“Emerging Growth Markets”

SMACNA
2010 Partners in Progress Conference

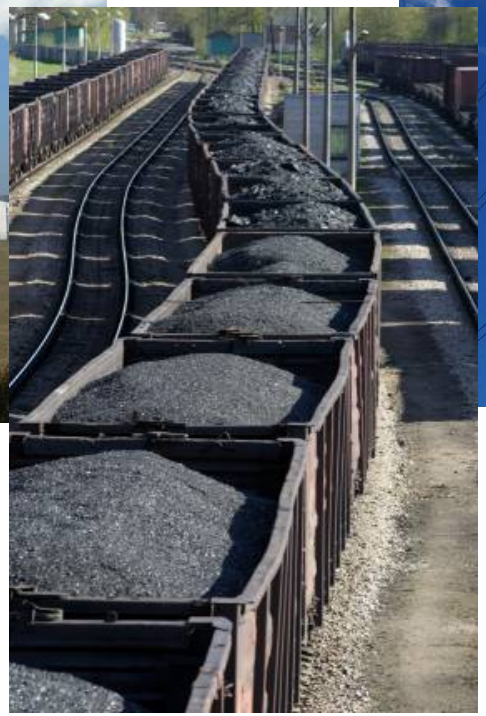
Presented By

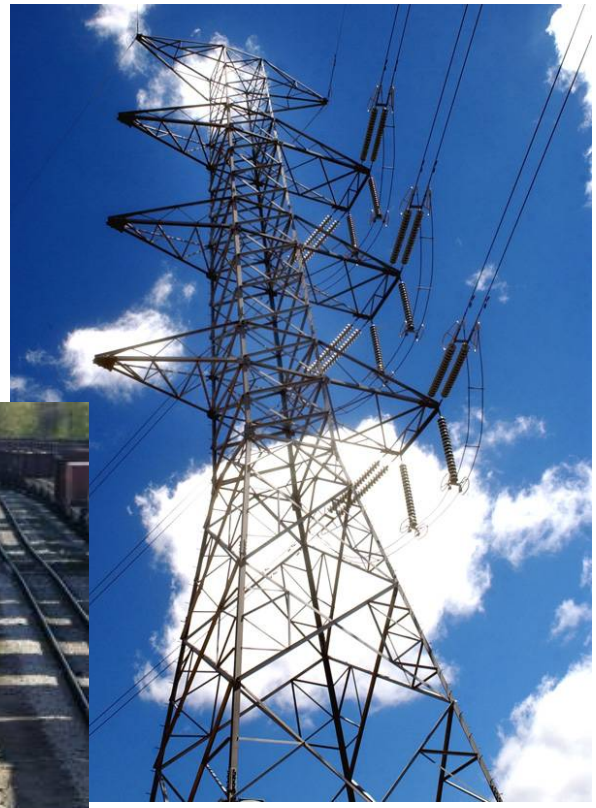
Ben Schlinsog
Regional Sales Manager
North Central Region

McQuay International
a member of the Daikin Group

“Emerging Growth Markets”

Energy

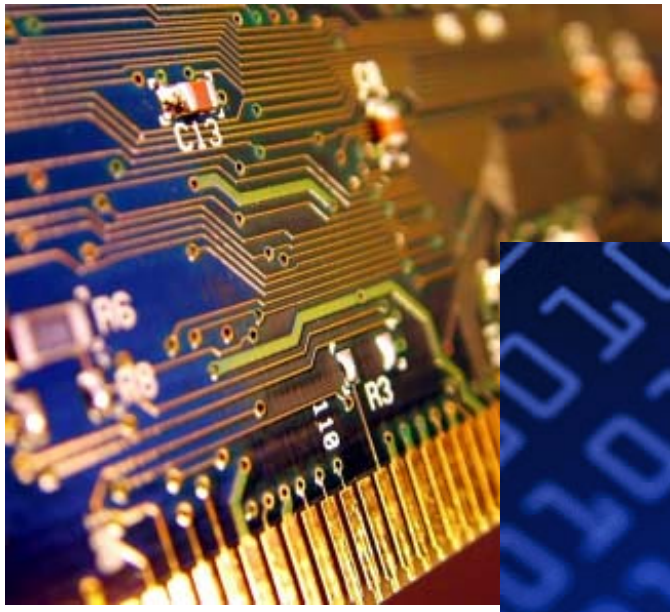




Energy

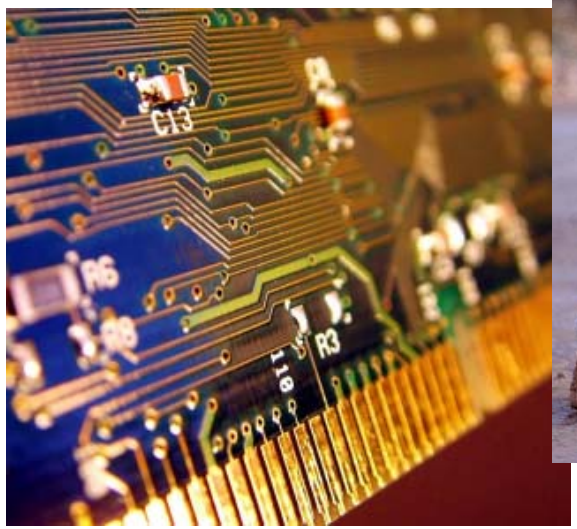
Higher Energy……
Costs **<u>Are</u>** the Future

