SMART BUILDINGS CENTER

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Smart Buildings Exchange

Achieving Persistent Operational Performance

September 16, 2020

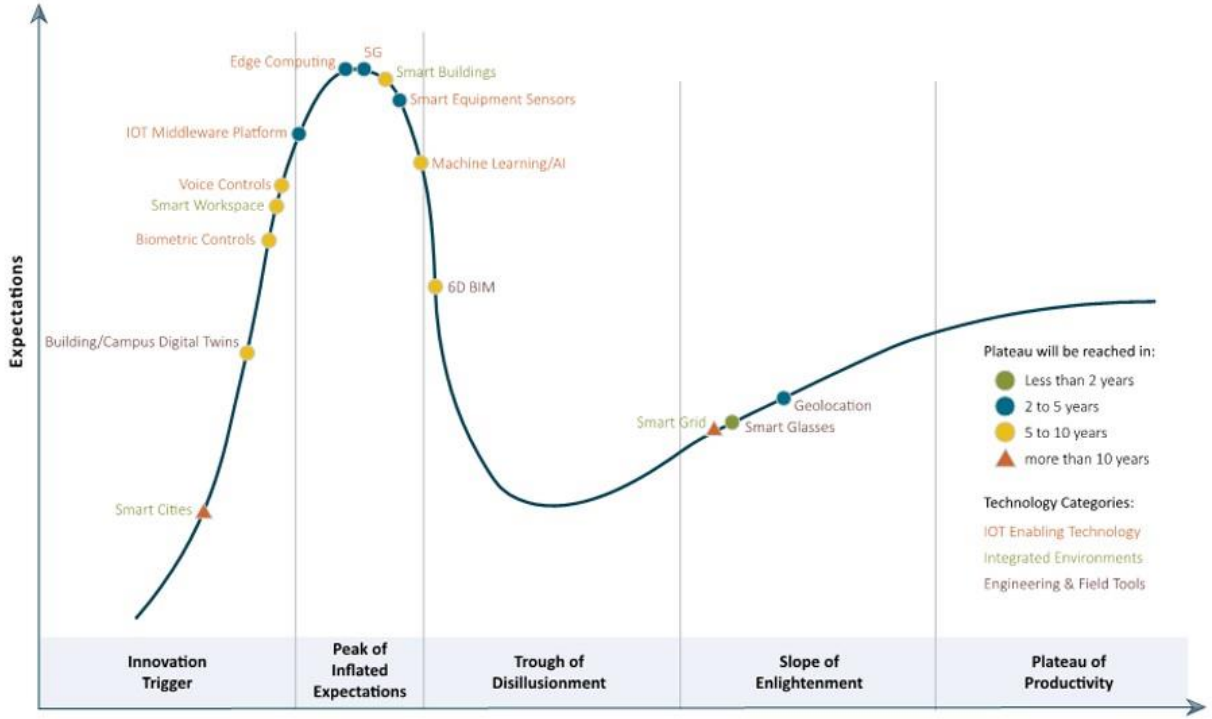
SMART BUILDINGS

Achieving Persistent Operational Performance

Poll Question

What is your top priority when thinking about application of technology to operations over the next five years?

- Overall operating costs
- Preventive maintenance and equipment life
- Occupant health and safety
- Workforce capacity and development
- Energy efficiency
- Something else entirely



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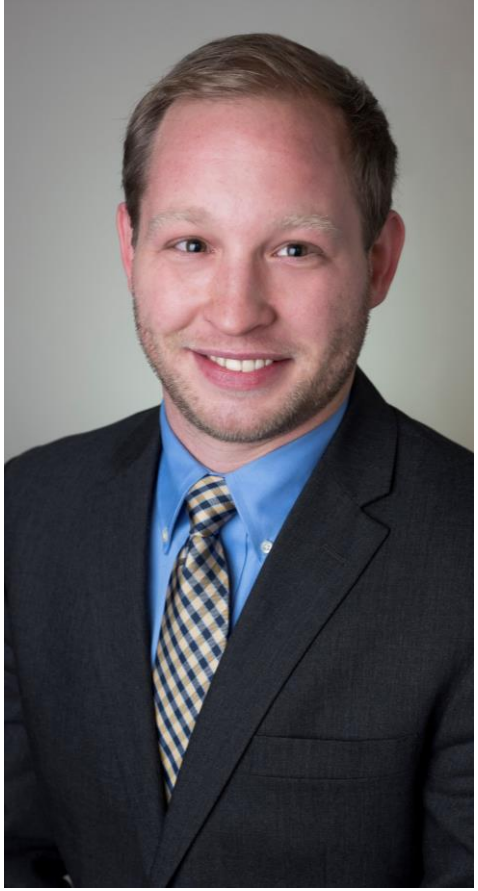
Achieving Persistent Operational Performance

