

ASHRAE 2019 Winter Conference – Kansas City, MO

TC 1.5 Computer Applications - DRAFT Minutes

TC 1.5 Public Web site: <http://tc0105.ashraetcs.org/>

TC 1.5 basecamp: <https://basecamp.cosm/2681208/projects/8192590>

Main Committee Meeting

Monday June 24

(25/25)

6:30-9:00 PM CST

Seminar Sponsoring and Cosponsoring:

Seminar 16: Multiscale Building Energy Modeling, Part 11. June 23, 1:30 – 3:00 PM

Seminar 50: How the Blockchain Will Affect You and Your Work in HVAC&R and Buildings: Don't Get Left Behind, It's Happening Now!. June 25, 11:00 AM – 12:30 PM

Seminar 62: Predictive Analytics for HVAC Engineers: What Is in the Box?. June 26, 8:00 – 9:30 AM

Call to order: 6:37pm

1. **Welcome:** Introductions
2. **Roll Call:** Number of voting members present to reach quorum (6): **Stephen Roth (Chair), Joshua New, Mike Galler, Steve Rosen, John Crosby, Bruce Billedeaux, Carol Lomonaco, Tim Dwyer, Ed Tsui, Cameron Labunski**

Alsr – review and update roster since website does not properly reflect voting and non-voting members.

Attendees: Mike Galler, Dan Macumber, Joshua New, Tim Dwyer, Dane Christensen, Patrick Carpenter, Mike Pouchak, Mark Adams, Mike Galler, Bruce Billedeaux, Daniel Macumber, Stephen Roth, Krishnan Gowri, Parasto Delgoshaci, Anthony Fontanini, Dave Branson, Mohammad Heiderinejad, Todd Einck

3. **Review of Agenda**
4. **Approval of Minutes from 2019 Winter Conference in Atlanta (Basecamp)**

Stephen moves to approve, Joshua New seconds, passes 5/0/0

Alsr – coordinate with section head regarding title, purpose, and scope of TC.

5. **Review Action Items from 2019 Winter Conference in Atlanta (open action items in table below)**

Responsible Member	Description	Due Date	Completion Date
Stephen Roth	Reserve Kansas City room locations	3.8.19	3.8.19
Mike Galler or someone else?	2 website action items: <ol style="list-style-type: none">1. Post section announcements on web site from subcommittee reports2. Find previous minutes to update new website	Continuing	1 month after mtg.

6. Subcommittee Reports:

Emerging Applications: Anthony Fontanini

5-6pm June 23, 16 attendees

- Kaggle competition 1.5 co-sponsoring (Clayton Miller has 1600 meters for 3 years), Wednesday will decide if \$25,000 in awards will be approved. Competition launch at BPACS conference in September and close at end of year. Seminar 62 talk on the competition. ASHRAE papers required for winners.
- Program: Dan Macumber for MBEM part 12
- Building models 1 atom at a time
- Debate: use of social media technology in the workplace
- Is your modeling too slow? Have you considered GPUs.

Programs: Mike Galler

- 6-7, 2 programs proposed accepted, and 1 co-sponsored accepted
- MBEM part 11 Sunday, 40-50 people in attendance
- Seminar 50: tomorrow 11-12:30
- Wednesday 9:30am
- Reviewed program from Atlanta
- What's new in Cybersecurity (70)
- Cannabis Challenges with HVAC, design, and operation (160)
- Orlando submission deadlines is 8/2
- GPU computing (Jin Wen, Drexel, may lead) – Joshua New has potential NVIDIA speaker, Mark Adams maybe session chair
- MBEM part 12 (Dan Macumber)
- Debate: Social media – is it good for the HVAC industry? (Carol Lemonaco) – has one speaker against social media
- What's new in cybersecurity (Carol Lemonaco)
- Co-sponsoring TC1.4 – seminar on hot cutting edge technologies for smart buildings, IoT, AI, DES, smart grid, and cybersecurity. [Chair's prerogative.]
- Vikrant requested machine learning for prognostics of HVAC equipment. Looking for cognizant TC.

Research: Todd Gottshall

- Research this morning, new RAC liaison Amid Rashid
 - Process of research – new subsection of work statement which is called the plain English abstract, this will be used for media postings, etc.
 - Ongoing PMS and PMES training has been useful.
 - PTAR – publication topic acceptance request, ASHRAE willing to pay for new and updating ASHRAE publications. Will dedicate 10%

of research budget to that (\$1.5M); average contract is \$131,000. Will be improving their data-mining. Author must estimate the budget. RAC attempting to inject some discipline into the estimation process.

