

Operator Effectiveness with
Building Automation Systems
Information & Action

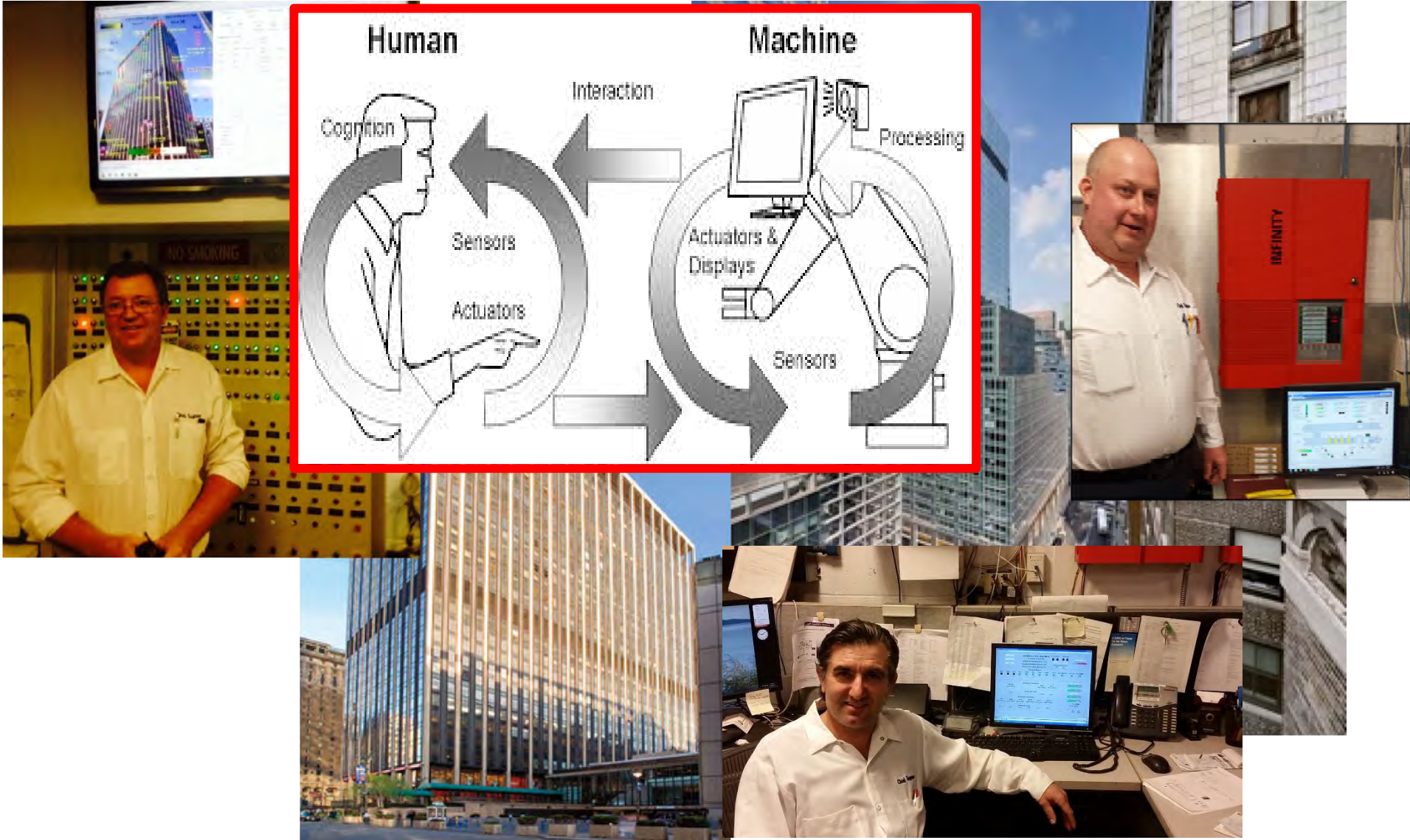
CUNY Building Performance Lab
City University of New York

Michael Bobker

Manorge Joseph

Research Focus:

DEEZ GUYS & THEIR BAS



Research Focus:

DEEZ GUYS & THEIR BAS



The Standard BAS Interface

Q Building – North AHU

AHU VA1 Schedule

RASP-SP ??
RA-SP ??

EF1-S ??
EF1-C ??

EA RA

DPR-C ??

MA-T ??

RA-T ??

RF-S ??
RF-C ??
RF-SPD ??

DAT-SP ??
DA-T ??

DASP-SP ??
DA-SP ??

OA-Q ??
MINPOS-SP ??

