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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 (3rd 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

Energy Efficiency

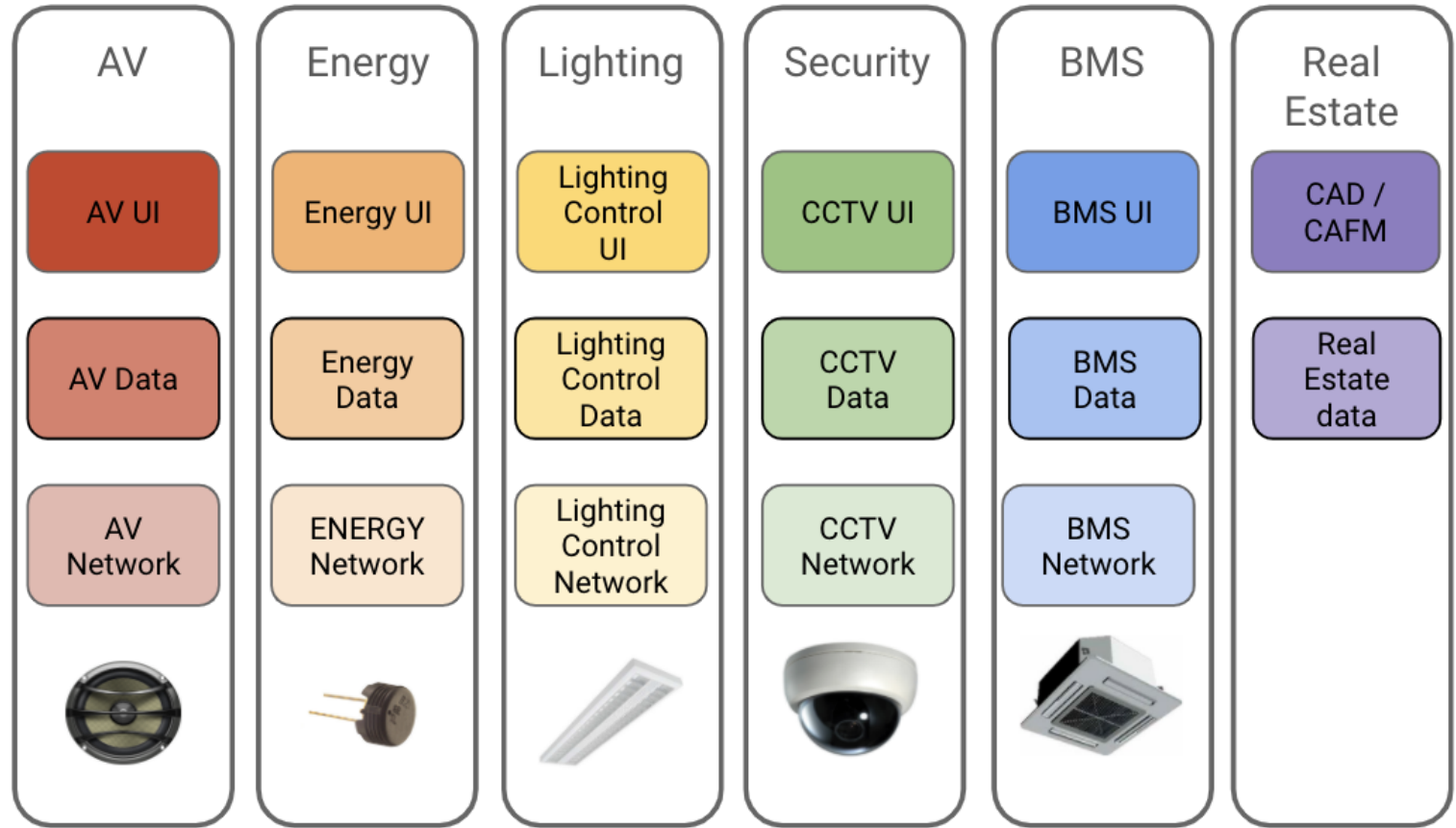
Tenant Comfort

Equipment Life

NOT MUTUALLY EXCLUSIVE!

Today's Building Systems

Today's BMS' and BAS' are largely rule-based and have limited external data access



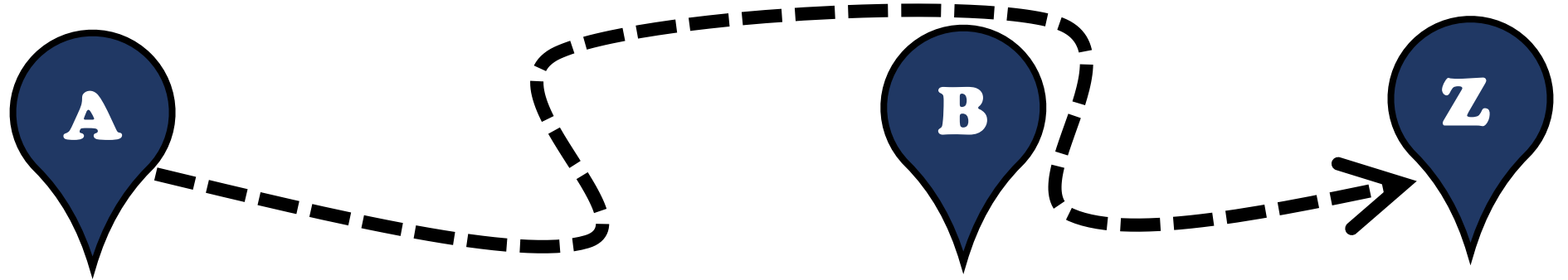
What is my “Analytics” Definition?