Poll Question

What “connected building” technology gets you most excited?

- Machine learning applied to operations
- Proactive maintenance based on equipment monitoring
- Optimized Indoor Environmental Quality (occupant wellness and risk mitigation)
- Asset geotagging and integration to CMMS/workflow
- Digital twins based on BIM and performance data
- Microgrid and eco-district applications

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Achieving Persistent Operational Performance

Panelists

- **Roy Buchert**, Kaiser Permanente
- **Mike Kowalick**, South Landing EcoDistrict
- **Norm Menter**, University of Washington

Moderator

- **Ric Cochrane**, McKinstry

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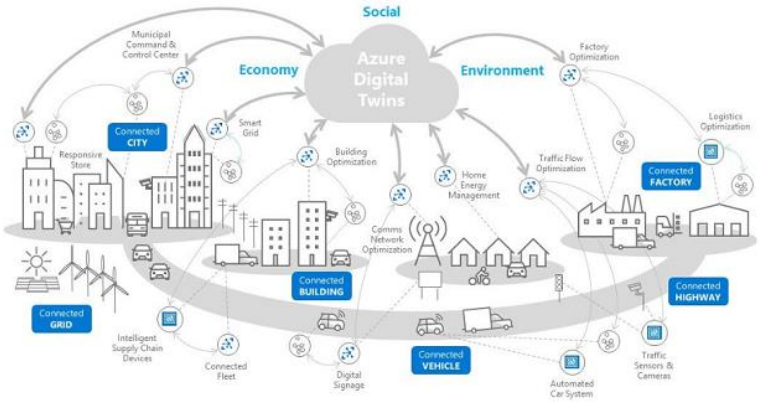
Problem Statement



- What are your greatest concerns in operating buildings and managing facilities assets and teams?
- Are building technology applications a *benefit* or *burden* for operations and energy efficiency?

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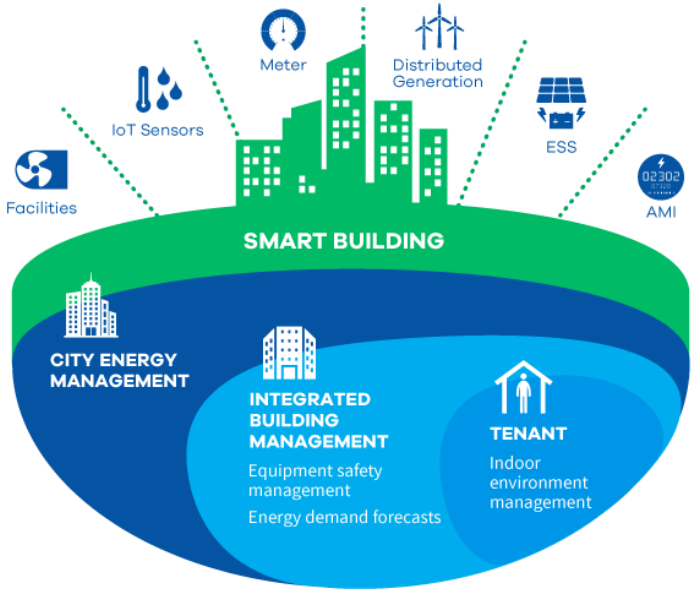
Root Causes



- What is the current state of system interoperability?
- Why is the building sector lagging so far behind other sectors in realizing energy and operational efficiencies?

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The Way Forward – Best Practices

- Is there a different way of being/doing?
- What can we do differently with what we have?
- What is the role of “human systems” in building tech?
- What is your “call to action” to building owners and operators?

