

Enterprise Building Management

Advancements in HMI Software and Integration
for the BMS Industry





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Building
Strategies

- George Huettel, PE CEM
 - President and Co-Founder
 - Responsible for Business Development, Company Vision
 - Twenty plus years in Controls Business
- Systems Integration Business
 - Established in 1997 in South Florida
 - Expanded Statewide in 2002
 - Represent major control manufacturers
- Enterprise Applications Business
 - CyrusPowered Products in 2004
 - Released an "*On-Demand*" Web-based HMI built on Web Services and IT standards



- Typical Building Integration
 - Fire alarm and smoke control with DDC
 - Security and Access control with DDC
 - Multiple Vendor DDC for campus environments
 - Digital Signage
- Enterprise Integration
 - Back office data systems: accounting, email, HR, aggregated energy reporting, real-time utility pricing, hotel guest service systems, continuous commissioning
 - XML Web Services BMS integration



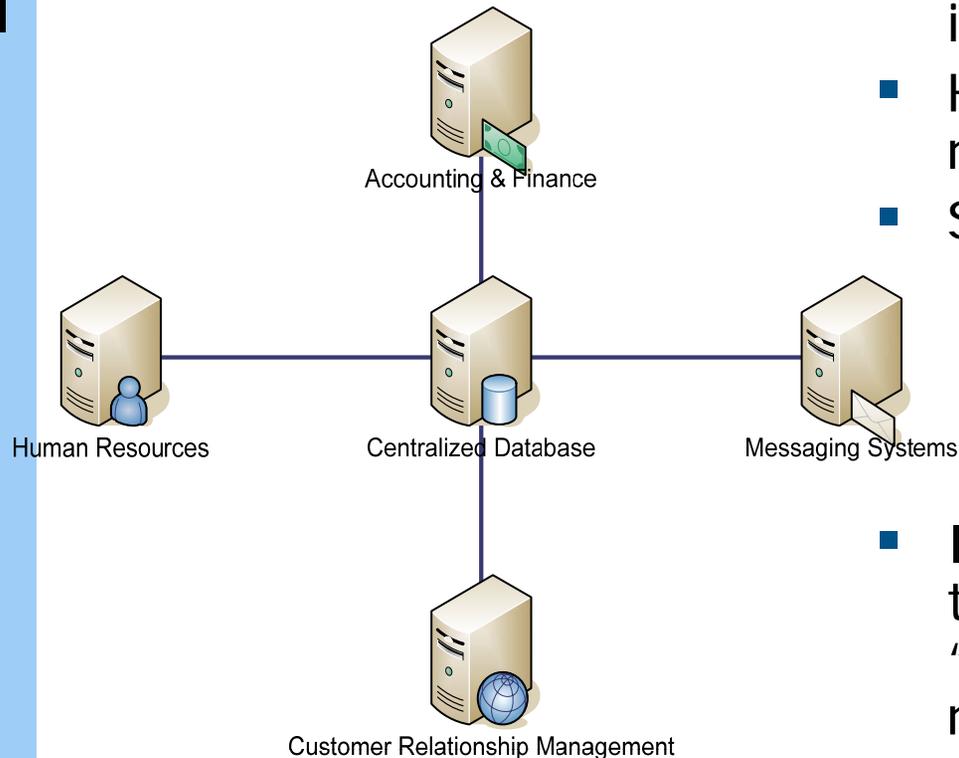
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- What is an Enterprise Building Management System?
 - Some will tell you that being “web” enabled makes a BMS Enterprise Class
 - Others claim that a single aggregated head-end is all you need
 - Both are facets of an Enterprise System, but neither make a system truly Enterprise
- A true Enterprise System must be capable of allowing the free and open exchange of data with other enterprise systems.
 - The key words here are “OPEN” and “FREE”
 - OPEN: To exchange data in a commonly accepted format
 - FREE: Exchange data without technical or monetary cost