- Research strategic plan – roadmap for people who want to put in WS or RTAR to hit targets that ASHRAE has put out there. 9 years old so they want to revamp it.
- 2 active projects:
- PMS 1801 met yesterday, project on track
- PMS 1810 BuildSimHub, no invoice yet, task ongoing to interview stakeholders and get pain points, completed 11 and PMS encouraged more.
- AItg – move all progress content to a basecamp folder
- 2 work statements: 1811 (Bing Dong) returned with comments, 1815 returned with comments
- Next submission date for new RTARS or WS is 8/15.

Handbook: Krishnan Gowri

Krishnan didn't make it in time, room was double-booked, already published so no action to address.

Handbook revamped from 30-40 pages down to 12 pages. No assistance near the end, so need.

Allk – leave off handbook for Orlando meeting rooms

Standards: Steven Rosen

Not present.

Cybersecurity: Mike Galler

Potential collaboration with CIBSE

Stephen Roth proposes TC1.5 supports and initiates the new MTG for cybersecurity; Mike Galler; passes 6/0/0

17 attendees

7. YEA update: Dave Branson or Lindsey King

Multiple TCs want happy hour to be more than a happy hour. Recruitment may not be successful. TC members may unofficially try to recruit at YEA events.

College of Fellows sponsored a seminar with 80 participants and YEA officers came to College of Fellows meeting this morning to setup structures that are ASHRAE-oriented.

Mark Adams: speed-dating event for TC recruitment of YEA

Lindsey King: thinks we should have a table to help recruit.

Mark Adams: scavenger hunt to visit 5 TCs to get a drink ticket

Tim Dwyer: YEA speaker as part of the social media in the workplace

Does YEA have a conversion rate for people that drop out of YEA? No.

YEA members are gaming ASHRAE by moving up through the standing committees.

Krishnan Gowri: Chair could work with YEA for handling paperwork and training prior to finding a role in the committee.

Stephen Roth: one of TC1.5 to mingle at YEA Friday party

Briana Masterson works for ASHRAE and is Chair of YEA

Carol: Try to get more young students

Dan: Scholarship with ASHRAE, should have shadow a TC requirement
Allc – contact someone to see if social media speaker

8. Chair's Report:

- a. Review goals for my 2-year term:
 - i. At least 4 sponsored or co-sponsored seminars/workshops per meeting (13 sponsored so 3 short of goal)
 - ii. At least 1 new RTAR and WS per meeting (had 2 in projects and 2 in review, achieved)
 - iii. At least 3 new TC 1.5 members per meeting. In fact, since the last meeting we have 6 new members:
Hayden Reeve
Amanda Smith
Dan Macumber
Shichao Liu
Nader Moazami
Sandeep Shinde
 - iv. Sponsor or co-sponsor at least 1 new standard during the 2-year term (co-sponsor 224)
 - v. Rename our TC (may happen before June 30)
- b. Ask members to update ASHRAE profile when info changes. There is a new online portal at:
https://web.ashrae.org/tech_committees2/index_v77.php?com_id=nave4rabakuw
- c. Feedback from Chair's breakfast shared that the initial reorganization goal was too ambitious, scaling that back, will go quiet and have some more discussion in Austin; will work at TCs not making quorum or not making progress.
Allc – provide feedback to TAC on 1h15m meeting on how to conduct meeting that was off-base and ended by saying how they could conduct meeting however they want.
- d. Present new Roster for 2019-2020
- e. PEC report: Recommendations from TC 1.5
- f. Discuss possibly holding subcommittee meetings prior to actual ASHRAE Meeting
- g. You all will be receiving an email about employee thank you letters in early August with details on how to request a thank you letter.
- h. George B. Hightower award nominees are due by September 1.
- i. 2019 Remote Participation Meetings Request – not common for our TC.
- j. AIkg – schedule Handbook subcommittee meeting online before the conference.
- k. Present dinner plans
10 attendees for restaurant

9. Liaison Reports

- a. BIM-MTG
 - i. Compilation from different TCs promoting BIM, Rob leading, been around 5 years and look into Title, Scope, and convert to TC. What is the purpose of BIM and how can it be promoted throughout ASHRAE?
- b. TAC

Covered earlier.