Kaiser Permanente

Fault Detection & Diagnostics (FDD)

- Identifies issues in real time
- Monetizes and prioritizes
- Lists potential causes
- Enables deep dive
- Provides transparency
- Facilitates advocacy

South Landing

The Catalyst Building

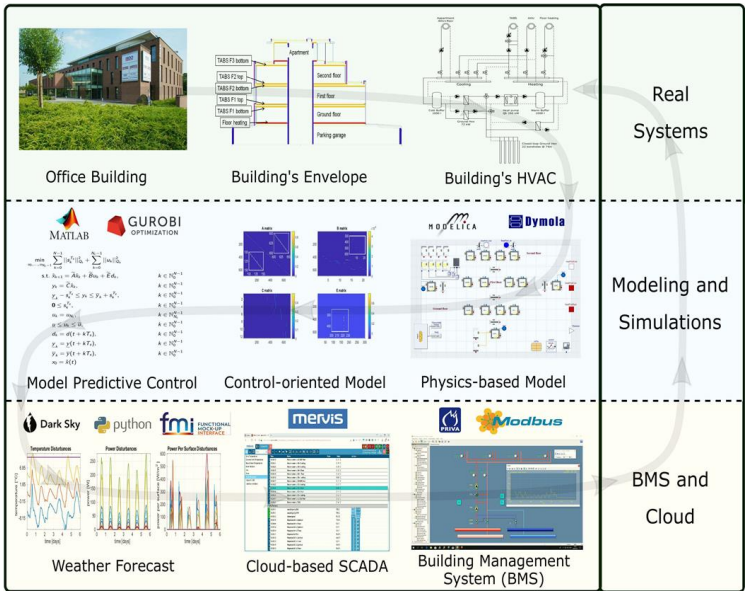
Five floors / 159,000 square feet
Zero-energy certification targeted
Zero-carbon certification targeted
Cross-laminated timber (CLT) construction