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Commercial Back-Office

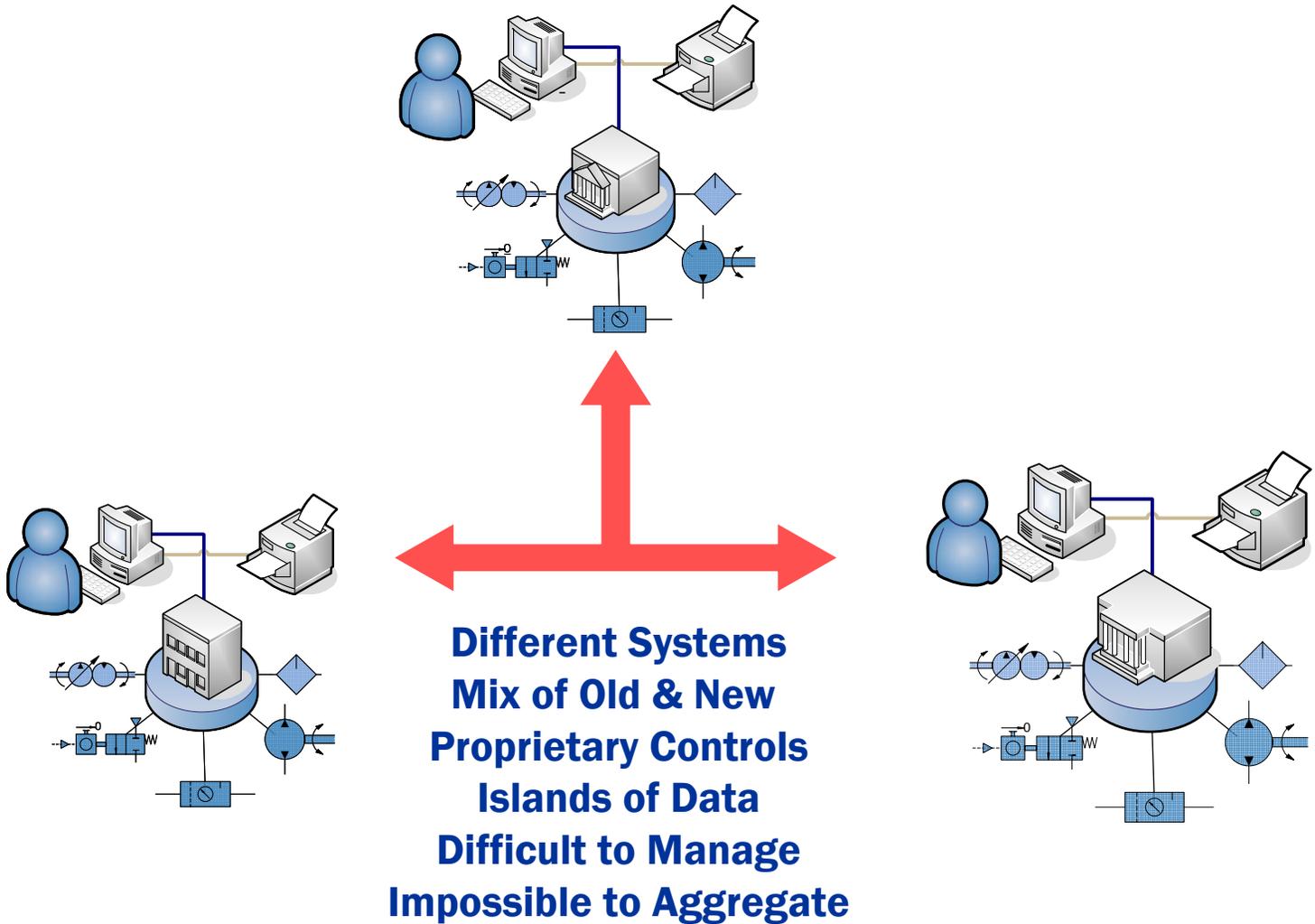


- Free & Open sharing of data is not a selling point... it is systemically critical.
- However, it's not necessarily plug & play.
- Standards used here:
 - ODBC/SQL
 - SMTP
 - SOAP/XML
 - OLE
- It takes the right kind of talent to get everything "talking" and meeting the need.

A Common Situation



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Different Systems
Mix of Old & New
Proprietary Controls
Islands of Data
Difficult to Manage
Impossible to Aggregate