10. Old Business

11. New Business

- a. ASHRAE Journal is making plans for the 125th anniversary with articles in the issues from July 2019 through June 2020. ASHRAE would like to publish some articles related to future trends in the HVAC&R industry. The publisher thought TC 1.5 would be a good place to start in the hunt for an author(s).
AIsr – talk to editor on ASHRAE journal, Mike Pouchak, Joshua New, Carol Lomanaco
- b. Discuss update to TC 1.5 Title-Purpose-Scope (TPS). **It was rejected by TAC in May 2019.** During the 2019 Winter Meeting, we voted to rename TC 1.5 to “Emerging Technology Applications”. We also voted on the following updated scope:

“TC 1.5 is concerned with determination of emerging technology and digital applications to the design and optimization of refrigeration, heating, and air-conditioning systems, equipment and components thereof; and with programs for all such uses.”

We need to revisit this.

Regarding the title, TAC suggested this: Some suggestions came up using the word “Computer” back in the title somehow, or use “IT” applications, etc.

Regarding the scope: The scope is also becoming short and needs some revisions. The current scope says “computer applications” and you proposed “software applications” instead. Is that really correct? It seems using computer applications is more appropriate because it covers everything related to computer, including software, drone systems, etc.

Carol Lomanaco moves to change the title to “Emerging Computer Applications”. Bruce Billedeux seconds.

Joshua New raises items from previous meeting:

Stephen Roth motions we approve the “TC1.5 is concerned with emerging technologies and software applications for the design and optimization of the built environment.” Joshua New seconds.

Discussion:

Passes 4/0/0 chair voting

Question if that was quorum. Plan to move forward with the old scope.

12. **Next Meeting Times:** ASHRAE Winter Conference, February 3, 2020 – Orlando, FL

13. **Adjournment 8:47pm**

Appendix A. Draft - Meeting Minutes

ASHRAE 2019 Annual Meeting – Kansas City, MO

TC 1.5 Computer Applications Emerging Application Subcommittee

Sunday, June 23, 5:00 pm - 6:00 pm

Lester Young B (3), Marriott-West

Chair: Anthony D. Fontanini, anthony.fontanini@nrel.gov, 720-527-9786

- Call to Order – 5:00 PM

Attendance: Tim Dwyer, Joshua New, Mike Galler, Anthony Fontanini, Derek Aschman, Carol Lomanoaco, Edward Tsui, David Branson, Todd Einck, Kim Barker, Dan Macumber, Mark Adams, Mike Pouchak, Jennifer Leach, Parastoo Delgoshaci, Joon-Ho Choi, Charlie Culp

Other Attendees:

- **Chair's Report**

- Welcome old and new attendees and encourage participation.

- **Review of Action Items and Activities from previous meeting**

- Program Review for this meeting:

Seminar 16 - Multiscale Building Energy Modeling, Part 11

Date and Time: Sunday, June 23rd, 1:30 pm – 3:00 pm

Track: Modeling Throughout the Building Life Cycle

Room: 2102B, KCCC

Sponsors: 4.7 – Energy Calculations and 1.5 - Computer Applications

Chair: Daniel Macumber, National Renewable Energy Laboratory, Golden, CO

1. Building Energy Model Assimilation and Calibration with Real World Sensor Data, Zheng O'Neill, Ph.D., P.E., University of Alabama, Tuscaloosa, AL

2. Classification and Approach to Multi-Scale Building Energy Modeling Daniel Villa, P.E., Sandia National Laboratories, Albuquerque, NM

3. City-Scale Building Energy Modeling and Calibration, Tianzhen Hong, Ph.D., Lawrence Berkeley National Laboratory, Berkeley, CA

4. Development and Validation of a National-Scale Building Stock Energy Model, Anthony Fontanini, National Renewable Energy Laboratory, Golden, CO

Well-attended with 40-45 attendees.

Seminar 50 - How the Blockchain Will Affect You and Your Work in HVAC&R and Buildings: Don't Get Left Behind, It's Happening Now!