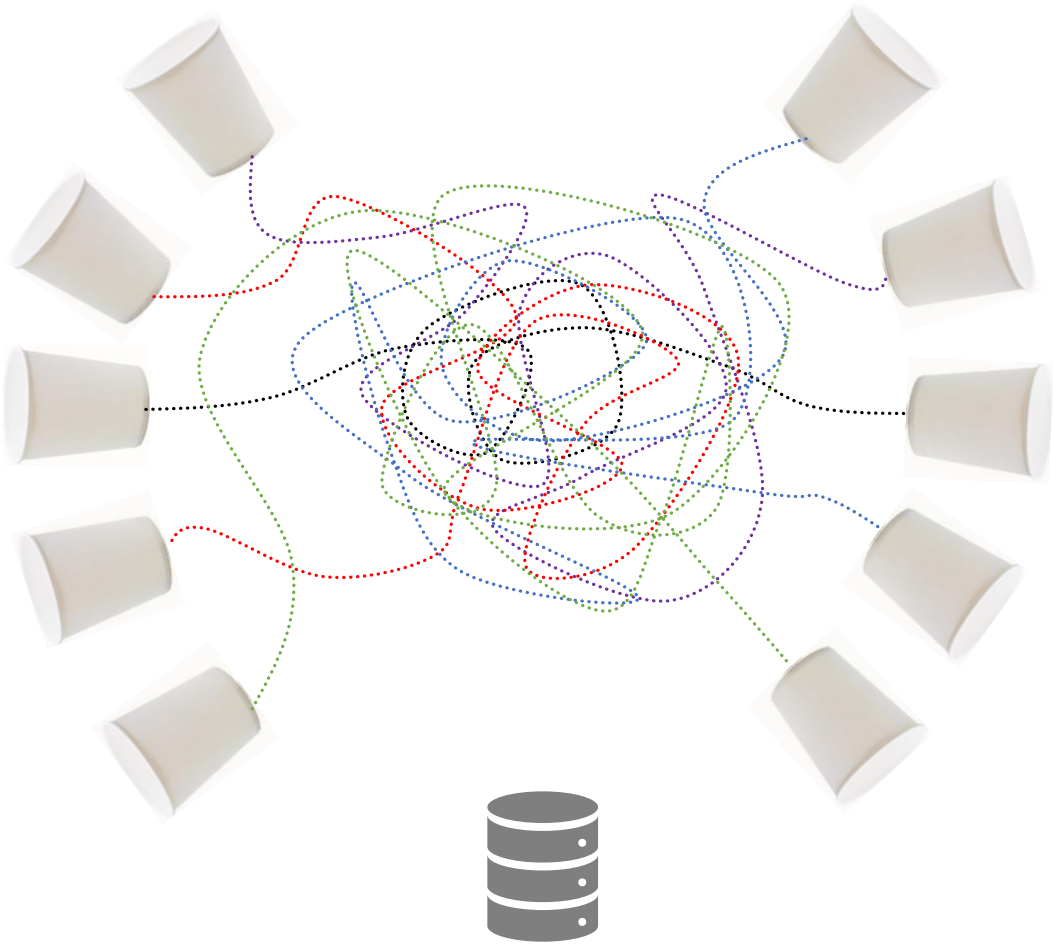
The Morris Center

Four floors / 40,000 square feet
All-electric central energy plant
Grid-optimized EcoDistrict operations
Energy research center and testbeds