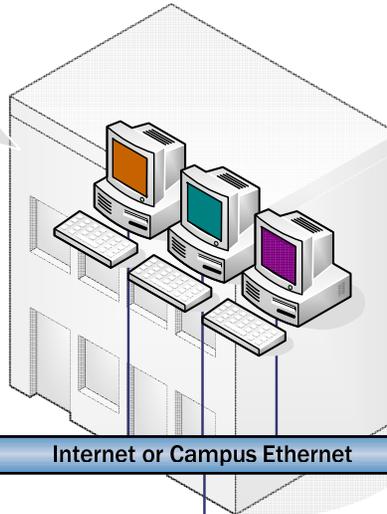
Common “Enterprise” Mistake



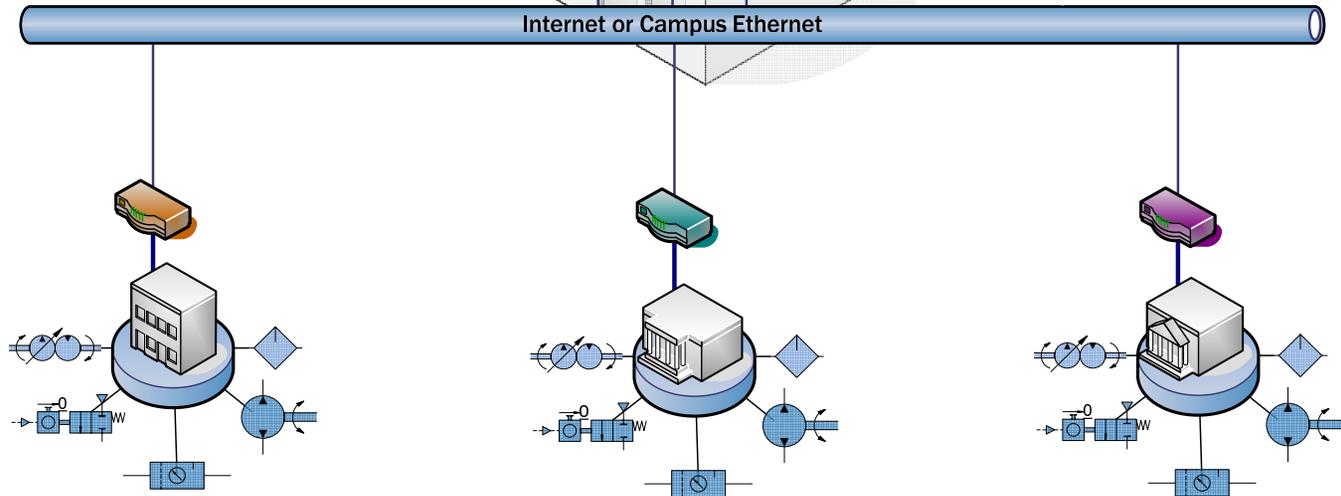
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HMI is all in one building,
but systems, monitoring,
and control are still
different.

Aggregation aggravation
still exists.



To solve HMI at each site,
manufacturers make
proprietary “routers” to
send HMI across network
to central location.



The Enterprise BMS Goal



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- Create a common building level gateway
- Centralize operator control at the enterprise
- Collect all data all the time
- Allow data from any outside source
- Only SOAP & XML on network
- Leading class network/message security
- Full integration with Active Directory
- Web browser only acceptable user application