Date and Time: Tuesday, June 25th, 11:00 am – 12:30 pm

Track: Fundamentals and Applications

Room: 2105, KCCC

Sponsors: 1.5 - Computer Applications, MTG.BIM Building Information Modeling

Chair: Tim Dwyer, CEng, UCL Institute for Environmental Design and Engineering (IEDE), London, United Kingdom

1. Blockchain Basics, Bruce Billedeaux, Maverick Technologies A Rockwell Automation Company, Portage, MI

2. Why Blockchain Is the Real Deal and Impacts Everyone Don Beaty, P.E., DLB Associates, Eatontown, NJ

3. How Blockchain Technology Can Be Used for HVAC Equipment Maintenance Stephen Roth, P.E., Carmel Software Corp., San Rafael, CA

4. Blockchains for the Internet of Things: Preventing Forgery and Tampering of Identities Devu Manikantan Shila, Ph.D., United Technologies Research Center, West Hartford, CT

Seminar 62 - Predictive Analytics for HVAC Engineers: What Is in the Box?

Date and Time: Tuesday, June 25th, 8:00 am – 9:30 pm

Track: Modeling Throughout the Building Life Cycle

Room: 2102B, KCCC

Sponsors: 1.5 - Computer Applications

Chair: Krishnan Gowri, Ph.D., BIM2BEM Solutions, Bothell, WA

1. Urban-Scale Natural Ventilation with Physics-Informed Machine Learning Prediction Chao Ding, Ph.D., Lawrence Berkeley National Laboratory, Berkeley, CA

2. Integrating BEM with Data and Machine Learning: Challenges and Perspectives Adrian Chong, Ph.D., National University of Singapore, Singapore, Singapore

3. Great Energy Predictor Shootout II: Revisited Clayton Miller, Ph.D., National University of Singapore, Singapore, Singapore

- **New Business (brainstorming)**

Kaggle Completion - Great Energy Predictor Shootout III; 3600 meters around the countries with 3 years of data; ASHRAE may provide \$35,000 in awards for the winning teams, may launch at BPACS conference in Denver, will open for 90 days to join and compete. Clayton giving a talk on it as part of Seminar 62. ASHRAE paper required as part of submission. At least hourly if not sub-hourly/15 min.

Jennifer (Section 1 Head) shares that TAC rejected the proposal to revise the TPS. Willing to help before she becomes active July 1 to find a way forward.

Research project –

- Urban-scale building energy modeling, Som Shrestha

Systems, components – could reach out to other TCs for recommended speakers

Building models – one atom at a time

Molecules to models

- Social media technologies

How social media use is effecting energy use of HVACs

Becoming aware of new technologies (Matlab youtube videos)

Debate on the use of social media technology in the workplace

Privacy and occupancy detection with phones while powered-off

- Modelica language and functional mockup units (FMUs)

- Drones

Interested in uses for commissioning; Syracuse University and GA tech have a project; ANL Ralph using drones for leakage detection of envelope, Drones for Good competition, Bentley Systems.

- Additive manufacturing / 3D printing

3D printing of heat exchangers and parts.

- Mobile applications

- Web-services

BACnet (TC1.4) has a web service that could be taken out and used as an ASHRAE web service

ASHRAE web services (AWS)

ASHRAE still struggling with hosting and cost

- Big data modeling/mining

GPU capabilities have taken over the HPC environment

Could be similar to Modelica (advanced computational techniques)

Would ASHRAE letter help modernize GPU use for simulation

FPGA and ASICS custom chip for simulation

Potential seminar or program on benefits to ASHRAE society

“How many orders of magnitude would it take to get your attention?”

“Is your modeling too slow? Have you considered GPUs?”

- Internet of Things (IoT)

This new topic added and could help buildings – impacts security, sensors&controls

- Virtual and Augmented Reality

Scans rooms, goes into gaming engine, wants to help people stream data into game. Interested in computational design. Simplified communication tool for showing change.

- Artificial intelligence

- Open Discussion

Application areas that are of interest to this subcommittee as they apply to the HVAC industry include but not limited to:

- Advanced Design Tools
- Contracting and Business
- Education and Training
- Engineering Design Productivity
- HVAC System, Equipment, and Component Optimization
- Operating Procedures and Diagnostics

Examples of current computer technologies that are of interest to this subcommittee include:

- Augmented Reality, GPS & GIS Application
- Building Information Modeling (BIM)
- Blockchain
- Cloud-based Computing
- Data Exchange and Interoperability
- Game Theory
- HVAC Applications for Smart Phones and Tablet Computers
- HVAC System Modeling Using Data Mining and Knowledge Discovery
- Optimal Control Using HVAC System Model based on Data Mining Approach
- Multi-disciplinary Design Optimization
- Multimedia
- Virtual Reality / Virtual BIM