PFILT-DP ??
FFILT-DP ??

CLG-C ??

SF-S ??
SF-C ??
SF-A ??
SF-SPD ??

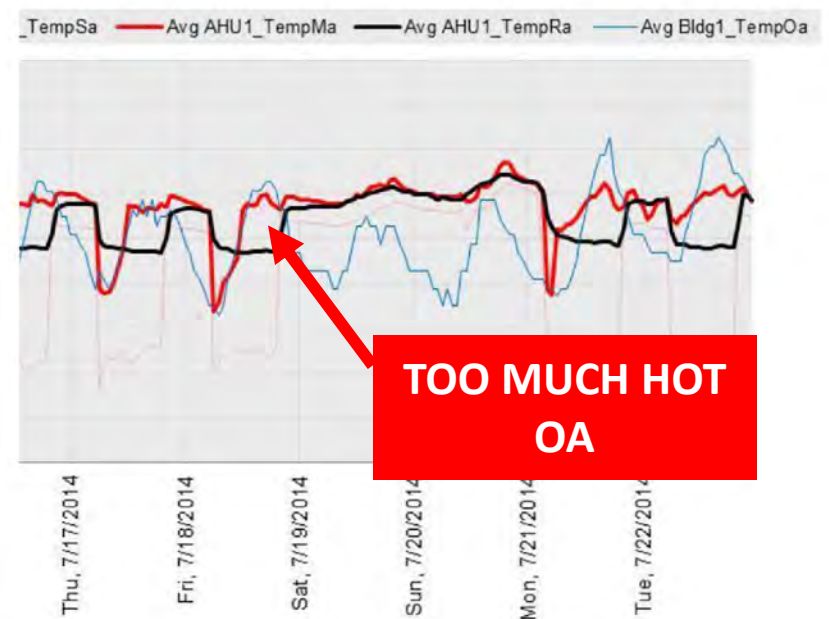
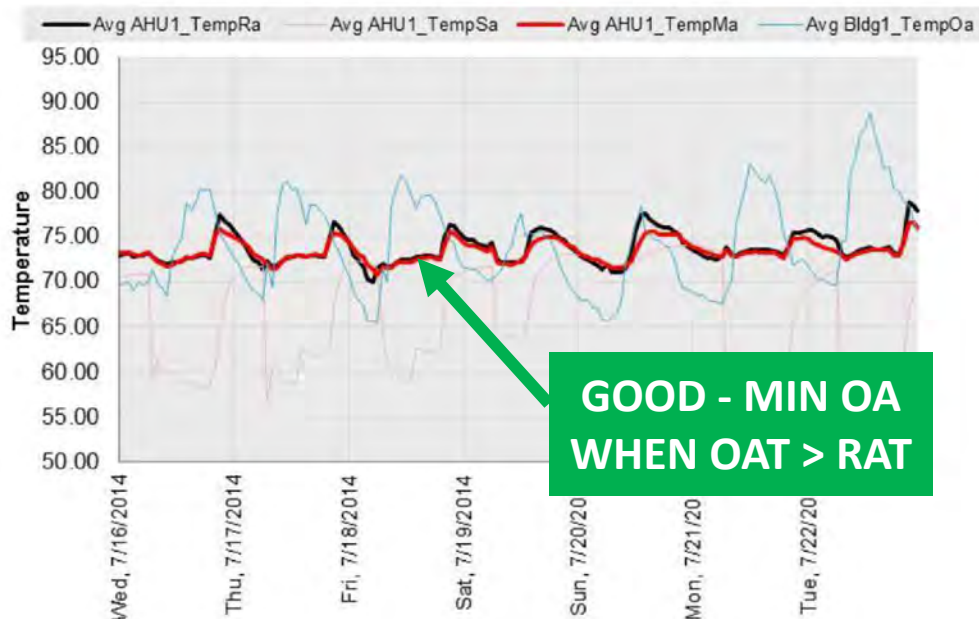
ZN-H ??
ZN-CO2 ??
BLDG-SP ??
BLDGSP-SP ??

?? 15 ??