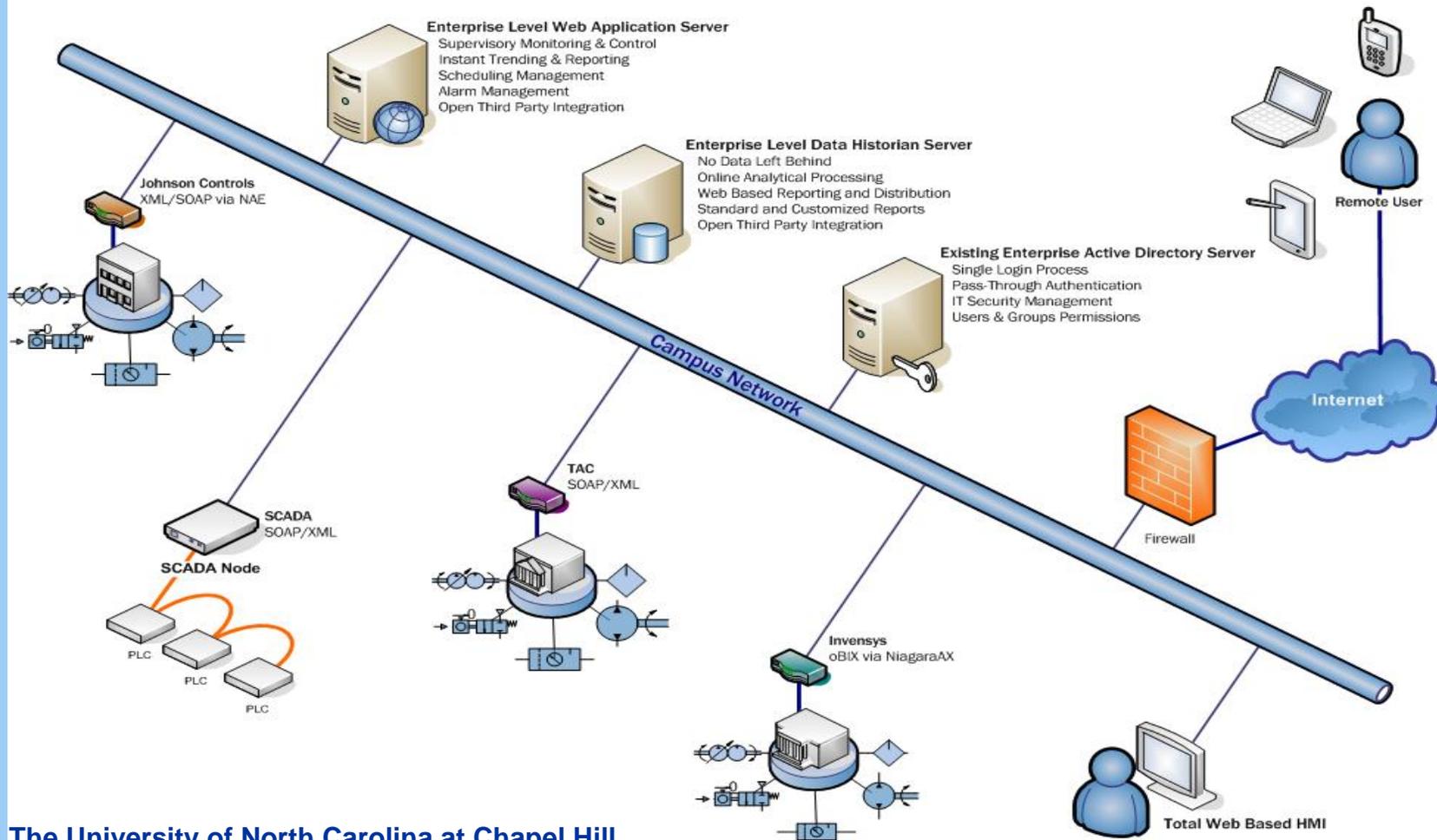


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- Remote alarm distribution
- Version control of all configuration
- SVG only allowable graphic format
- Enterprise class data storage and backup
- Simplified trending and reporting
