11:00 a.m. BU 120 – Sean Stein Auditorium

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Abstract: Primary narrative is **Optimizing Thermal Comfort and Energy Efficiency**, by leveraging data analytics and applied to the built environment. Our industry use case examples demonstrate how Automated Logic designs systems that allow for massive data sets, trends and relationships, to be normalized and presented in rich visualizations to maintain optimum indoor environments at the highest kw/ton/sq. ft. efficiency possible. We maintain optimum environments at the lowest energy intensity possible.

1. The built environment consumes 60% percent of our national energy. Productivity / greatly impacted by thermal comfort and IAQ / (3/30/300)
    a. Optimum temp: 70 and 74 F and 40-60% Relative humidity
    b. individual user zone, zones drive the output of the larger plants, AHU's, Chillers
    c. Sustainability and reduction of carbon footprint; need to lower the energy intensity
    d. Indoor environments impact productivity (3/30/300) CogFX

Data Analysis Example 1: Thermo Graphic Floor Plans: We aggregate and display visualizations representing deviation from setpoint thru themo-graphic floorplans---
Benefit: reduced maintenance hot/cold calls, rapid identification of problem areas, more productive staff

Data Analysis Example 2: Fault Detection and Diagnostics; Intelligent, active alarm routines, that provide guided insights, and suggested corrective actions.
Benefits: quicker root cause identification, suppression of nuisance alarms; Persistency framework with linked variables; intelligent sequencing, that can be configured to only send alarms when X number of conditions are met, for a variable quantity of inputs.

Data Analysis Example 3: **Environmental Indexing. S**ingle metric to illustrate rolled-up "performance to plan" set-points, (Space Temp, Humidity, VOC, IAQ).
Benefits: Can instantly see how close the campus is meeting comfort conditions, and can manage budgets to that metric, are we willing to lose 5 points of ER to not burn 100kW per hour? What is the cost/comfort analysis? ER can be impacted by asset health (electro mechanical system failures) and entire facility departments can be measured against how well they are able to maintain the ideal indoor comfort conditions that produce optimum occupant performance.

Data Analysis Example 4: Network Health Manager Cloud based utility that allows user to have visualizations in the health of distributed control systems thru automated network diagnostics and resource capacity.
Benefit: Network resiliency and uptime results in fewer outages, disruptions and sustained operations for critical environments

ALC's Network Health Manager is hosted on our Cortix AI platform, user can see CPU Utilization, IP Level Controller utilization and Non-IP Controller Utilizations, packet transmission diagnostics and security overlays-better visualizations and data management allow for more proactive maintenance and asset health, lowering costs and securing uninterrupted indoor environment experiences.

Modern buildings are comprised of sophisticated electro mechanical systems for conveyance, lighting, heating, cooling, security, communications, and all the systems required to maintain clean, safe comfortable environments for our use. These systems can represent thousands and hundreds of thousands of sensed data points. Automated Logic aggregates the these physically sensed data points, from a wide variety of sensors that detect temperature, voltage, strain, pressure, fluids, particles, smoke, light, power and potential and create intuitive and rich visualizations to optimize, control, report and sustain the built environment.