- **Meeting Action Items**

- **Next Meeting Time**

February 2, 2020 – Orlando, FL, USA

- **Adjourn – 6:01 pm**

- **Meeting Action Items**

- **Next Meeting Time**

June 24, 2019 – Kansas City, MO, USA

- **Adjourn** – 6:00 pm

APPENDIX B. TC 1.5 Subcommittee Meeting, Programs

Mike Galler calls to order at 6:10

Attendees: Mike Galler, Mike Pouchak, Joshua New, Tony Fontanini, Stephen Roth, Joon-Ho Choi, David Branson, Carol Lemanoco, Charlie Culp, Bruce Billedeaux

Introductions

Multi-scale BEM, Part 12

Unintended consequences of marijuana growth, cold cash, expensive thermal mass

Debate – whether social media is good for the HVAC&R industry

IoT and sensor proliferation – Mark Adams

Standard building data format with GPUs – Dan Macumber

HPC expert on GPUs and speedup success in another domain

Digital Twin – Bentley Systems

Current Programs:

- ☐ 2 submitted program proposals accepted
- ☐ 1 cosponsored program proposal accepted

Seminar 16 (Intermediate): Multiscale Building Energy Modeling, Part 11

Sunday, June 23, 1:30 PM–3:00 PM

Location: KCCC, 1st Floor, 2102B

Program Track: Modeling Throughout the Building Life Cycle

Chair: Daniel Macumber

Technical Committee: 4.7 Energy Calculations

Co-Sponsoring Committee: 1.5 Computer Applications

Models of the existing building stock are an emerging application of multiscale building energy modeling.

These models have many valuable applications from fault detection and diagnostics, goal setting for campuses and cities, infrastructure planning for utilities, and national scale technology assessments. This seminar focuses on classification of model types, sources of validation data, strategies for calibration, and best practices. These techniques are necessary to increase stakeholder confidence in the quality of models for decision making purposes. Calibration of models has the potential to close the modeling loop and improve the accuracy of building energy modeling in other applications.

1. Building Energy Model Assimilation and Calibration with Real World Sensor Data

Presenting Author: Zheng O'Neill, Ph.D., P.E., University of Alabama, Tuscaloosa, AL, USA

2. Classification and Approach to Multi-Scale Building Energy Modeling

Presenting Author: Daniel Villa, P.E., Sandia National Laboratories, Albuquerque, NM, USA

3. City-Scale Building Energy Modeling and Calibration

Presenting Author: Tianzhen Hong, Ph.D., Lawrence Berkeley National Laboratory, Berkeley, CA, USA

4. Development and Validation of a National-Scale Building Stock Energy Model

Presenting Author: Anthony Fontanini, National Renewable Energy Laboratory, Golden, CO, USA

Seminar 50 (Basic): How the Blockchain Will Affect You and Your Work in HVAC&R and Buildings:

Don't Get Left Behind, It's Happening Now!

Tuesday, June 25, 11:00 AM–12:30 PM

Location: KCCC, 1st Floor, 2105

Program Track: Fundamentals and Applications

Chair: Tim Dwyer, CEng

Technical Committee: 1.5 Computer Applications

Co-Sponsoring Committee: MTG.BIM Building Information Modeling

Blockchain is likely to disrupt the way that you, as a professional, work in the very near future. In the world of buildings and HVAC&R, blockchain will affect you if trying to assure the quality of a product, project, or building operation. Blockchain provides a publicly secure digital record that is virtually impossible to falsify. This seminar will provide a brief history of blockchain and explain its concept and application so that you can understand the basics sufficiently to be able to discuss it with others and consider how it might be usefully applied.

1. Blockchain Basics

Presenting Author: Bruce Billedeaux, P.E., Maverick Technologies A Rockwell Automation Company, Portage, MI, USA

2. Why Blockchain Is the Real Deal and Impacts Everyone

Presenting Author: Don Beaty, P.E., DLB Associates, Eatontown, NJ, USA

3. How Blockchain Technology Can Be Used for HVAC Equipment Maintenance

Presenting Author: Stephen Roth, P.E., Carmel Software Corp., San Rafael, CA, USA

4. Blockchains for the Internet of Things: Preventing Forgery and Tampering of Identities

Seminar 62 (Basic): Predictive Analytics for HVAC Engineers: What Is in the Box?

