

# BUILDING AUTOMATION INTEGRATION TRENDS

ADVANTAGES – CONSIDERATIONS – PITFALLS



Todd Bergey

Director of Support Services  
Southern Lehigh School District

484-866-0952

bergeyt@sbsd.org



PASBO 62<sup>ND</sup> ANNUAL CONFERENCE AND EXHIBITS, PITTSBURGH

March 2017

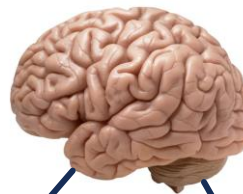
1

Building  
Automation  
Integration  
Trends

## AGENDA



- Introduction
- Goal
- Current Technology
- Integration Trends
- Considerations
- Pitfalls



PASBO 62<sup>ND</sup> ANNUAL CONFERENCE AND EXHIBITS, PITTSBURGH

March 2017

2



- Introduction
- Goal
- Current Technology
- Integration Trends
- Considerations
- Pitfalls

Todd's Brain



## The Goal of Building Automation Integration:

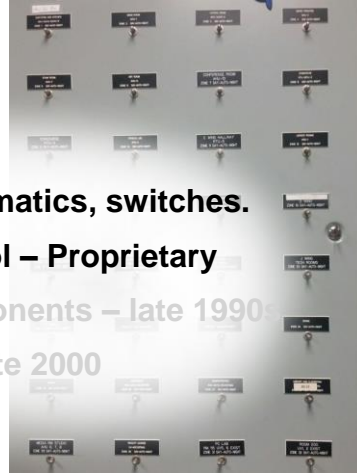
- Improved occupant comfort
- Efficient operation of building systems
- Reduction in energy consumption
- Reduced operating costs
- Improved life cycle
- Eliminating the idiot factor

# HISTORY

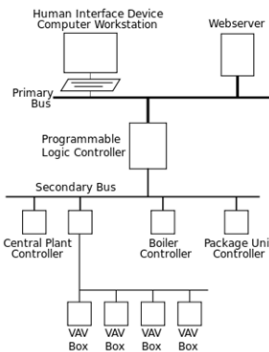
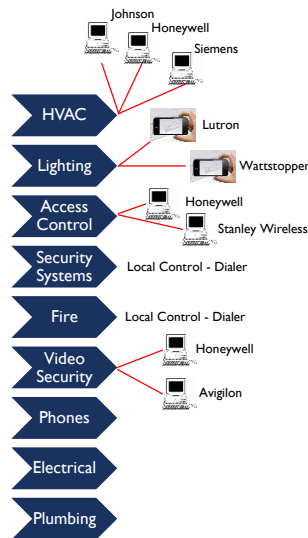


## History

- Thermostat -1883
- Light Switch -1884
- 1900s relays, pneumatics, switches.
- 1970s digital control – Proprietary
- Addressable components – late 1990s
- Open protocol – Late 2000
- What next???



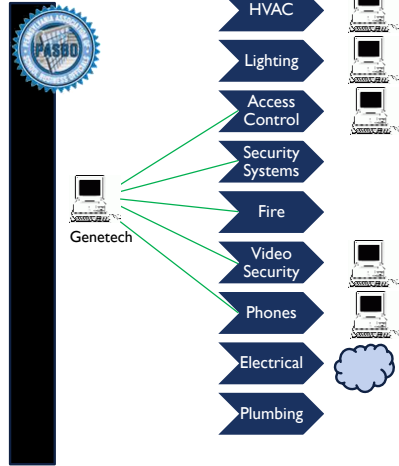
# HISTORY



**Pre-2005 Technology**  
 Hardware & Backbone 90% of Costs  
 Addressable Components Developing

# CURRENT TECHNOLOGY

Making the future possible



- BAI is in it's Infancy
- Addressable Components
- Open Protocol/Open Environment
- Communication between Platforms
- Customized Programming
- Auto Generated Messaging
- Control by Software
- Software is 30% of cost