- Robust, centralized scheduling
- Energy management
- Energy modeling
- Intelligent Commissioning

Enterprise BMS Solution

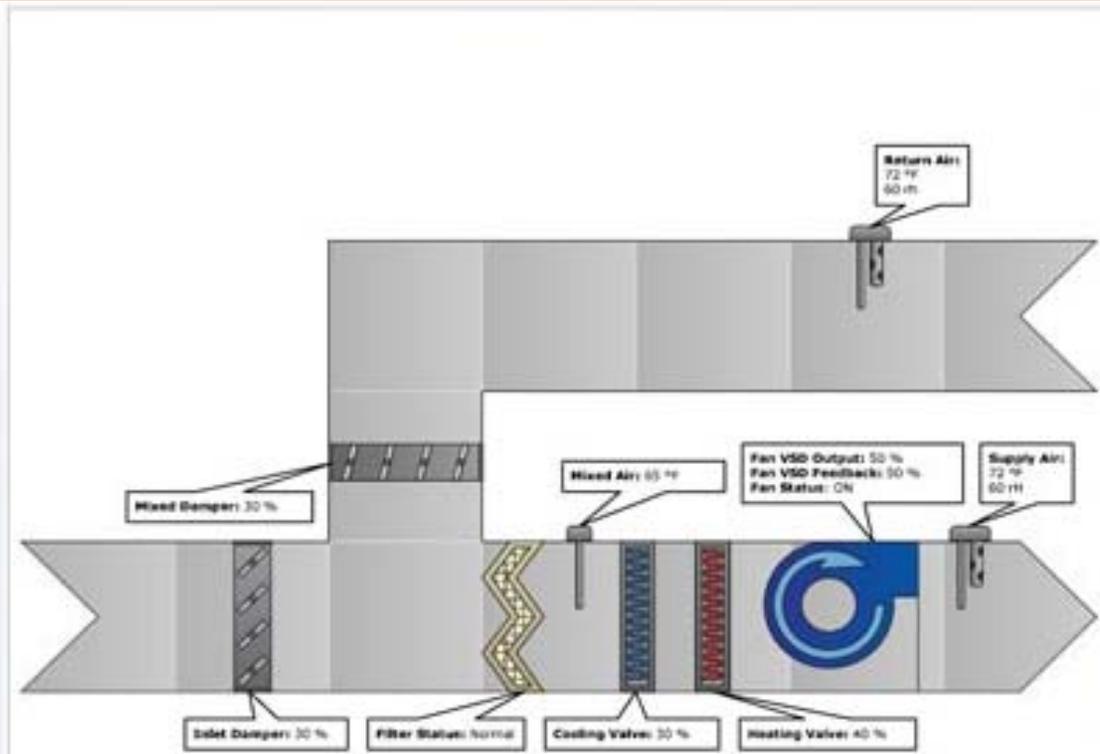
Campus-Wide Enterprise Level Control System Including Campus-Wide Electrical SCADA Control Integration