Wednesday, June 26, 8:00 AM–9:30 AM

Location: KCCC, 1st Floor, 2102B

Program Track: Modeling Throughout the Building Life Cycle

Chair: Krishnan Gowri, Ph.D.

Technical Committee: 1.5 Computer Applications

New machine learning and AI techniques are widely adapted for data discovery. The software industry has effectively used predictive analytics for retail marketing, computer system performance, network reliability among many other successful applications. Building energy use and HVAC equipment performance data from building automation systems can be used for predicting energy use intelligently with the new techniques. This session brings together three diverse, experienced researches in the field of machine learning and building energy management applications.

1. Urban-Scale Natural Ventilation with Physics-Informed Machine Learning Prediction

Presenting Author: Chao Ding, Ph.D., Lawrence Berkeley National Laboratory, Berkeley, CA, USA

2. Integrating BEM with Data and Machine Learning: Challenges and Perspectives

Presenting Author: Adrian Chong, Ph.D., National University of Singapore, Singapore, Singapore

3. Great Energy Predictor Shootout II: Revisited

Presenting Author: Clayton Miller, Ph.D., National University of Singapore, Singapore, Singapore

4. Atlanta: Review of Accepted Programs:

**ID Sponsoring Committee Program Type Session Title Track Co-Sponsoring Committee Other Sponsors
Session Chair**

10 1.5 – Computer Applications Seminar What's new in Cybersecurity1 Systems and Equipment Mike Galler

27 1.5 – Computer Applications Seminar Cannabis Grow Facilities: Challenges for HVAC Design, Equipment Selection and Operation Systems and Equipment Stephen Roth

5. Speaker Ratings:

APPENDIX C. Research Meeting

Meeting Agenda

ASHRAE 2019 Annual Meeting – Kansas City, MO
TC 1.5 Computer Applications Research Subcommittee

Sunday, June 23, 2019, 7:00-8:00pm, Marriott-West, 3rd Floor Lester Young B

Chair: Todd Gottshall tgottshall@westernallied.com 925-381-3049

1. **Call to Order: 7:00pm**
2. **Welcome – Introductions:**
3. **Review of Agenda**
4. **New Business/Followup:**
 - a. Work Statement Status
 - i. RP-1801 BIM-Data-Content-Development
 1. Rob Hitchcock
 2. PMS Report (Meeting earlier on Sunday)
 - 8 Guests, lots of interest and discussion
 - ~25% through billings
 - Made significant progress developing the Task 3 classification spreadsheet
 - Need feedback on any missing Equipment Component Data Templates
 - Next Tasks
 - i. Task 4 Develop Spreadsheet Documentation
 - ii. Task 5 Create Neutral Format Schema and Data Content Documents
 - Next meeting September
 3. PMS
 - Todd Gottshall, TC 1.5
 - Tim Dwyer, MTG-BIM
 - Krishnan Gowri, MTG-BIM
 - Michel Tardif, TC 7.1
 - Russell Taylor TC 7.1
 - ii. RP-1810: gbXML Reference BIM Test Cases
 1. Author: Stephen Roth
 2. Contractor: BuildSimHub, Weili Xu and Krishnan Gowri
 3. PMS Report (Meeting earlier on Sunday)

- 4 Guests, lots of discussion
- No billings to date
- Mostly through Task 1 and 2: Interviewing stakeholders and identifying “pain points” in BIM to BEM process using gbXML
- Only 11 interviews to date, Encouraged to gather more
 - i. Business model canvas and up to 75 interviews (as in NSF’s I-Corps) could be of value
 - ii. Ending every interview with “what 3 other people should we talk to?” would enable interviews to continue.
- Will de-emphasize Mechanical system test cases and add more Geometry test cases.
- Will continue to gather more interviews possible through contacts in IBPSA
- Will work to develop the test case documentation by September

4. PMS

- Todd Gottshall, TC 1.5
- Dave Branson, TC 1.5
- Lindsey King, TC 1.5
- Stephen Roth, TC 1.5

iii. WS-1811: Occupancy from Social Media Data Mining

1. Bing Dong
2. Submitted to RAC for review in KS

iv. WS-1815: Integrating Occupant Behavior Data into Building Performance Simulation