Technology



People

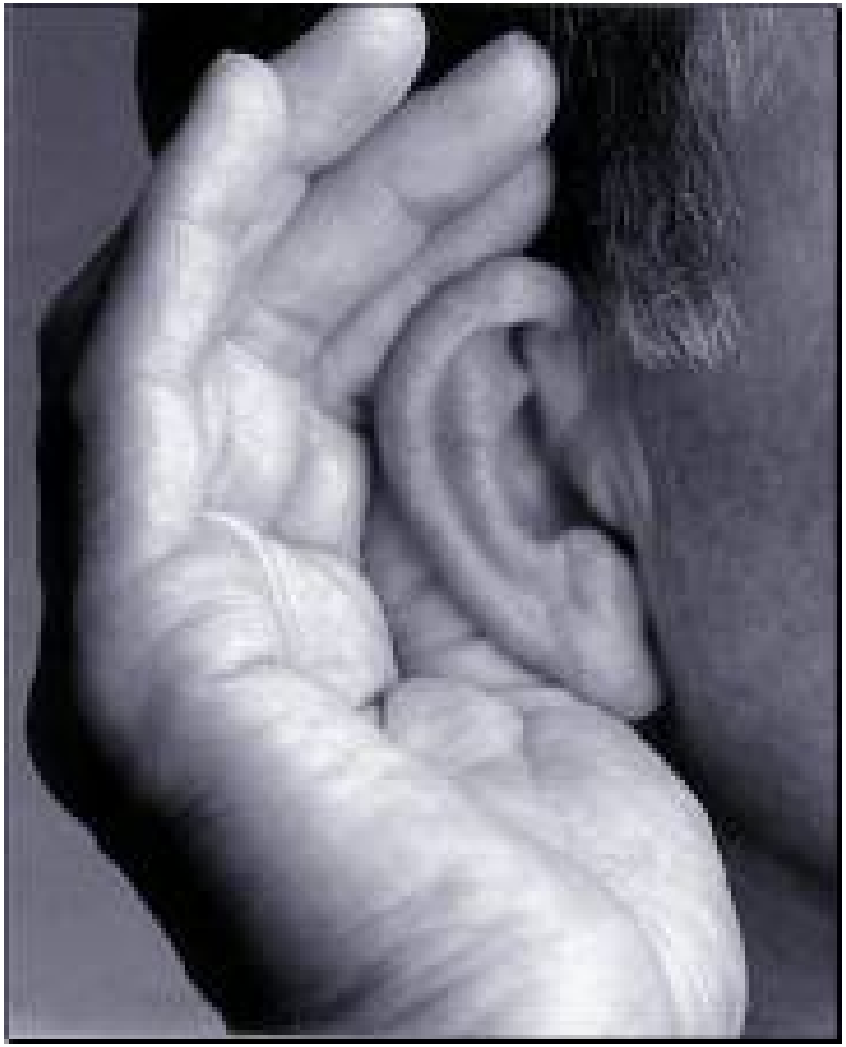
Energy
Technology
People



Energy

- There are over 5 million commercial and industrial building in the U.S.
- The combined energy costs for those building is over $200 Billion each year
- 30% of the energy used in those building is used inefficiently
- U.S. Commercial buildings emit 17% of the U.S. greenhouse gases, Industrial facilities emit 28%

Energy



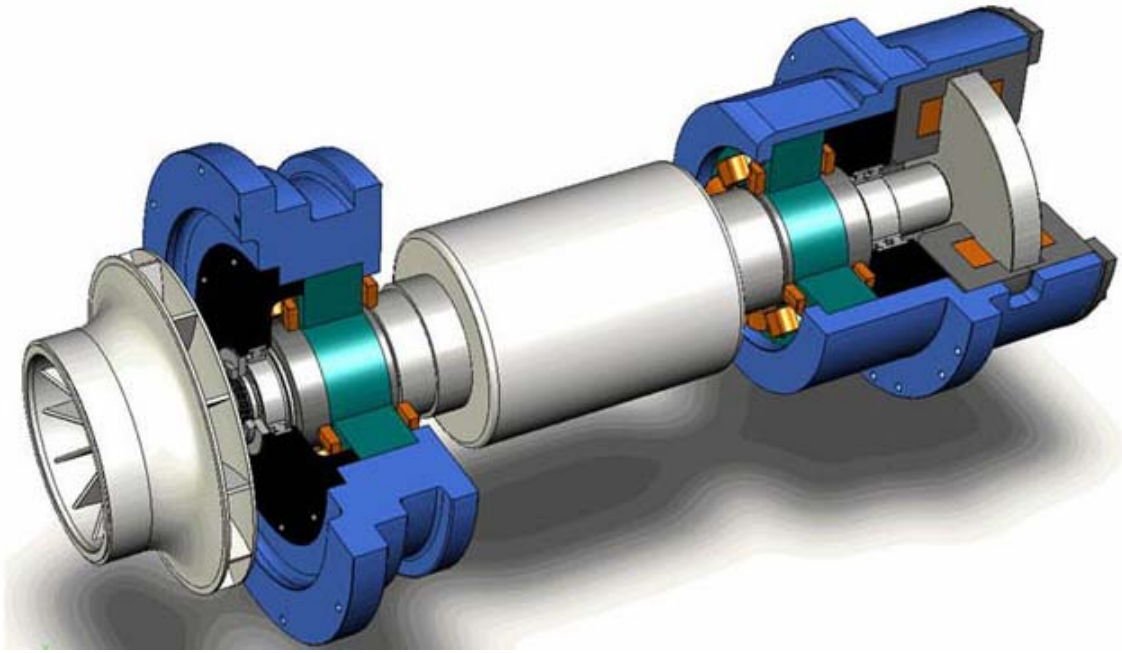
“Solve customers problems in the most economical way”

