

Safety and Buildings

2008

S&B Division Update

Wisconsin Department of Commerce



Code Projects Underway

- Elevator Licensing and Inspection
 - Commercial Installations
 - Residential Installations
- Amusement Rides
 - National Standards as Base
 - More Robust Inspection Process



Code Projects Underway

- Fee Adjustments
 - Overall 15% Revenue Increase Needed
 - Amounts Vary by Program
 - Fall 2008 – Target Effective Date
- Plumbing Administrative Forfeitures
 - Recent Legislation Authorized Commerce
 - Spring 2008 – Target Effective Date



Code Projects Underway

- Erosion and Sediment Control & Storm Water Management
 - More Focused Statewide Enforcement
 - January 2010 – Target Effective Date
- Statewide Electrical Inspection
 - Focus is on Commercial Buildings
 - January 2010 – Target Effective Date



Future Code Project

- Commercial Building Code and Fire Prevention Code
 - To adopt the 2009 editions of national model codes from the International Code Council and the National Fire Protection Association.
 - Expected code effective date - April, 2010



Future Code Project

- Coordination with the Commercial Building and Fire Prevention Codes
 - Anhydrous Ammonia Systems
 - Fuel Gas Systems
 - Mechanical Refrigeration Systems



Wisconsin Building Safety Network

(((WBSN)))



State and local officials affiliated to
promote safety and health in the
built environment.



S&B Networking Strategy

Coordinate Division regulatory services with municipalities to eliminate duplication of efforts that promote health, safety and welfare in built environments.



Wisconsin Building Safety Network

(((WBSN)))

- 1913 – Fire departments were assigned to conduct fire prevention inspections.
- 1915 – The Wisconsin Commercial Building Code recognized municipal agents for plan review.



Wisconsin Building Safety Network

(((WBSN)))

- Over 190 municipalities are delegated agents for commercial building plan review and/or inspection.
- Over 50% of Wisconsin citizens live within these agent municipalities.



((((WBSN)))

Agents for Commercial Buildings

- 171 for Building Plan Review & Inspection
- 20 for Building Inspection Only
- 9 for Plumbing Plan Review
- 5 for Fire Sprinkler Plan Review & Insp.
- 3 for Swimming Pool Inspection
- 1 for Boiler Inspection
- 1 for Elevator Inspection

WBSN

A “Broadcasting” Network

WBSN is older than the UW radio station 9XM that started in 1917. Known now as WHA, it has been continuously operating longer than any other radio station in the nation.

WBSN started in 1913.





A “Broadcasting” Network



Local WBSN affiliates serve communities.



A “Broadcasting” Network



Some programs are
from central
source.

A “Broadcasting” Network

Many programs originate locally.





Two Major Program Areas

Commercial Buildings

WBSN – CBC

Broadcasting section 101.02, stats.

One- and Two-Family Dwellings

WBSN – UDC

Broadcasting section 101.60, stats.



