Post Conference Update

Working Group 705 has been created for Lighting Systems. Please consider joining!
Haystack 4.0 and Lighting Systems

Jeremy Yon
Current, Powered by GE
ONE Jer : TWO Perspectives

PART 1: Industry
Sharing insights from ANSI C137 efforts

American National Standards Institute
Lighting Systems Committee
Jeremy’s perspective – not official statement

Note the background

PART 2: My Company
Sharing more specifics from Current Powered by GE

Note the background
Starting at the Beginning
ANSI C137
ANSI C137 Data Modeling – Initial Work

Key Elements

- Over 15 lighting models/protocols
- Over 30 logical device types
- Over 20 functions

9 Essential Points of Interoperability
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I. Individual Occ Sensor State
II. Room or Area Occ State
III. Individual Sensor Illuminance Level
IV. Room or Area Illuminance Level
V. Zone Control Level
VI. Load Control Level
VII. Preset Select
VIII. Set DR Mode
IX. Energy Use

Individual Devices
Zone/Area/Room Occupancy
Illuminance
Output Level
Setpoint Change
Demand Response
Energy Measurement

May 13-15, 2019
...it’s All About the VOCAB!

phScience: WG649
- illuminance
- luminance
- luminous flux
- luminous intensity
- (discussion @ horticulture)

phlot
- Occupancy
- Demand Response
- Partitioning
- Scenes/Presets
- Energy Measurement
- Dimming/Levels

Over 30 Terms Identified for Consideration
Lighting: An ideal platform for IoT in Buildings

LED Lighting Systems offer...

- Pervasive coverage
- "Bird’s-eye view" of space
- Power to lighting devices
- Cost effective deployment
- Natural integration to BMS
- Corporate capital budgeting
Location/Organization Markers

- [region or multiSite] = collection of sites
  - geoPlace = Geographic Place
  - site = Built Location
    - space = 3D volume
      - building
      - floor
      - room
    - xxx-zone-space = associated with a specific system and physical volume(s) (xxx=lighting or hvac)
- [No Tag] = Individual (inferred)

Lighting-zone-space use:
- Can be associated/nested with any building level
- Can define a physical region
- Can define a region of control
- Can define a collection of distributed points/spaces
- There are NO constraints to physical realities

Red = New
Green = Existing type/tag
## Data Representation

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<thead>
<tr>
<th>Value Represented</th>
<th>Units</th>
<th>Variability</th>
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<td>MEASURED</td>
<td>Default Units</td>
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<tr>
<td>calc</td>
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<td>Default Units</td>
</tr>
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<td>Unitless</td>
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</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>sp</td>
<td>Adjustable CONSTANT</td>
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</tbody>
</table>
Data Grouping

Interest in Individuals and Collective

• [no tag] = represents a single entity

• aggregated-calc = combination of multiple entities with calculation

Example: Room Occupancy based on multiple sensors
Physical Relationships

- **equip** = equipment
  - **comm** = physical communication element such as a radio
  - **xxx-[physicalDevice or physicalSensor or ??]** = a physical device
  - **luminaire**
    - **lightsource**
    - **driver**
  - **meter** = equipment to meter
    - **elec-meter**
    - **flow-meter**
    - **occupancy-meter**
    - **optical-meter**
      - **Illuminance-optical-meter**
      - **thermal-meter**
Final Thoughts

- Expand **id** (identification) concept
- Evolve conjuncts and combinations
- Incorporate physicality (location+relationship)
- Focus on cross-data/info/semantic model opportunities
- Share Industry Concepts
- Embrace Standardization (the right way)
Haystack 4.0 and Lighting Systems

Jeremy Yon: jeremy.yon@ge.com
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