Energy

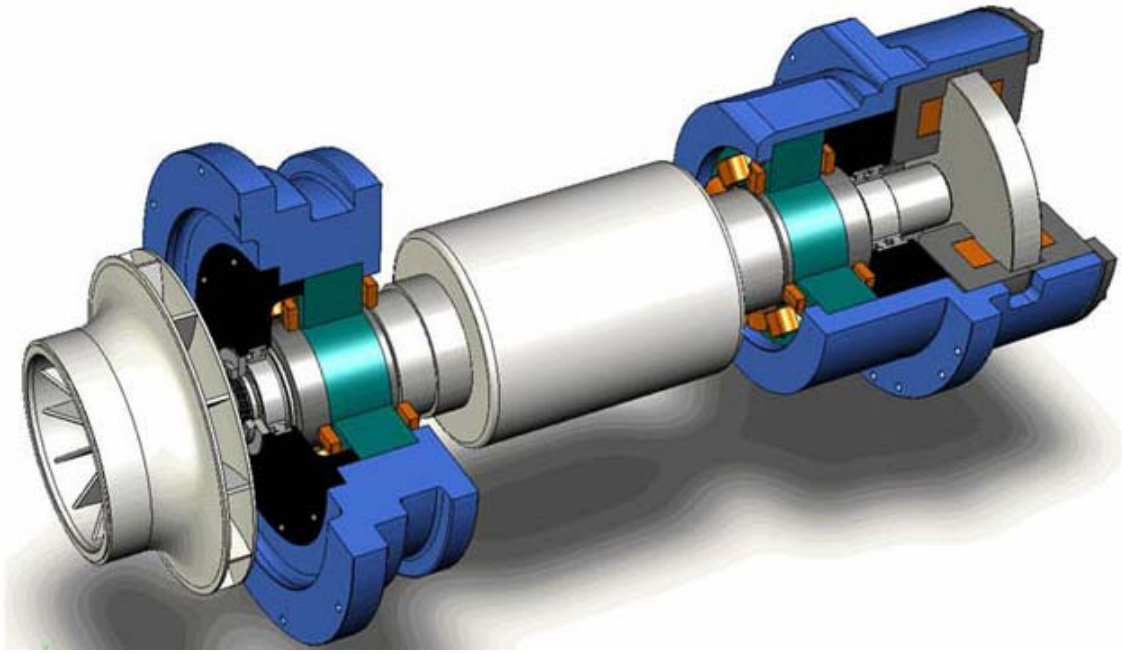
Energy

- New Buildings projects
- Renovation Building projects
- New approach to meet new needs

Technology



Technology – No Oil



Technology – No Oil


THE HVACR CONTRACTOR'S WEEKLY NEWSMAGAZINE SINCE 1926

Air Conditioning | Heating | Refrigeration

the NEWS

JUNE 5, 2006 WWW.ACHRNEWS.COM A BNP MEDIA PUBLICATION $3.00

The High Cost of Oil Contamination

Oil Contamination

Oil In Evaporator	Performance Loss
1-2%	2-4%
3-4%	5-8%
5-6%	9-11%
7-8%	13-15%

Source: The News, 08/2006

Technology – No Oil

Capacity tons	Full load, kW/ton	IPLV
500	0.531	0.312

Source: The News, 08/2006

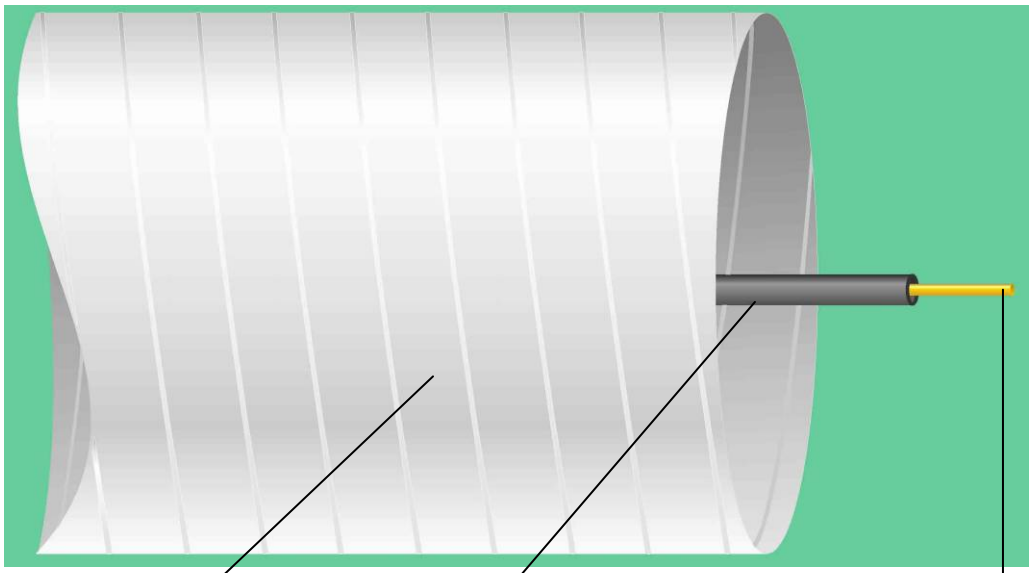
Rebates

- Don’t forget rebates!
- Figure out the Rebate red tape
- Be the Rebate expert

Transport Cost

- Significant improvement in individual components is getting more difficult
  - Approaching Isentropic efficiency
- Focus must shift to the entire system
  - Integrated design considering all operating conditions
  - Reduction in Transport costs
- Bleeding edge will focus on integration and parasitic (transportation) losses