Wisconsin Building Safety Network

Fire Prevention Inspection & Education

860 Fire Departments are Agents by Law





Wisconsin Building Safety Network

One- and Two- Family Dwelling Construction

1249 Municipalities Administer and Enforce





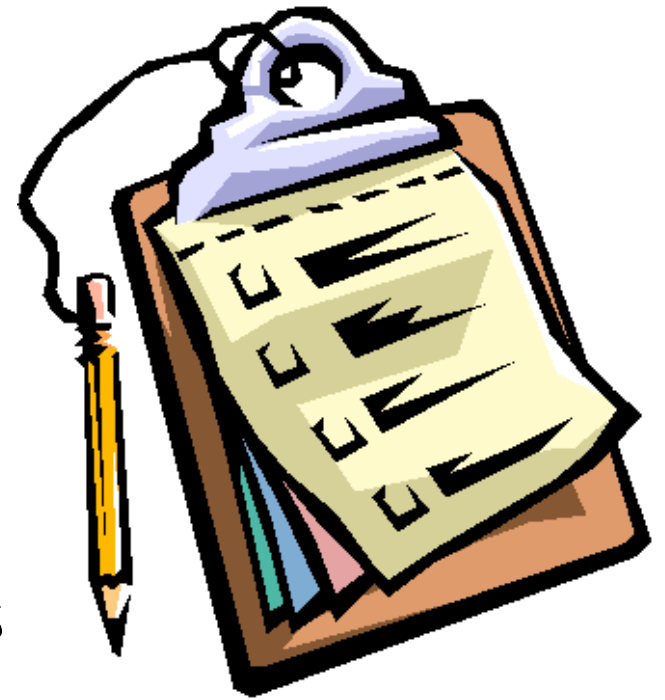
Wisconsin Building Safety Network

Private Onsite Wastewater Treatment Systems

By law, 71 Counties and 2 Cities Administer and Enforce

General Plumbing

By law, 47 Municipalities Inspect Plumbing in Commercial Buildings





WBSN Future Potential

Due to Mandates in State Law

- Electrical System Inspection
- Erosion and Sediment Control & Storm Water Management Inspection



Network Improvement Ideas



Streamline Agent Delegation

Codify more of the process and expectations.



Network Improvement Ideas

Establish Education System

Identify needs for education within the network.





Network Improvement Ideas

Establish Performance Expectations

Require permit issuance.



Network Improvement Ideas

Establish Network Monitoring System

- Set up audit parameters.
- Collect data on network outputs.
 - Survey Planned





Network Improvement Ideas

Improve Communications with the Public

Communicate the outputs of the WBSN.





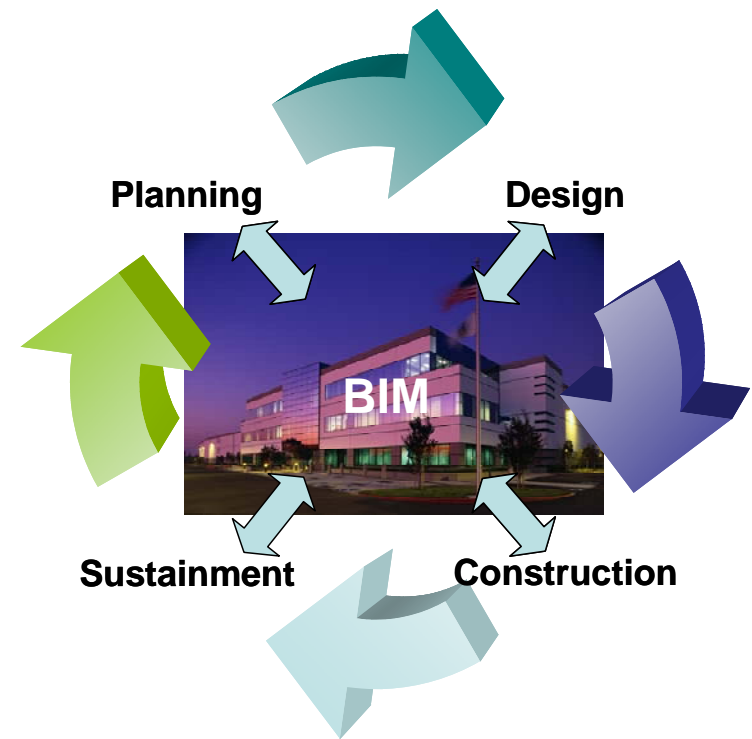
New Technology to Consider

- Building Information Model (BIM)
- ICC SMARTcodes
- Model Checking Software



Building Information Models

A building information model (BIM) is a digital representation of the physical and functional characteristics of a facility.