South Landing

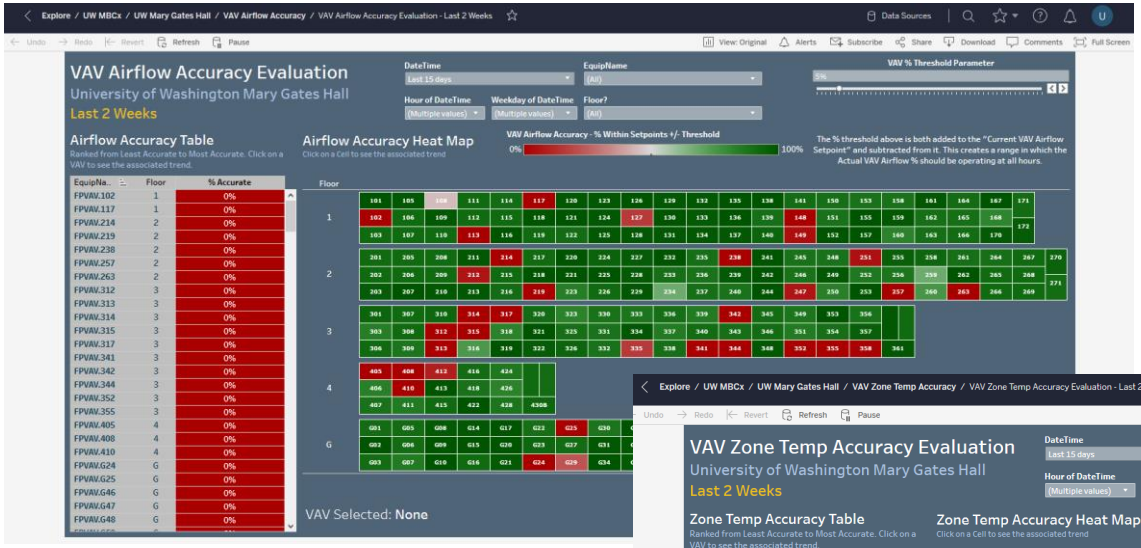
Dynamic Energy Modeling

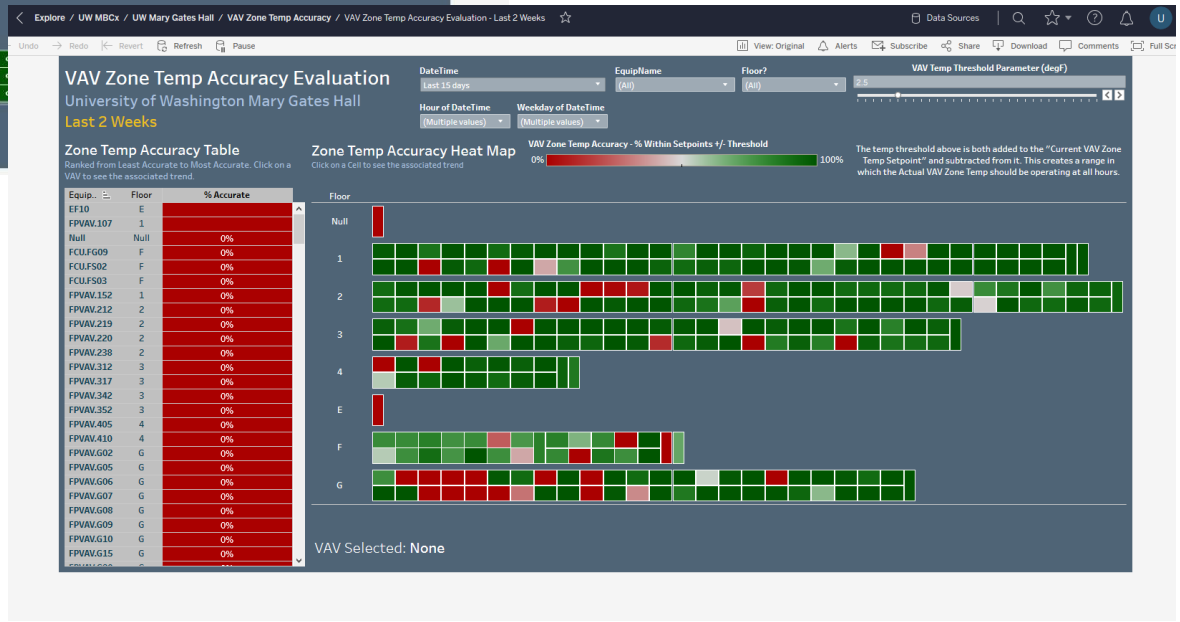




Meter Monitor Program & Monitoring Based Commissioning

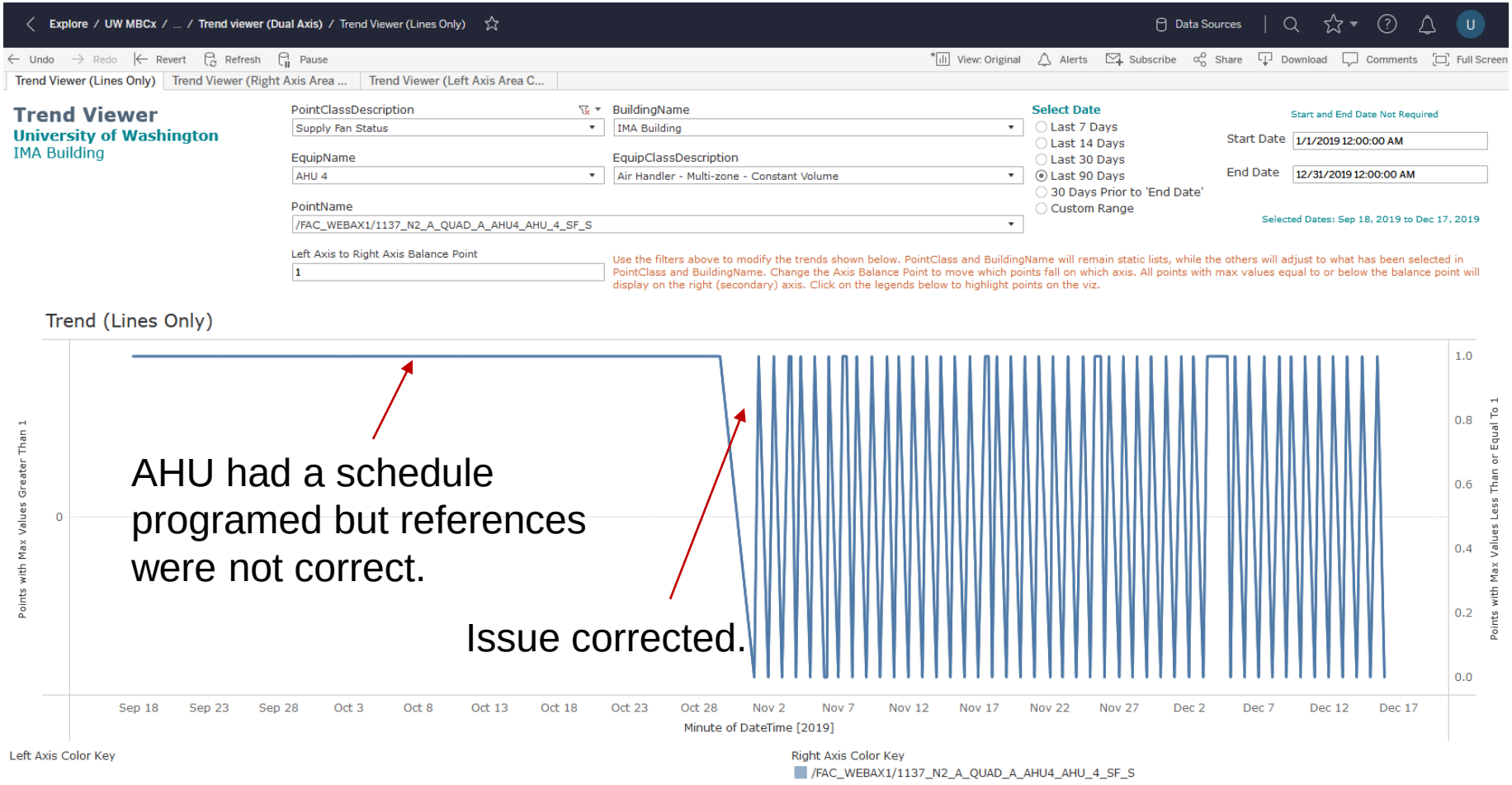