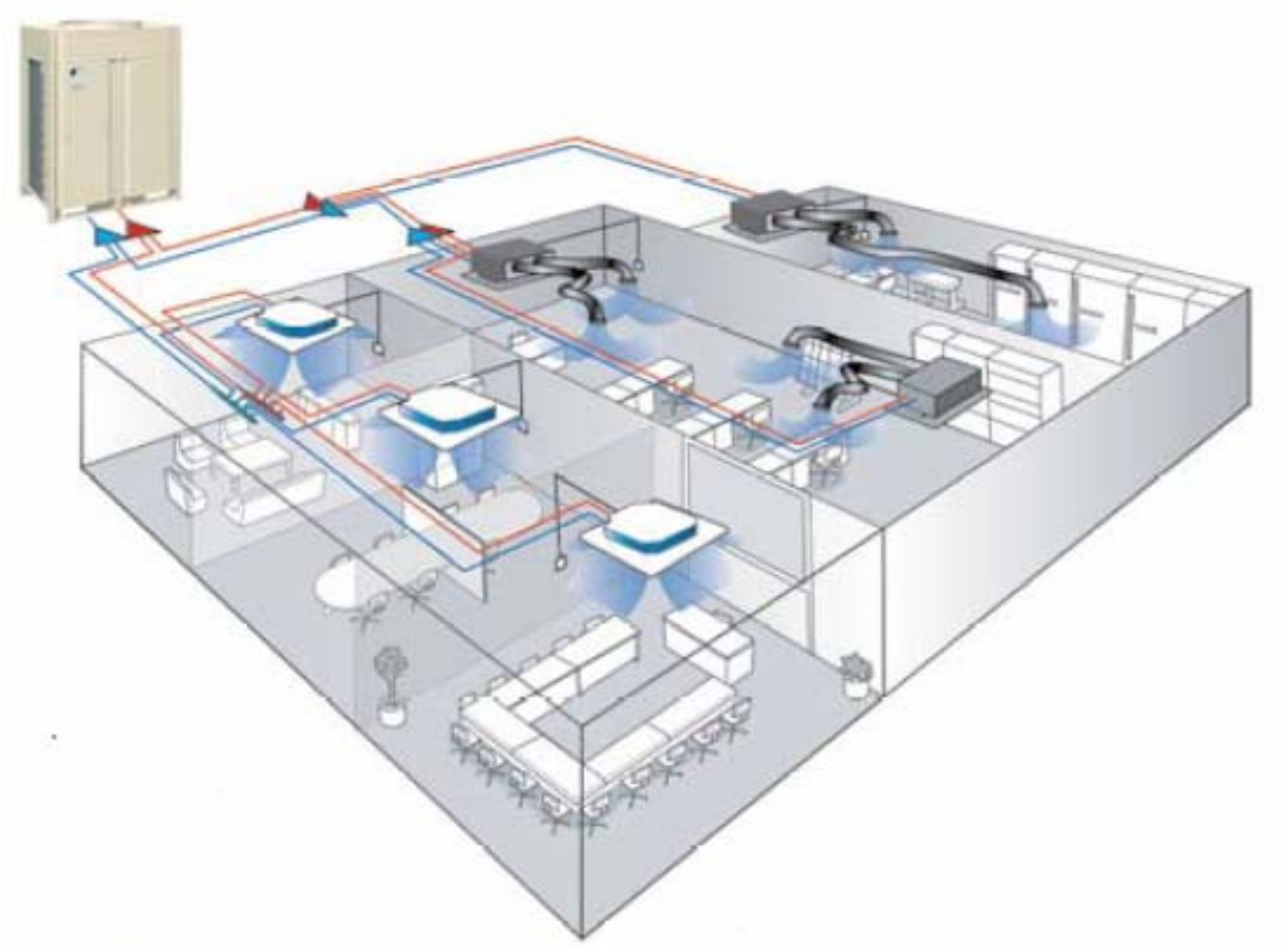
Transport Cost



All move the same amount of Energy

Transport Cost

Variable Refrigerant Volume



Technology

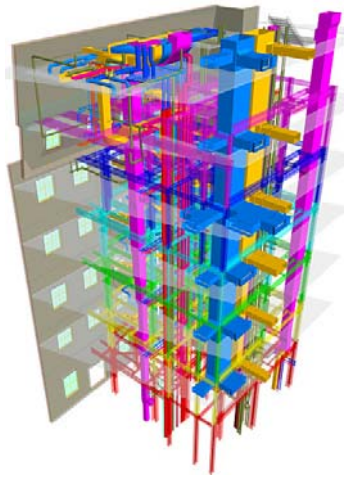
Building Information Models (BIM)

BIM: What It Is and Why It's Important

- BIM is the next step in building design software
- BIM is essentially a 3D CAD system whereby components relate to each other and communicate with each other

Manual ⇒ CAD ⇒ BIM

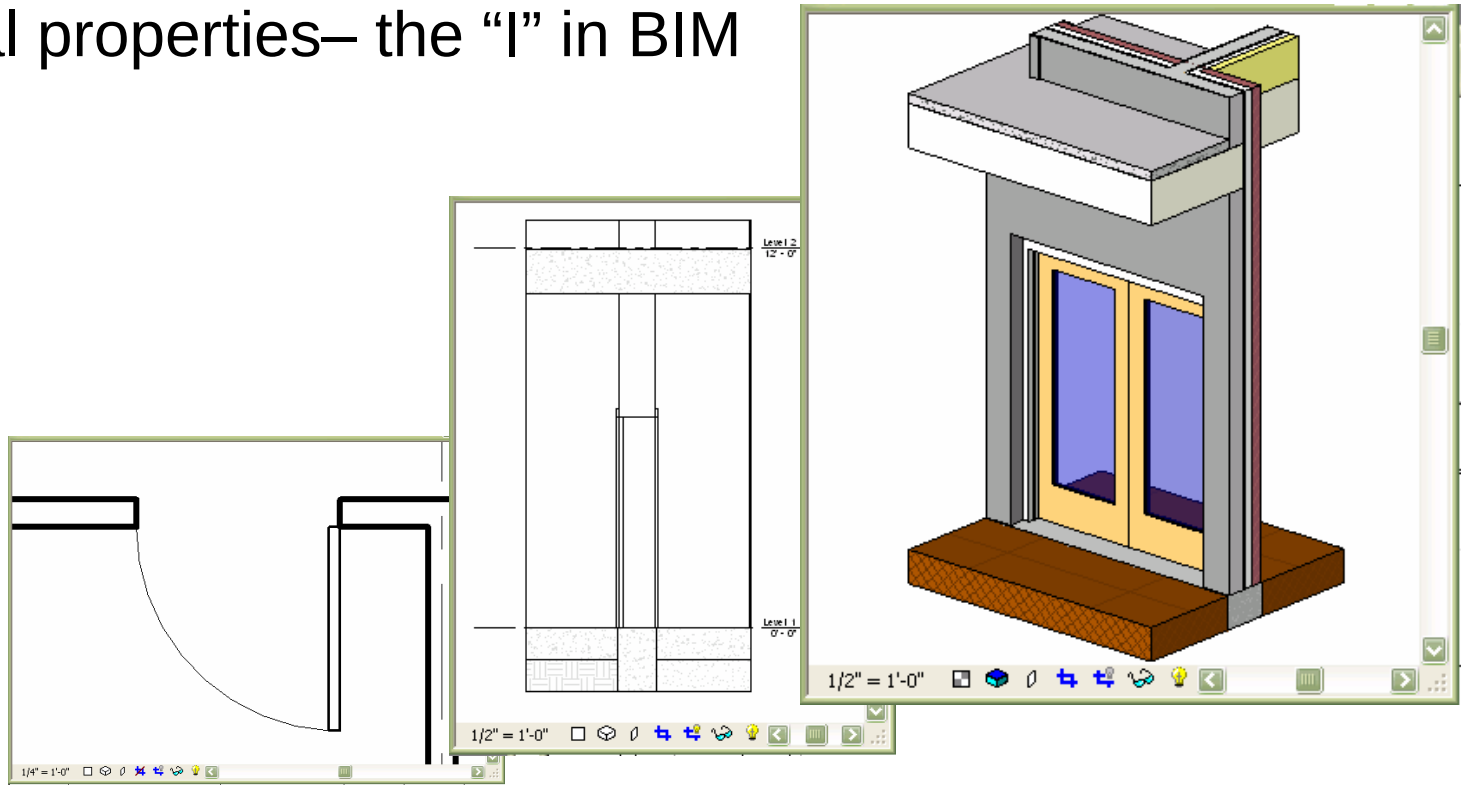
Manual	CAD	BIM
– Think in 3D	– Think in 3D	– Think in 3D
– Draw in 2D	– Draw in 2D	– Design in 3D, render 2D or 3D
	– Change faster	– Simulate
	– Print to a plotter	– Involve all players in process
	– Exchange files	