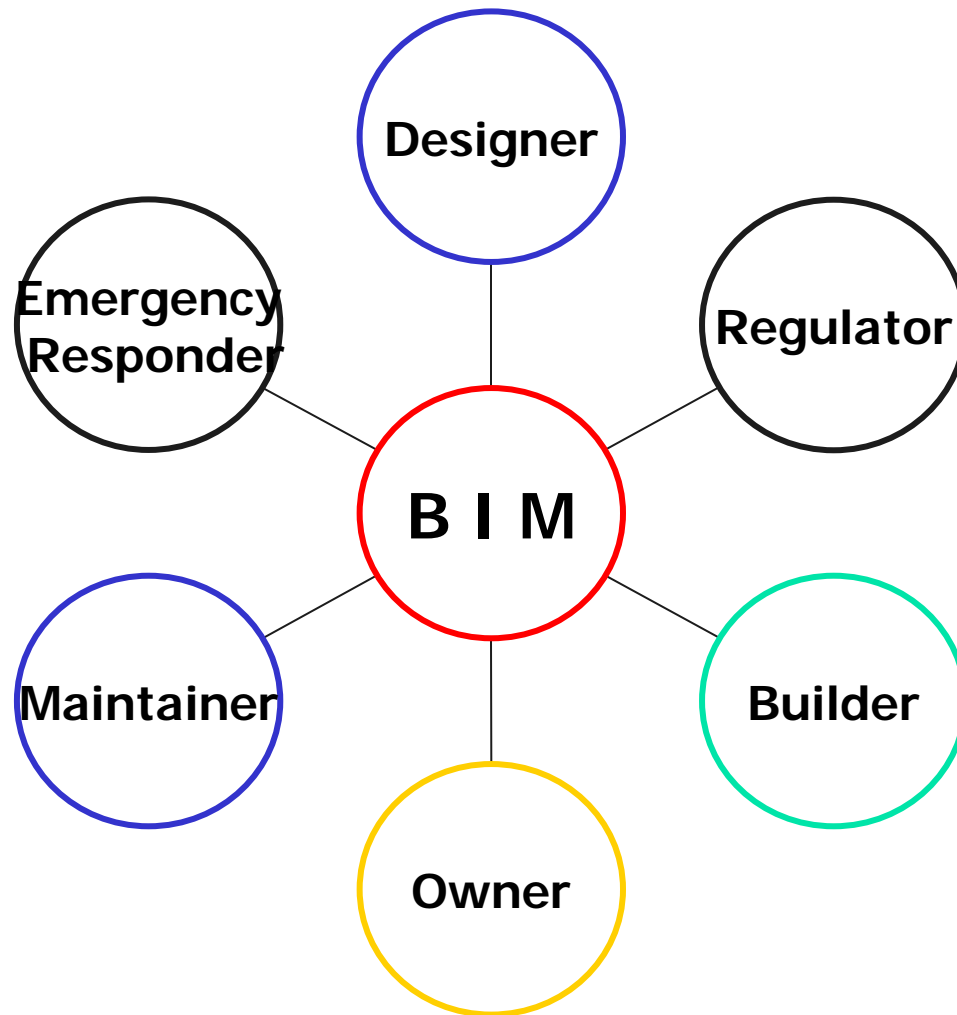




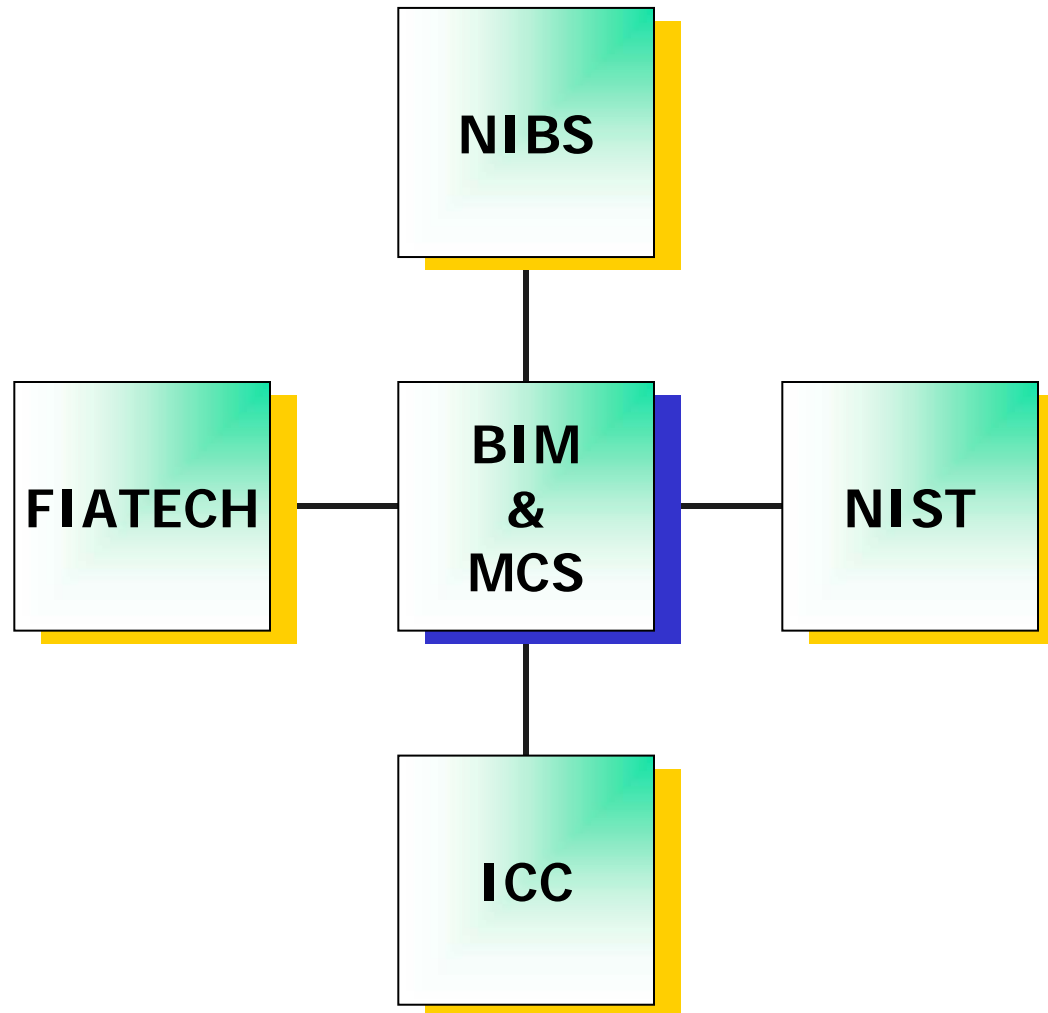
Evolving Communication Tools

- Every building is constructed three times:
 - **In the mind**
 - **On Paper** – the communication tool
 - **In Real Life**
- Evolving to **Digital** instead of paper.

Sharing Information



Many working on **B**uilding **I**nformation **M**odeling and **M**odel **C**hecking **S**oftware





buildingSMARTalliance

- Launched by the National Institute of Building Sciences, **NIBS**.
 - NIBS is a non-government non-profit organization established by congress.
- Focus is on coordinating and improving government and private sector construction-related processes.



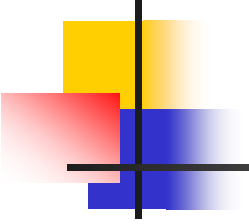
buildingSMARTalliance

- Sponsors include:
 - American Institute of Steel Construction
 - Associated General Contractors of America
 - International Code Council
 - McGraw-Hill Construction
 - Sheet Metal and Air Conditioning Contractors' National Association
 - U.S. Army Corp of Engineers



NIST - National Institute of Standards and Technology

- Founded in 1901, **NIST** is a non-regulatory federal agency.
- NIST's mission is to promote U.S. innovation and industrial competitiveness in ways that enhance economic security and improve our quality of life.



SMARTcodes Project