**Real-time “snapshot”
Patterns over time?**

TREND LOG VISUALIZATION – PATTERN RECOGNITION

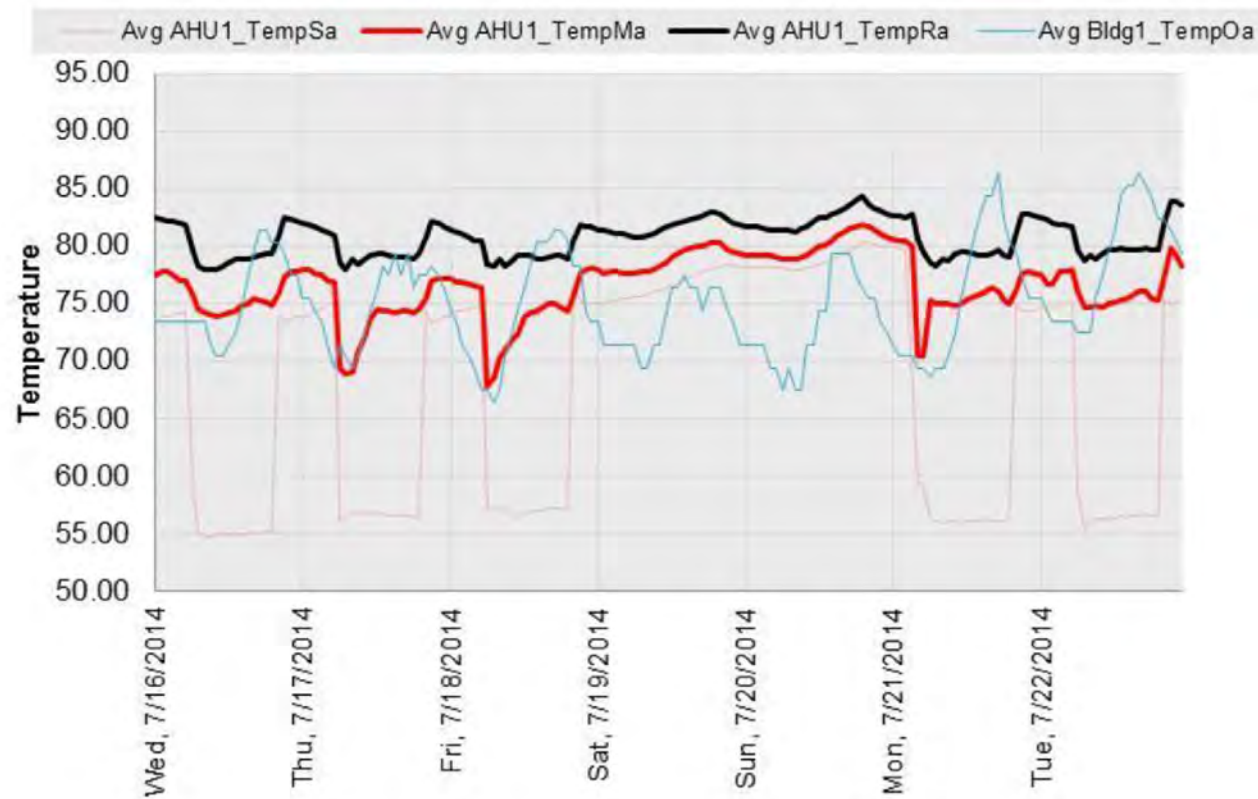
Outside Air Temp, Return Air Temp, Mixed Air Temp at an AHU or RTU (“economizer”)



Incorrect Outside Air. Very expensive. Quite common.

TEACHABLE ? ACTIONABLE ?

After just a little practice, you can readily see that this is ...



Constant off-set - Sensor probably out of Calibration

Operator Feedback

USABLE ?

ACTIONABLE ?

“ YES ”

Many points for trending...