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.

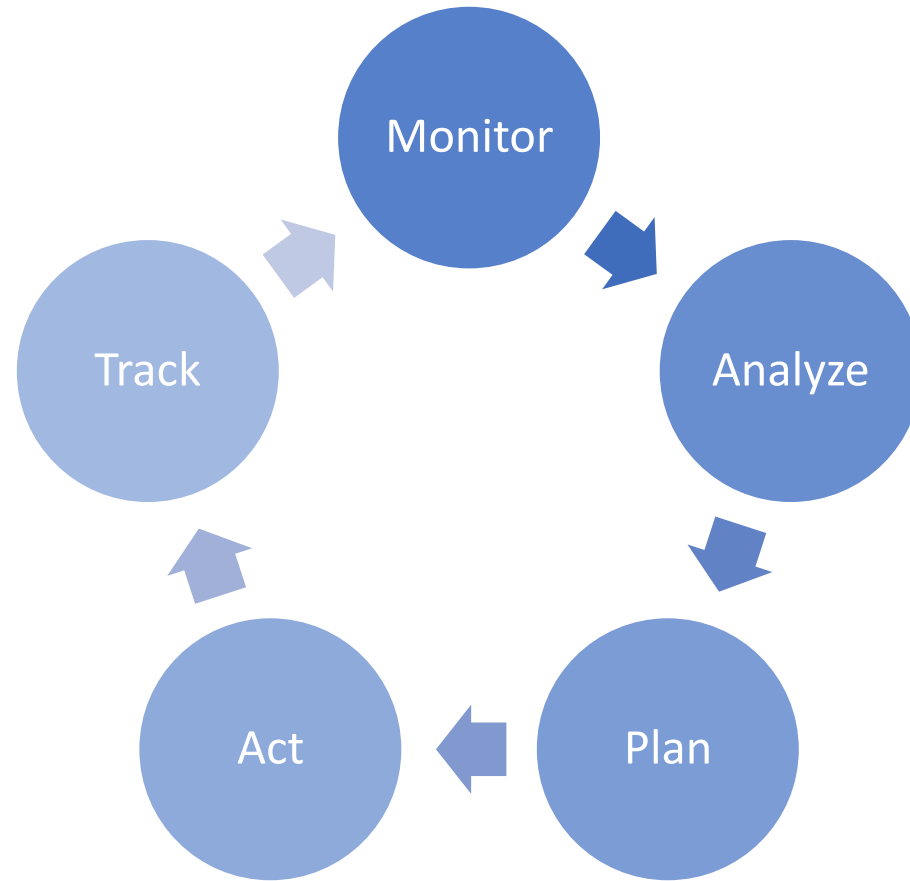
Analytics is a journey

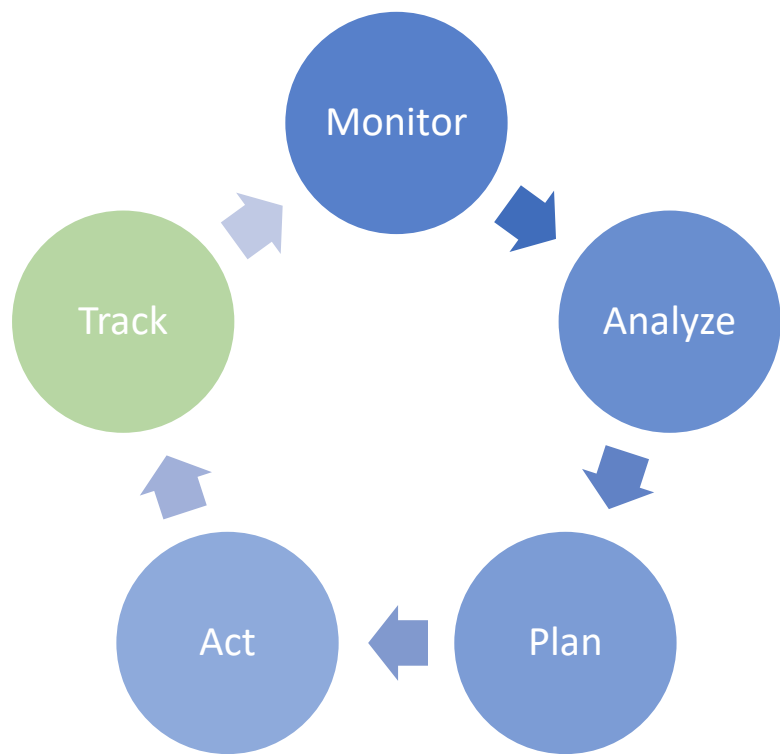
- Applying analytics to buildings is not like buying equipment with lower consumption
- It is impossible to calculate savings ahead of time
- It is not a set and forget
- Analytics are just a tool – enables us to see how building systems are really performing
- Identifies many low/no cost issues, but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



The journey needs a defined process. . .

Data Driven Facility Management





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