- Led by the **International Code Council**.
- Code text is electronically linked by topic to aid designers, builders, owners and regulators.
- Ties to **Model Checking Software** which screens a **BIM** for code compliance.



The Goal of SMARTcodes

- Automate code compliance checking for the I-Codes and federal, state and locally adopted versions of those codes, leading to:
 - **Enhanced communication, knowledge and collaboration**
 - **More complete code complying designs**
 - **More timely design acceptance and approval**
 - **Improved building safety and performance**
 - **Reduced construction costs**

Automated Code Compliance Checking

The screenshot displays a software interface for automated code compliance checking. The interface is divided into several panels:

- Rule Set:** A list of rules for fire safety compliance, including:
 - Fire Compartment Area Must Be within Limits
 - Fire Walls Must Have Correct Wall, Door, and
 - Spaces Must Be Included in Fire Compartment
 - Door Minimum Dimensions
 - Doors and Windows Must Be Connected to Spa
 - Escape Route Analysis
- Model Tree:** A hierarchical view of the building model, showing:
 - SMC Building
 - Building.b1.1
 - Ground floor
 - Column
 - Door
 - Fire Compartment
 - Opening
 - Slab
 - Space
 - Stair
 - Wall
 - Window
 - Second floor
 - Column
 - Door
 - Fire Compartment

