Real World Example
Mid-Rise Office, 395k SF
Occupied 2015
Fully 3rd Party Commissioned
LEED Gold
Full-Time Facility Engineers

“Most buildings will lose up to 30% of their efficiency in the first three years of operation.”

Bill Harrison, ASHRAE Past President
(Data based on Texas A&M Study)
Results after 2 Years (3\textsuperscript{rd} year of building operation)

> 12% Occupancy Increase

~10% Normalized Energy Reduction (740,000 kWh)

> 10% Average Monthly Demand Reduction

> $60,000 Avoided Energy costs

Reduced Hot/Cold Calls

50,000+ Hour Equipment Run Time Reduction

\textbf{NOT MUTUALLY EXCLUSIVE!}
**Today’s Building Systems**

Today’s BMS’ and BAS’ are largely rule-based and have limited external data access.
What is my “Analytics” Definition?

Analytics are a tool that.

1. creates actionable “value” from data

2. detect patterns, trends, deviations, and anomalies from expected outcomes that represent opportunities for better building performance.
Analytics is a journey

- Applying analytics to buildings is not like buying equipment with lower consumption
- It is impossible to calculate savings ahead of time
- It is not a set and forget
- Analytics are just a tool – enables us to see how building systems are really performing
- Identifies many low/no cost issues, but still require action to realize the benefit
- Can make reporting requirements (AHJ, JCAHO, Tenants, Validation, etc.) easier
The journey needs a defined process...
How do we make sense of data?

When there is:

- Heterogeneity of devices & systems
- Disparity of data in various silos
- Need for data correlation across silos
- Serve data to various applications and personas

Ontology

- As a common vocabulary to refer to concepts in the building
- As a way to capture knowledge inside the Building domain (relations)
Ontology at a glance

- **An Ontology**: is a representation of domain concepts and relations that connect such concepts
- Ontologies are represented in **triplets**: (object, relation, object)
- **Classes and Instances**
- W3C Standards: RDF, OWL, JSON-LD