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The diagram shows a cross-section of an HVAC system with the following components and values:

- Return Air:** 72 °F, 60 rh
- Mixed Air:** 65 °F
- Supply Air:** 72 °F, 60 rh
- Mixed Dampers:** 30 %
- Inlet Dampers:** 30 %
- Filter Status:** Normal
- Cooling Valve:** 30 %
- Heating Valve:** 40 %
- Fan VSD Output:** 50 %
- Fan VSD Feedback:** 50 %
- Fan Status:** ON

Time Slider Panel

On Off

10 Hours

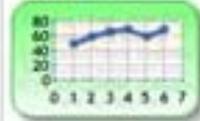
Look Back: Minutes

Polling Duration Panel

Average age of this system data: 67 Secs.
 Newest value of this system: 7 Secs.
 Oldest value of this system: 74 Secs.
 Average BAS Network Latency: 94 Secs.
 Average WSG Network Latency: 5 Secs.
 Average App. Latency: 0.2 Secs.

Information & Command Panel

Element ID: AHU_Fan
 Currently Set: 70 F
 Currently Value: 73 F
 Model: STR350



Speed: 50% Temp: 50F Position: 50%

Pan & Zoom Panel





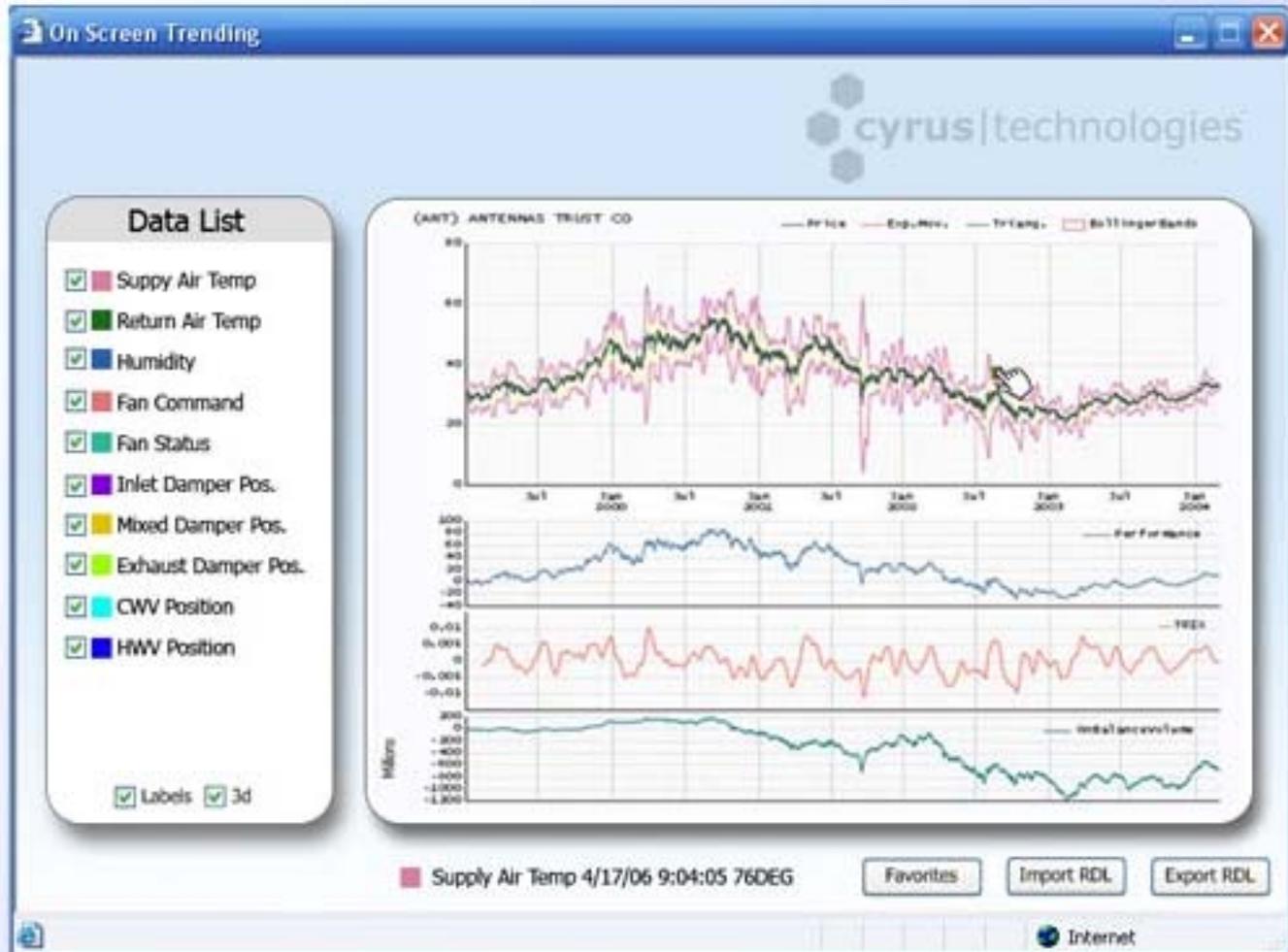
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Icon	#	Priority	Status	Site	Building	Zone	System	Element	Point	Value	Date/Time
	1	9	Unack	UNC	Memorial Hall	NE Zone	AHU 1	Filter Section	Filter Alarm	Dirty Filter	4/18/2006 12:00:00AM
Site: UNC					Value: Dirty Filter. Needs Replacing					Status: UnAcknowledged	
Building: Memorial Hall					Detail: Replaced					Action:	
Zone: NE Zone					Date/Time Last Occ: 4/18/2006 12:00:00AM					Cause:	
System: AHU1					Date/Time First Occ: 4/18/2006 12:00:00AM					File Link: Filter Replacement	
Element: Filter Section					# Of Occurances: 1					User: Mike Best	
Point: Filter Alarm					Priority: 9						
	1	9	Unack	UNC	Memorial Hall	NE Zone	AHU 1	Filter Section	Filter Alarm	Dirty Filter	4/18/2006 12:00:00AM
	1	4	Ack	UNC	Memorial Hall	NE Zone	AHU 2	Filter Section	Filter Alarm	Dirty Filter	4/18/2006 12:00:00AM
	1	4	Ack	UNC	Memorial Hall	NE Zone	AHU 2	Filter Section	Filter Alarm	Dirty Filter	4/18/2006 12:00:00AM
	1	9	Unack	UNC	Memorial Hall	NE Zone	AHU 1	Filter Section	Filter Alarm	Dirty Filter	4/18/2006 12:00:00AM
	1	4	Ack	UNC	Memorial Hall	NE Zone	AHU 2	Filter Section	Filter Alarm	Dirty Filter	4/18/2006 12:00:00AM