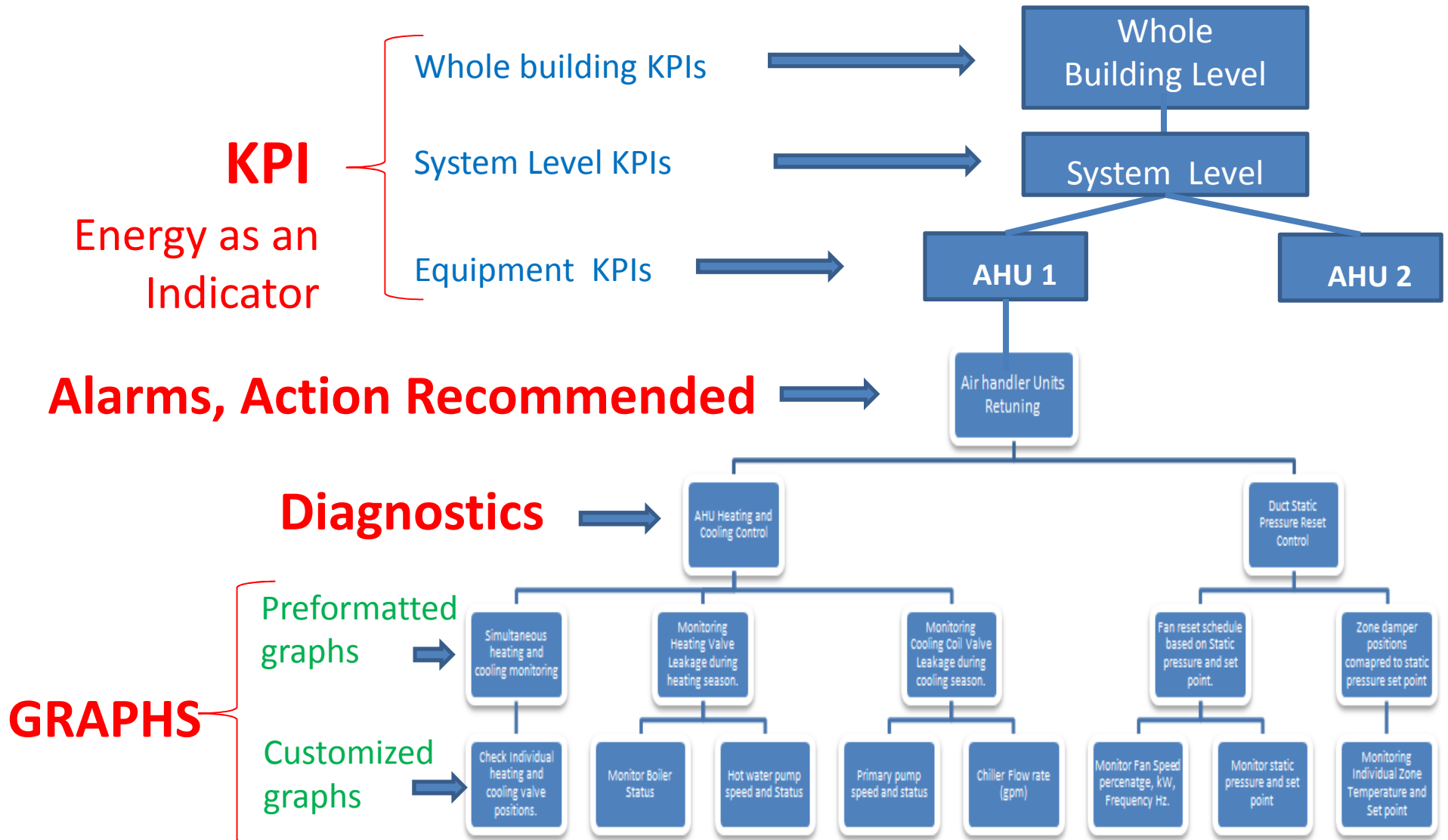
Problem is.....

with so many possible plots,

What to look at?

- On-off scheduling
- Static pressure
- Fan speed
- Supply & Return Air Temperatures
- Coil actuation & valve leakage
- VAV box positions
- Re-heat actuation
- Central Plant equipment

Designing how to get there with dashboards and drill-downs

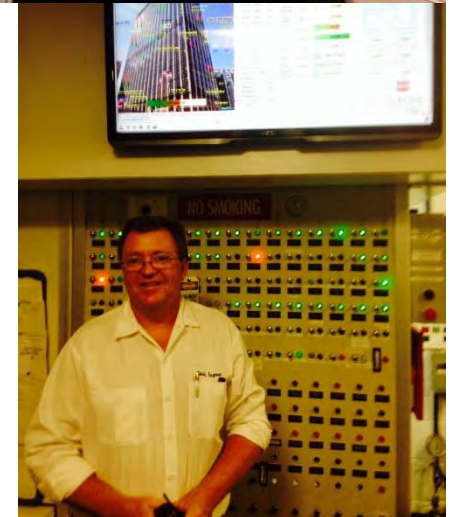


Better HMI for better performance?

Can these “Key Intermediaries” work with visualized “big data”?

**Enthusiastically,
YES.**

**Proven training
product – Building Re-Tuning**



For more on...

- **Building Re-Tuning**,
see the Pacific Northwest National Lab website
www.buildingretuning.pnnl.gov
- Operators figuring out better operation in their plants,
see CUNY School of Professional Studies YouTube video
series “**Heroes in the Basement**”
- On-going BAS work at the CUNY Building Performance
Lab, contact
Michael Bobker, mbobker@ccny.cuny.edu
Honey Berk, honey.berk@cuny.edu
Manorge Joseph, manorge.joseph@cuny.edu