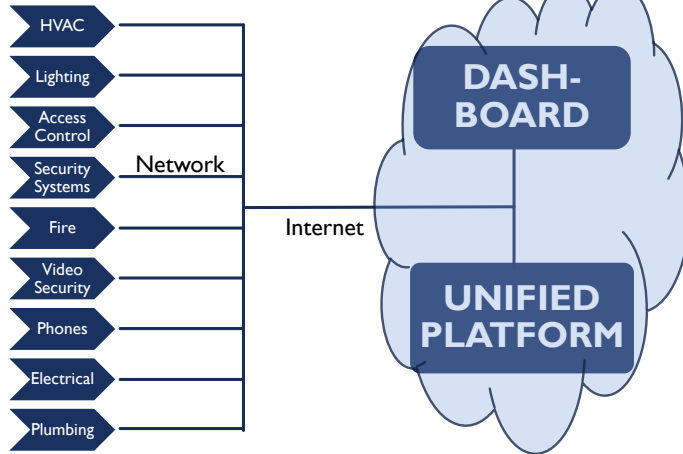
# CURRENT TECHNOLOGY



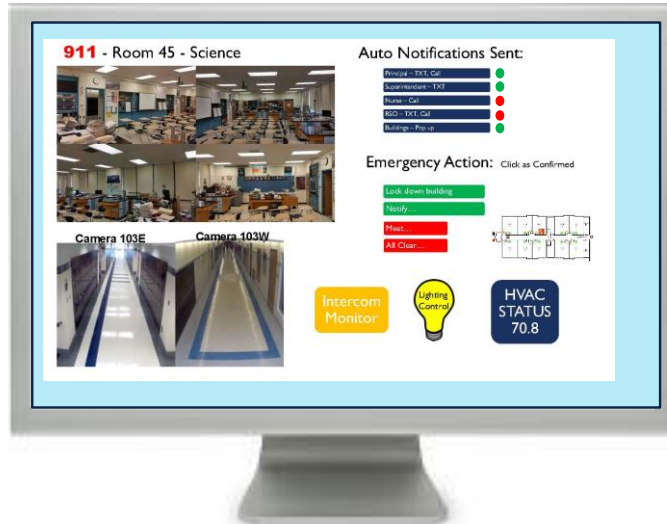
**Southern Lehigh School District**

Board Room DEC Override: Auto					
	Fan Shutdown: Auto	Unoc: Shutdown: Auto	Damper Shutdown: Auto	Fan Shutdown: Auto	Unoc: Shutdown: Auto
<b>High School</b>					
	Fan Shutdown: Auto	Shutdown_Enab: Unoc: Shutdown: Auto	Damper Shutdown: Close_Enabled	Fan Shutdown: Auto	Unoc: Shutdown: Auto
<b>Middle School</b>					
	Fan Shutdown: Auto	Unoc: Shutdown: Auto	Damper Shutdown: Auto	Fan Shutdown: Auto	Unoc: Shutdown: Auto
<b>Lower Millford Elementary</b>					
	Fan Shutdown: Auto	Unoc: Shutdown: Auto	Damper Shutdown: Auto	Fan Shutdown: Auto	Unoc: Shutdown: Auto
<b>Hopewell Elementary</b>					
	Fan Shutdown: Auto	Unoc: Shutdown: Auto	Damper Shutdown: Auto	Fan Shutdown: Auto	Unoc: Shutdown: Auto
<b>Intermediate School</b>					
	Fan Shutdown: Auto	Unoc: Shutdown: Auto	Damper Shutdown: Auto	Fan Shutdown: Auto	Unoc: Shutdown: Auto
<b>Liberty Bell Elementary</b>					
<b>Campus Wide</b>					
Fan Shutdown: Auto					
Unoc: Shutdown: Auto					
Damper Shutdown: Auto					
Econ Enable SP: 23.0 BTU/lb					
<b>Weather Forecast</b>					
Allentown, PA					
<b>Current</b>	<b>Today</b>	<b>Tomorrow</b>			
71.0 °F, Fair (ok)	92.0 °F / 64.0 °F	Thundershowers			
Humid: 5-42 AM	Precip: 31 %	Precip: 17 %			
Severe: 8:24 PM					
OA Enthalpy: 17.4 BTU/lb					

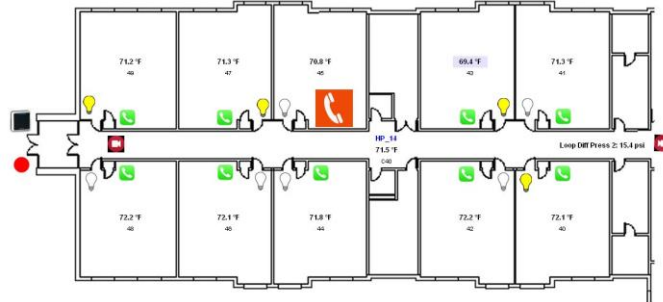
# INTEGRATION TRENDS



# INTEGRATION TRENDS



## INTEGRATION TRENDS



## CONSIDERATIONS



- **New Buildings** – Plan out integration during design
- **Look to the Future** – Design upgrades around flexibility
- **Clearly Identify Needs and Expectations when Integrating** – Don't jump into technology that you can not support
- **Costs will Move from Hardware to Software** - Hardware IP addressable allowing processing by software which will provide hardware cost savings – controllers not required. Software will be 60% of installation costs.
- **Wireless** – Wait for wireless technology?
- **Security** – This must be addressed up front.
- **Dashboard or Full Integration** – Most of today's systems support dashboards. Full integration can increase problems.
- **Human Element** – Staff can be notified and lead through any event.

## PITFALLS



...caution is advised when planning BAS systems with a high level of integration. The more integration, the more complex the system becomes and the more training is required for the operating staff. Also, reliability requirements for the different systems may vary. (Facilities Standards 5.22 - U.S. General Services Administration)

- **Engineers Knowledge of Emerging Technology** – Changes and cross systems could be out of expertise for design.
- **Multiple Techs for Every System** – Ongoing maintenance costs could skyrocket because multiple techs required for simple repair. Finger pointing and not finding cause.
- **May Lose Efficiency** – Trained staff with old technology may be more efficient operation.
- **Software/Network Failure - Data Loss - Backups**
- **Replacement Costs** – What will replacement costs be if integrator goes out of business or no longer supports?
- **Upgrades** – Entire platform must be upgraded with individual system upgrade.

## COSTS



### INSTALLATION OF AN INTEGRATION SYSTEM CAN BE FREE

With a yearly service contract for hosting of the system.

This could be the perfect solution for your situation.

Set goals, expectations and consider  
long term costs.



# BUILDING AUTOMATION INTEGRATION TRENDS

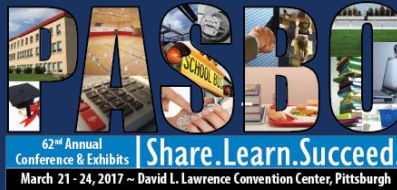
ADVANTAGES – CONSIDERATIONS – PITFALLS

Todd Bergey

Director of Support Services  
Southern Lehigh School  
District

484-866-0952

[bergeyt@slsd.org](mailto:bergeyt@slsd.org)



PASBO 62<sup>ND</sup> ANNUAL CONFERENCE AND EXHIBITS, PITTSBURGH

March 2017

15