- 3D Model:** A 3D rendering of a building structure with a blue roof and red structural elements.
- Results Panel:**
- Exit List:**
 - Door.0.8
 - Door.0.6
- General Requirements Table:**

Usage	Travel Distance	Area/Occupant	Exit Count	Start Point
Business	100'	100.00 sq ft	2 Door	
Educational	75'	80.00 sq ft	2 Door	
Technical	75'	200.00 sq ft	2 Door	
- Info - Compartmentation Table:**

Component	Storey	Area	Properties
External Walls			
Gross Areas			
Fire Compartments			Fire Rating:
Fire Compartment.0.1	Ground floor	1,887.70 s...	
Fire Compartment.1.2	First floor	2,039.81 s...	
Fire Compartment.2.1	Second floor	2,039.95 s...	
Fire Compartment.3.1	Roof	125.48 sq ft	
Secure Compartments			

Automated Code Compliance Checking

The screenshot displays a software interface for automated code compliance checking. The interface is divided into several panels:

- Checking Panel:** Shows a 'Rule Set' with the following items:
 - Security Check
 - Fire Compartment Area Must Be within Limits
 - Fire Walls Must Have Correct Wall, Door, and
 - Spaces Must Be Included in Fire Compartment
 - Door Minimum Dimensions
 - Doors and Windows Must Be Connected to Sp
 - Escape Route Analysis
- Model Tree:** Shows a hierarchical view of the building model, including 'SMC Building', 'Building.b1.1', 'Ground floor', 'First floor', 'Second floor', and various elements like 'Column', 'Door', 'Fire Compartment', 'Opening', 'Slab', 'Space', 'Stair', 'Wall', and 'Window'.
- Selection Basket:** Shows 'Selected: 54' items, with 'Wall' currently selected.
- 3D View:** A 3D perspective view of the building model. Blue lines represent escape routes, and red lines outline fire compartments. A large number '2' is visible on the ground floor.
- Parameters Panel:** Shows visualization options:
 - Show Routes (To Final Exit, 2 route)
 - Show Fire Compartments
 - Show Occupancies
 - Show Exits
- Results Panel:** Lists various spaces and their IDs:
 - Space.1.1 : Office[202]
 - Space.1.10 : Office[209]
 - Space.1.11 : Corridor[201]
 - Space.1.12 : Stair[214]
 - Space.1.13 : Restroom[204]
 - Space.1.14 : Office[210]
 - Space.1.15 : Office[203]
 - Space.1.16 : Corridor[241]
 - Space.1.2 : Office[212]
 - Space.1.5 : Office[211]
- Info Panel:** Shows details for 'Space.1.7 : Kitchen[205]'. It includes a table with 'Property' and 'Value' columns.

Property	Value
Model	SMC Building
Name	Kitchen
Number	205
Type	7 Other Usage

The logo consists of a vertical black line and a horizontal black line intersecting at the center. To the left of the intersection, there are three overlapping squares: a yellow one at the top, a red one in the middle, and a blue one at the bottom. The text 'FIATECH Consortium' is positioned to the right of the logo.

FIATECH Consortium

- **F**ully **I**ntegrated and **A**utomated **T**echnology
- A nonprofit cooperative research corporation launched by the University of Texas at Austin in 2000.
- Goal is to improve the design-build-operate cycle of the US Construction Industry.
- Has a focus on streamlining government.



FIATECH Consortium

- Wisconsin is a member of Fiatech.
 - Department of Administration
 - Department of Commerce
- **DOA** wants all state-owned buildings as BIM files within five years.
- **Commerce** wants to stay abreast of and participate in the technology evolution.



Information on the Internet

- National Institute of Building Science,
NIBS Building Information Models

www.facilityinformationcouncil.org/bim/

- NIBS buildingSMARTalliance

www.buildingsmartalliance.org/



Information on the Internet

- ICC SMARTcodes demonstration
www.smartcodes.org
- FIATECH
www.fiatech.org/