BIM: What It Is and Why It's Important

BIM is a database, not drawings

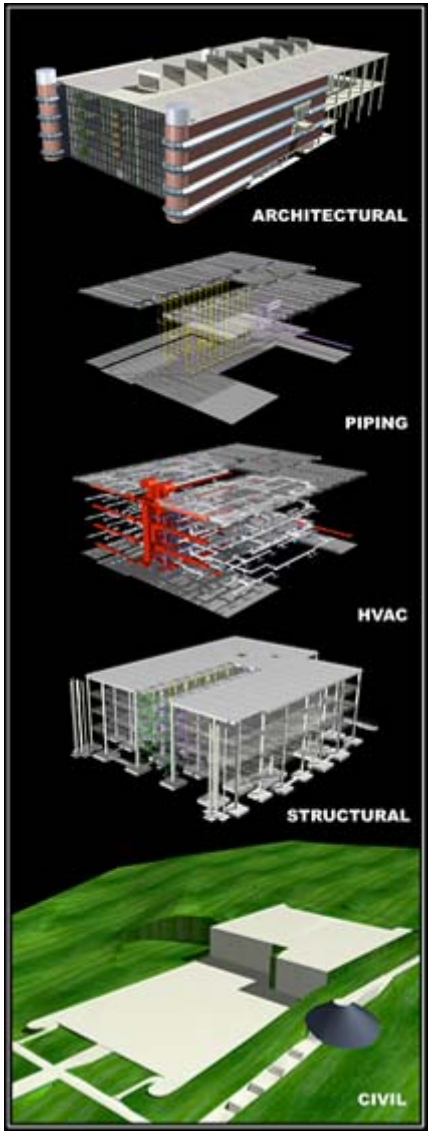
- Made of intelligent objects rather than lines, arcs and text
- Objects have data and attributes about their geometry and non-graphical properties– the "I" in BIM



BIM: What It Is and Why It's Important

BIM is a group of interoperable databases

- Discipline-specific models that can interoperate with each other
  - Architectural model
  - Structural model
  - HVAC model
  - Piping model
  - Telecommunications model
  - Electrical model
  - Furniture model
  - Civil model
  - Construction model
  - Fabrication model
  - Facility management model