Building Performance Insights





UNIVERSITY of WASHINGTON

IMA AHU-4 Schedule



Cost Savings Summary

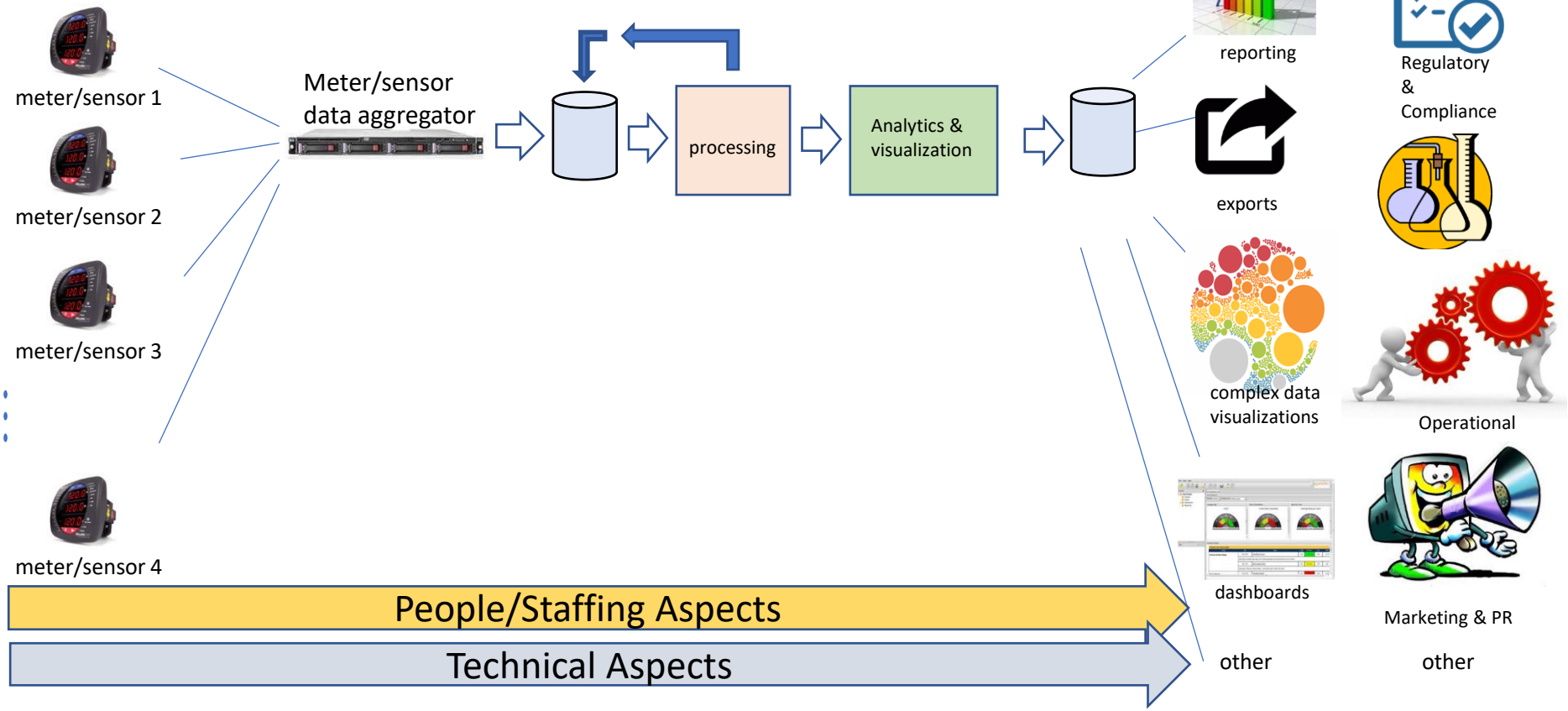
- 2018 Utility Cost Avoided - $11,794 per year
  - (calculated from Loew, Mary Gates, IMA = 581K GSF)