Smart Trending Module

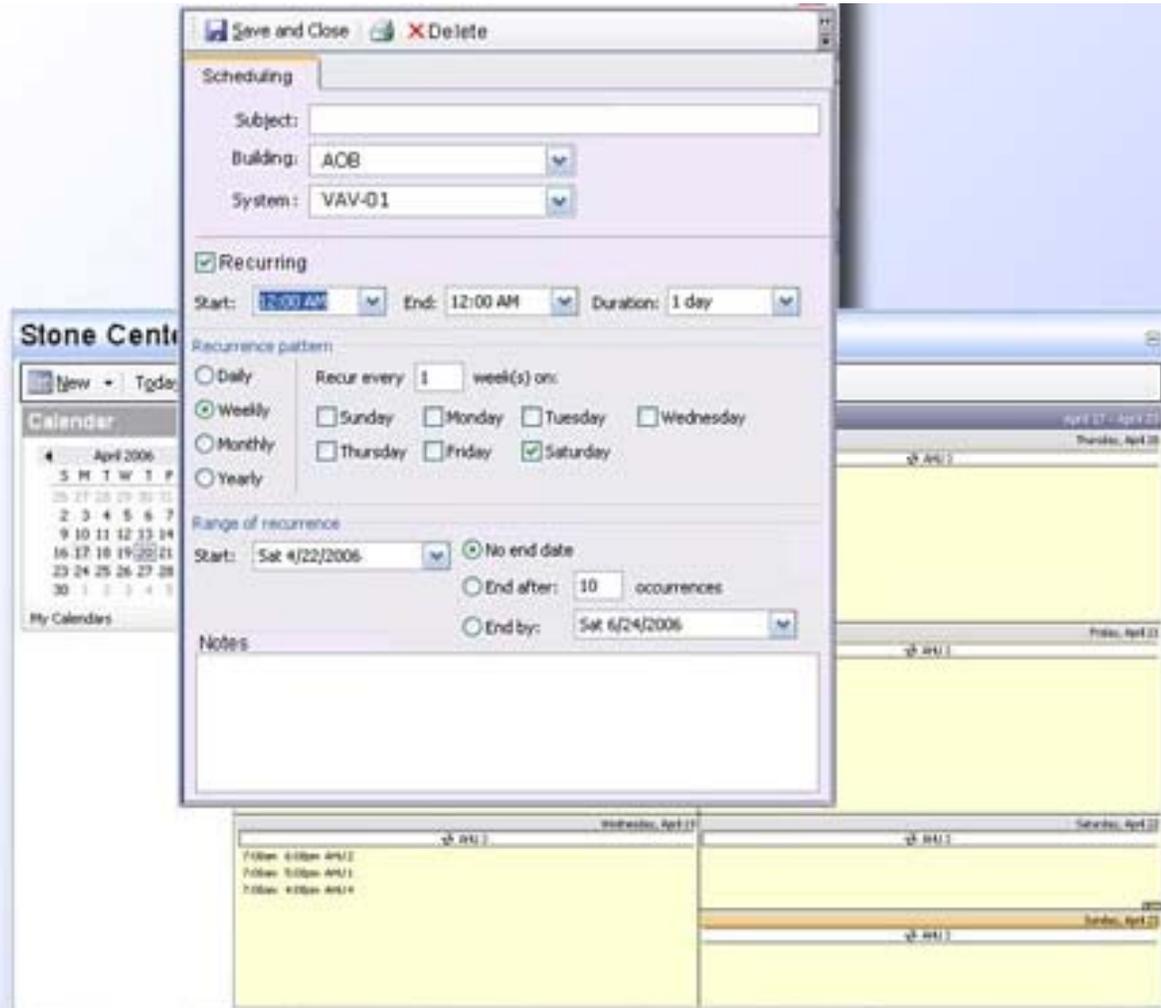


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The screenshot displays the Scheduling Module interface. The main window is titled "Scheduling" and contains the following fields and options:

- Subject:** [Empty text field]
- Building:** ACB [Dropdown menu]
- System:** VAV-01 [Dropdown menu]
- Recurring**
- Start:** 12:00 AM [Time dropdown]
- End:** 12:00 AM [Time dropdown]
- Duration:** 1 day [Duration dropdown]
- Recurrence pattern:**
 - Daily
 - Weekly**
 - Recur every 1 week(s) on:
 - Sunday Monday Tuesday Wednesday
 - Thursday Friday **Saturday**
 - Monthly
 - Yearly
- Range of recurrence:**
 - Start:** Sat 4/22/2006 [Date dropdown]
 - No end date**
 - End after: 10 occurrences
 - End by: Sat 6/24/2006 [Date dropdown]
- Notes:** [Empty text area]

The interface also shows a "Stone Center" calendar on the left and a task list on the right. The task list includes items like "Follow 4:00pm AM/1" and "Follow 5:00pm AM/1".

Report Management



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- Building Owners and Operators
 - Lower first cost on new construction
 - Seamless operation, consistent monitoring and control
 - Standardization across disparate systems
 - Free and open access to information, reporting
 - Improved decision management
 - Lower operating costs and TCO
 - Enhanced customer (tenant) experience



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Thank You!

George B. Huettel, PE

President

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