Images: Bentley

Image Source: Bentley Systems

BIM: What It Is and Why It's Important

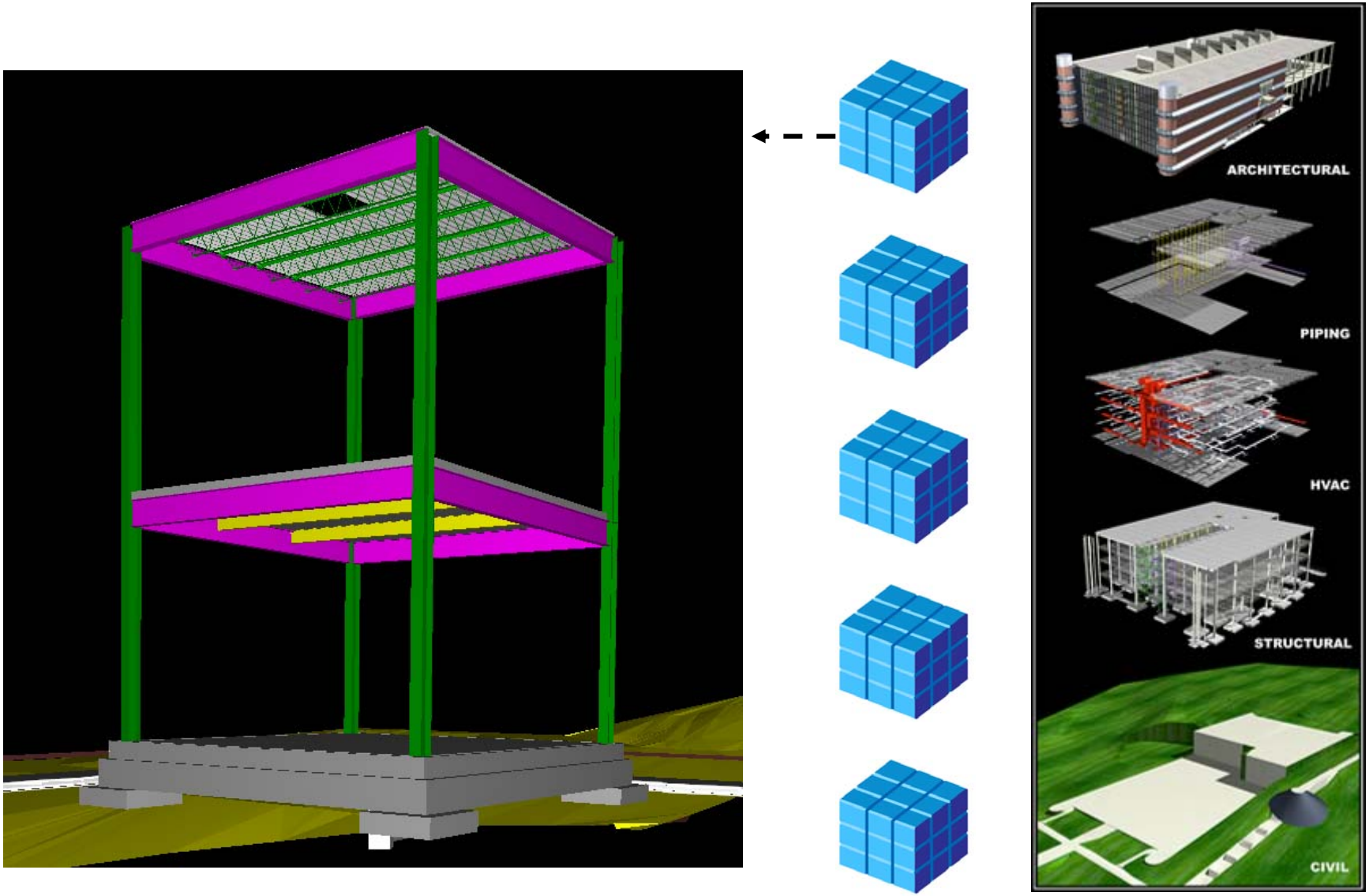


Image Source: Bentley Systems

Images: Bentley

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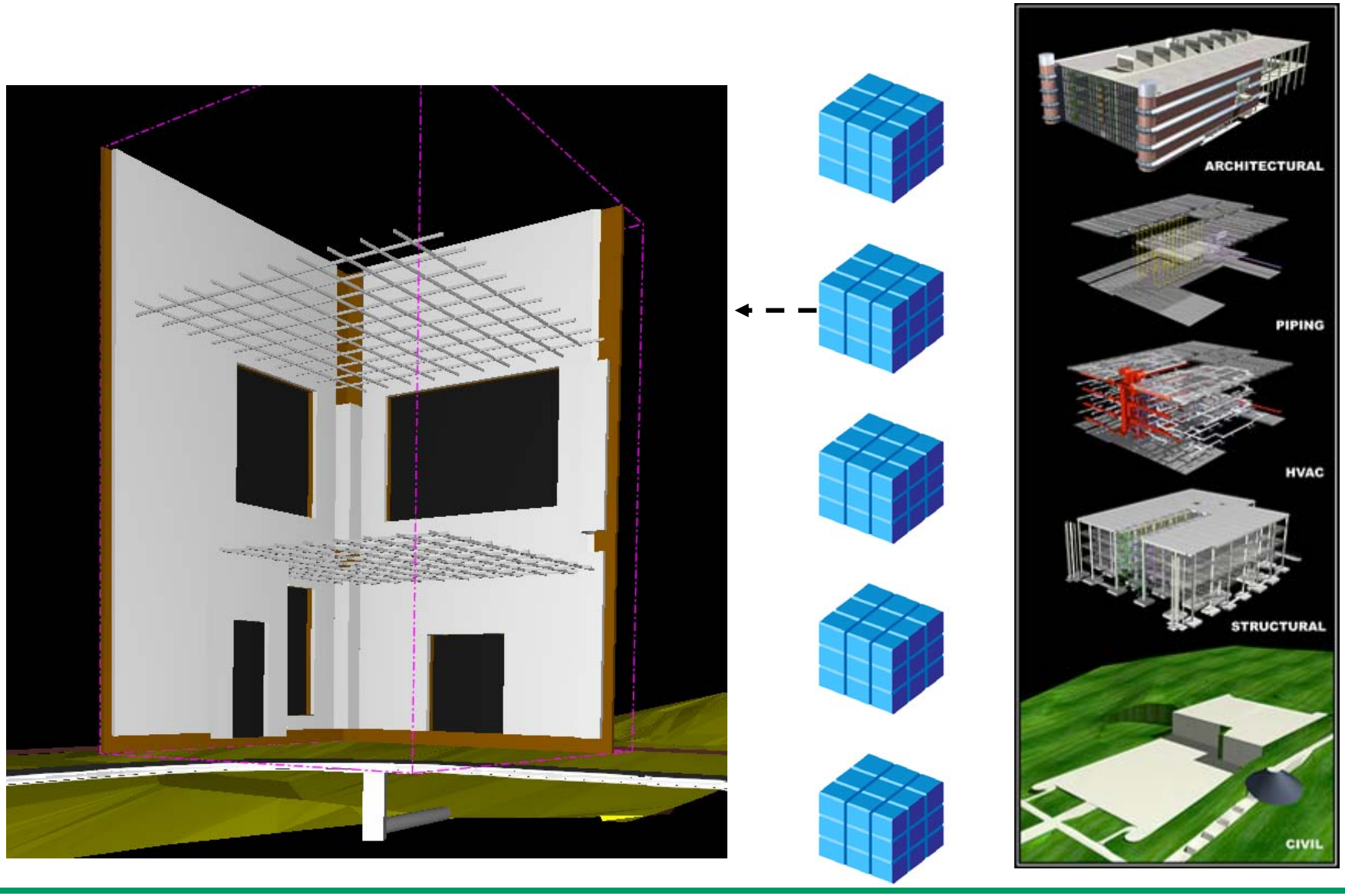