1. Rob Hitchcock
2. CoSponsor with **MTG.OBB** and MTG.BIM
3. Update
 - Final submittal to RAC with approved comments sent in May 2019
 - To be voted out for TRP by RAC in KC June 2019

b. New RTAR Submission Deadlines

- i. MMAD
- ii. August 15, 2019

5. **NEW RTAR Ideas**

6. **RAC Report**

- a. **Shinsuke Kato** (kato@iis.u-tokyo.ac.jp)

7. **Next Meeting Time**

- a. February 2, 2020 – Orlando, FL

8. **Adjourn**

APPENDIX D. TC 1.5 Computer Applications Handbook Subcommittee Meeting Minutes

Jan 14, 2019

Georgia World Congress Centre, Atlanta, GA

1. Meeting Called to Order at 6:00 p.m.
2. In attendance – Krishnan Gowri, Subcommittee Chair; Bruce Billedeaux
3. Chapter final draft was completed and approved by TC (electronic vote in Dec. 2018).
4. All the following topics were covered :
Cloud computing, mobile technologies, big data, HVAC applications, Systems design, component design
5. Thanks to the following contributors:
 - a. Cyber security – Mike Pouchak
 - b. Big data – Dave Branson
 - c. Cloud computing – Krishnan Gowri
 - d. Mobile applications – Lindsey King
 - e. EMCS applications – Todd Gotschal
 - f. BIM and interoperability – Rob Hitchcock and Supriya Goel
6. Meeting Adjourned – 6:01 p.m.

Appendix E. Cybersecurity Meeting Minutes

TC 1.5 Computer Applications - Cybersecurity Subcommittee

Agenda- ASHRAE 2019 Annual Conference – Kansas City, MO

**Sunday June 23, 4:00-5:00 PM, Marriott-West, 3rd Floor, Lester Young
B**

Chair: Mike Galler

9. **Call to Order:**

Call to order at 4:00pm

10. **Welcome – Introductions:**

Attendees: Mike Galler, Joshua New, David Branson, Jason DeGraw, Eaton English, Salvatore Cataldi, Wangda Zuo, Christian Kohler, Carol Lomonaco, Hywel Davies, Josephine Lau, Edward Tsui, Joe Furman, Jim Butler, Kim Barker, Eric Olson, Shichao Liu.

11. **Review of Agenda**

12. **Chair's Report**

13. **Update on CIBSE collaboration:**

- a. Chair received update from ASHRAE staff – 2 people from this TC subcommittee provided comments.

14. **Cybersecurity TG**

- a. Process/Schedule
- b. Liaisons – Jason DeGraw (), potentially 7.5, Kim Barker (1.4) to request a vote of support for sponsoring the cybersecurity MTG. Discussion was had regarding the best way to form or deliver items in partnership between 2 societies with ASHRAE's involvement. Plan is to move forward and figure out the liaison process as part of the formation process.
- c. Need to determine if going to point at NIST or have a guideline.

15. **Open Discussion about Cybersecurity Advocacy/Standards/etc.**

- a. Discuss Cybersecurity/HVAC needs – potential connection with commissioning process for including cybersecurity. potential disaster recovery or business continuity reports related to BAS (depends on the customer);
- b. Directions moving forward- determine where we should focus.
..and what we want to avoid: (from xkcd.com)

16. **Next Meeting Time**

February 2, 2020 – Orlando, FL

17. **Adjourn**

4:45pm

Notes:

- Cybersecurity- "Cybersecurity standards are digital security techniques developed to prevent or mitigate cybersecurity attacks. These guides provide general outlines as well as specific techniques for implementing cybersecurity." – Wikipedia
- Some current Cybersecurity standards (Wikipedia): ISO 27001, ISO 27002, NIST SP-800 series, Standards of Good Practice (ISF SoGP), NERC, ISO 15408 (Common Criteria), RFC 2196, ISA/IEC-62443, IEC 62443,...

2019	Kansas City	0
	Atlanta	2 seminars
2018	Houston	0
	Chicago	1-Conf Paper Session 11
	Long Beach	1- Seminar 20
2017	Las Vegas	1- Seminar 27
2016	St. Louis	0
	Orlando	2- Ron Bernstein YEA, and Seminar 63
2015	Chicago	0
	<i>Committee started</i> Atlanta	0
2014	Seattle	0
	New York	0
2013	Dallas	0
	Denver	0
2012	Chicago	0
	San Antonio	0
2011	Orlando	0
	Albuquerque	0

of Cyber Security Seminars

18. YEA update:

David Branson provides YEA update in Lindsey King's absence.