- 2018 Labor/yr. - $8,374 (all MBCx AIM work orders)

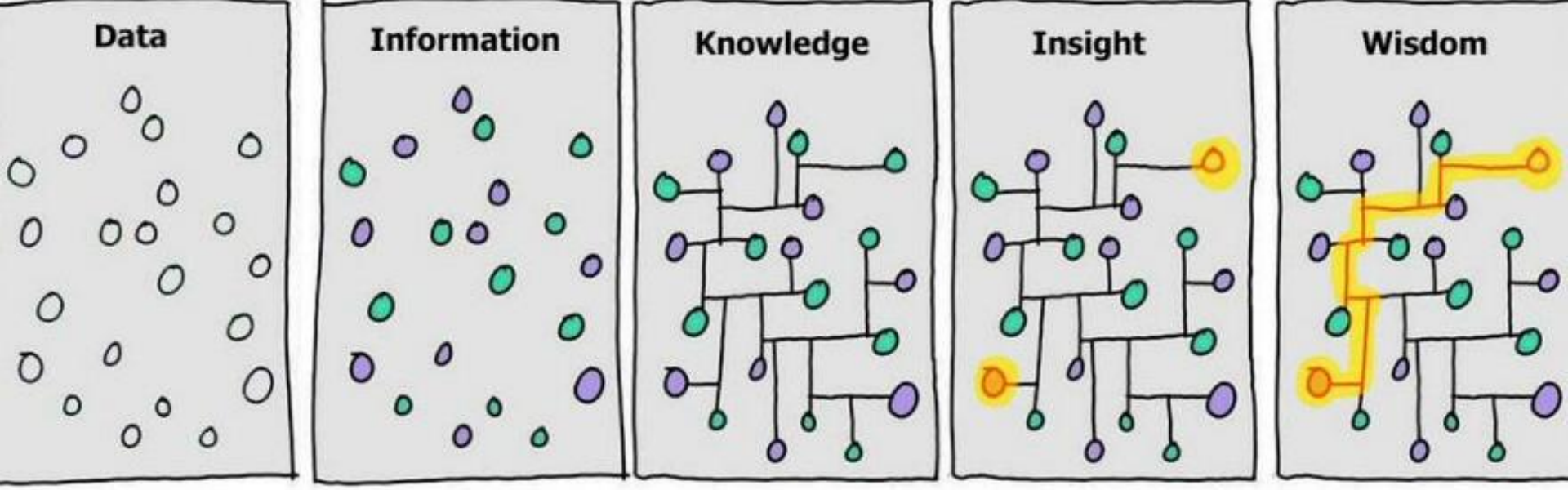
- Future State @ Scale:
  - At 100 buildings/11M GSF
  - Avoided Utility Cost = $245k/yr.
  - Shop 69 Direct Labor Cost = $174k/yr.
  - Comply with Clean Buildings Code & Tune-up Ord.

Meter Monitor Program

UW Facilities & UW-IT: IoT Systems Analysis Approach



Chuck Benson/ Norm Menter 2020



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Calls to Action

- Focus on Human Systems served by Technology
- Think big, create a path, start small
- Demand “open”
- Make your data work for you
- Align construction and operations
- Develop common language
- Bridge the IT/OT divide