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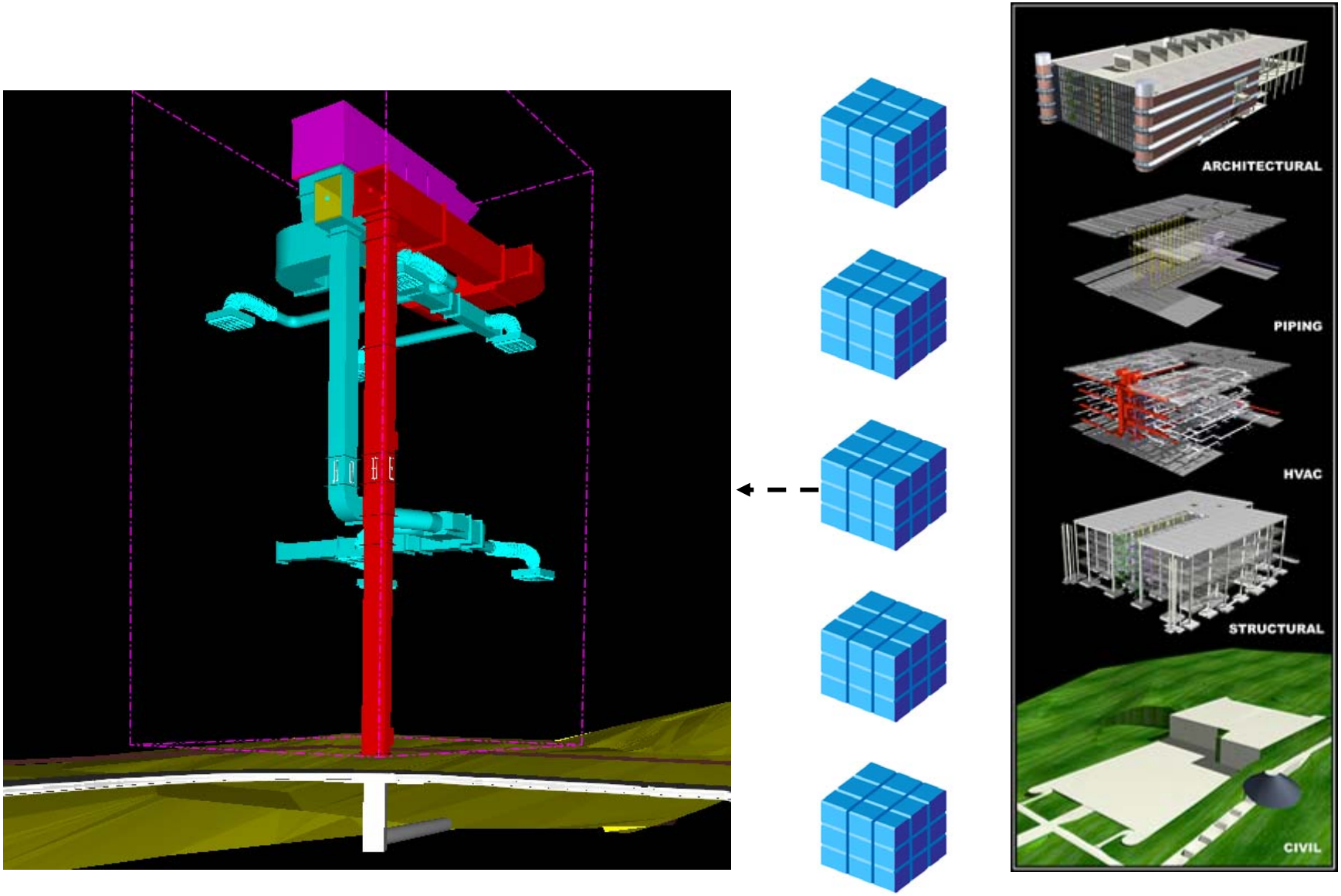