Lindsey King discusses is very active and has a strategy to help YEA members land with involvement to TCs. College of Fellows for establishing mentoring connections for YEA.

TC1.5 has 2 YEA members in the room.

19. Chair's Report:

Lindsey King went to the Chair's meeting.

- a. Review goals for my 2-year term (are these reasonable, yet a bit aggressive?):
 - i. At least 4 sponsored or co-sponsored seminars/workshops per meeting
 - ii. At least 1 new RTAR and WS per meeting

- iii. At least 3 new TC 1.5 members per meeting. In fact, since the last meeting we have 5 new members:
- Parastoo Delgoshaei
 - Dane Christensen
 - Nilesh Deshpande
 - Eric Nordstrom
 - David Stephens
 - Dan Macumber (signed up in subcommittee meeting)
 - Perhaps 1 other

- iv. Sponsor or co-sponsor at least 1 new standard during the 2-year term

- v. Rename our TC

Name change voted on already. Would like to review and vote on new scope along with the name change regardless of a merge.

Krishnan Gowri asks if section head, Amir Jokar was supportive of Stephen Roth.

Title: Computer Applications -> Emerging Technology Applications

Scope:

Eric Garrison attended because this TC was the only one that mentions computer or software.

Stephen Roth motions we approve the “TC1.5 is concerned with emerging technologies and software applications for the design and optimization of the built environment.” Joshua New seconds.

Discussion:

Passes 4/0/0 chair voting

- b. ASHRAE reorganization

Letter - <https://3.basecamp.com/3106353/buckets/4362382/uploads/1529754568>

290 meetings to decrease to 30 new TCs (from 110), 180 TC subcommittees aren't going away but may be reduced. Plan is to have seminars in the morning and all TCs are happening in the afternoon.

ASHRAE would like feedback within 60 days so they can develop a plan and implement it by Orlando, FL.

Discussion:

- Mark Adams feels hard to get people involved if subcommittee meetings are only online
- Joshua New expresses understanding of more meetings (room overhead) and less conference attendance (less registrations).
- Mike Pouchak believes that larger TCs will be more intimidating and less likely to encourage involvement.
- Carol Lomanaco joined someone who led an effort in connected buildings which is not as intimidating when more capable people that have 10+ years left are already participating
- David Branson is afraid this is another StarTrek issue – to boldly go where no man has gone before; what other organizations have tried this? Bruce mentions this has been tried by ISA and ISO.

- Bruce Billedeaux believes a lot of time must be set aside for everyone to make presentations to bring everyone up to date and harmonize work between committees.
 - Carol Lomanaco was involved with ISA, moved twice as fast as ASHRAE, on phone every Thursday, librarian hired and paid out of dues, March to November had a report completed
 - Joshua New notes people are resistant to change, but believes we should move faster and break things. Looking at optimal hierarchical group size would be beneficial. Liaisons between TCs may help in the combinations.
 - Patrick Carpenter looked at historical data from 18 years ago, few section have more, some less, not 10% different (maximum number per section). Up or down 1-3.
 - Dane Christiansen: lot fewer rooms, more registering and attending the conference (more research), can find smaller venues to open number of cities we can meet at.
 - Mick Schweidler: first issue is using our volunteer's time wisely (cost reductions would be a nice side effect but are not a driving factor; less communication challenges)
- c. Setting expectations for upcoming members:
- i. Make sure to remind voting members that they will be committed for 2 years
 - ii. Make sure they understand the responsibilities of the position
- d. Present dinner plans – ~11 people

20. **Liaison Reports**

None.

BIM MTG (Multi-Disciplinary Task Group) is the longest-running MTG since 2011. Supposed to convert to Technical Resource Group (TRG) and eventually a Technical Committee (TC).

21. **Old Business**

Mike Pouchak says that draft minutes have to be posted within 60 days. Mike Pouchak will work with Dan Macumber to post it as a 1-time deal.

22. **New Business**

None.

Stephen Roth motions to adjourn, Edward Tsui seconds. All approved.

Next Meeting Times: ASHRAE Annual Conference, June 24, 2019 – Kansas City, MO