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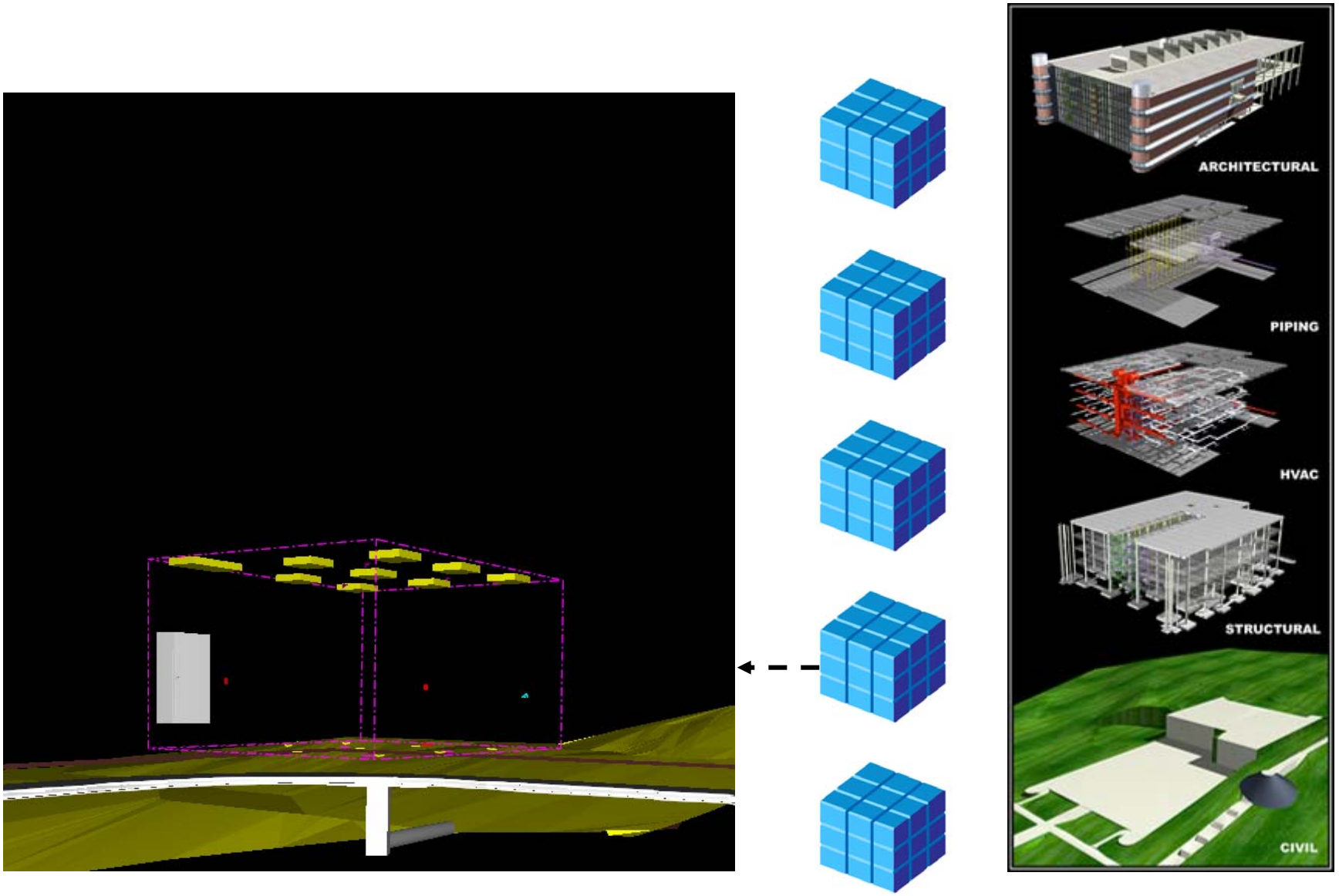

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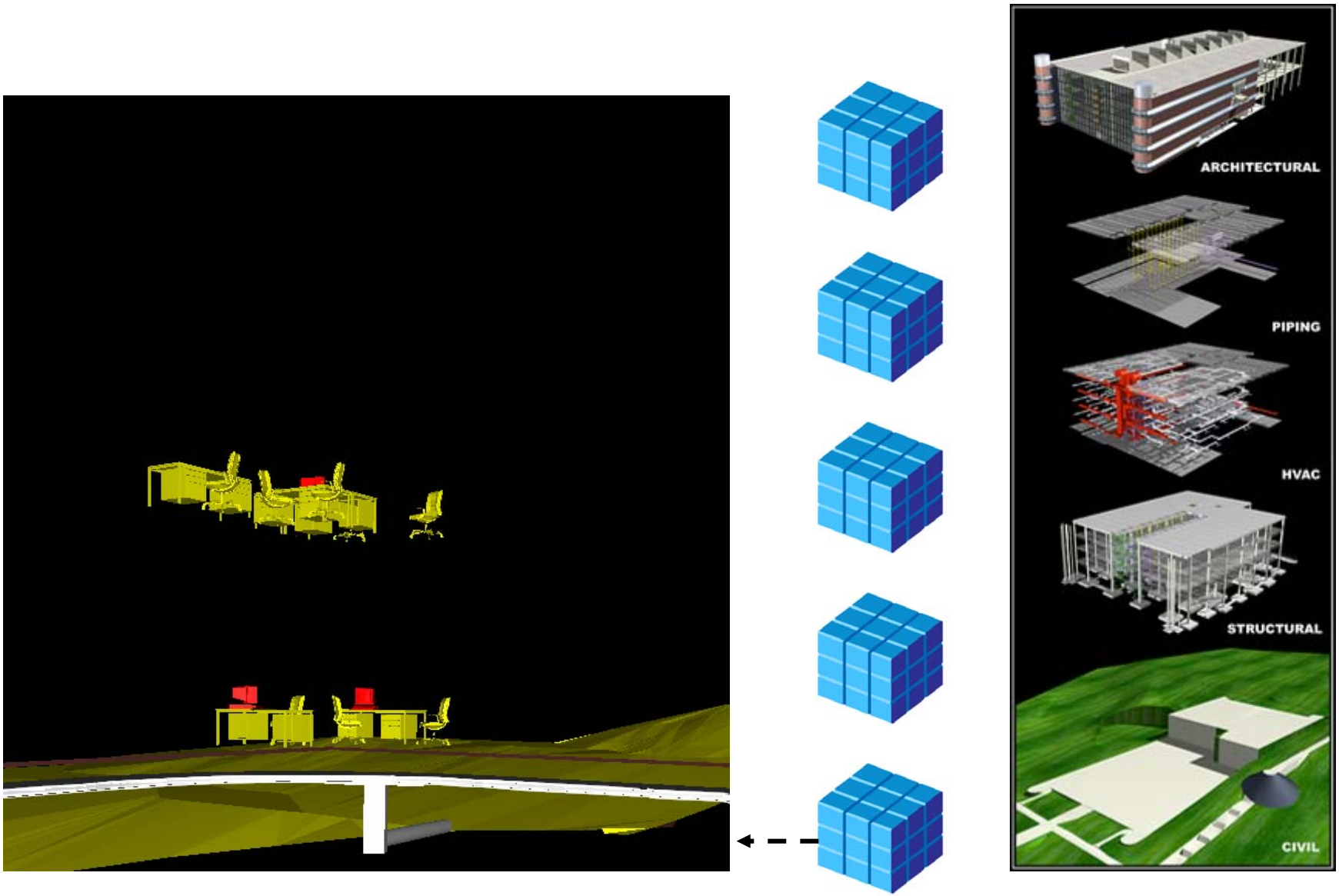

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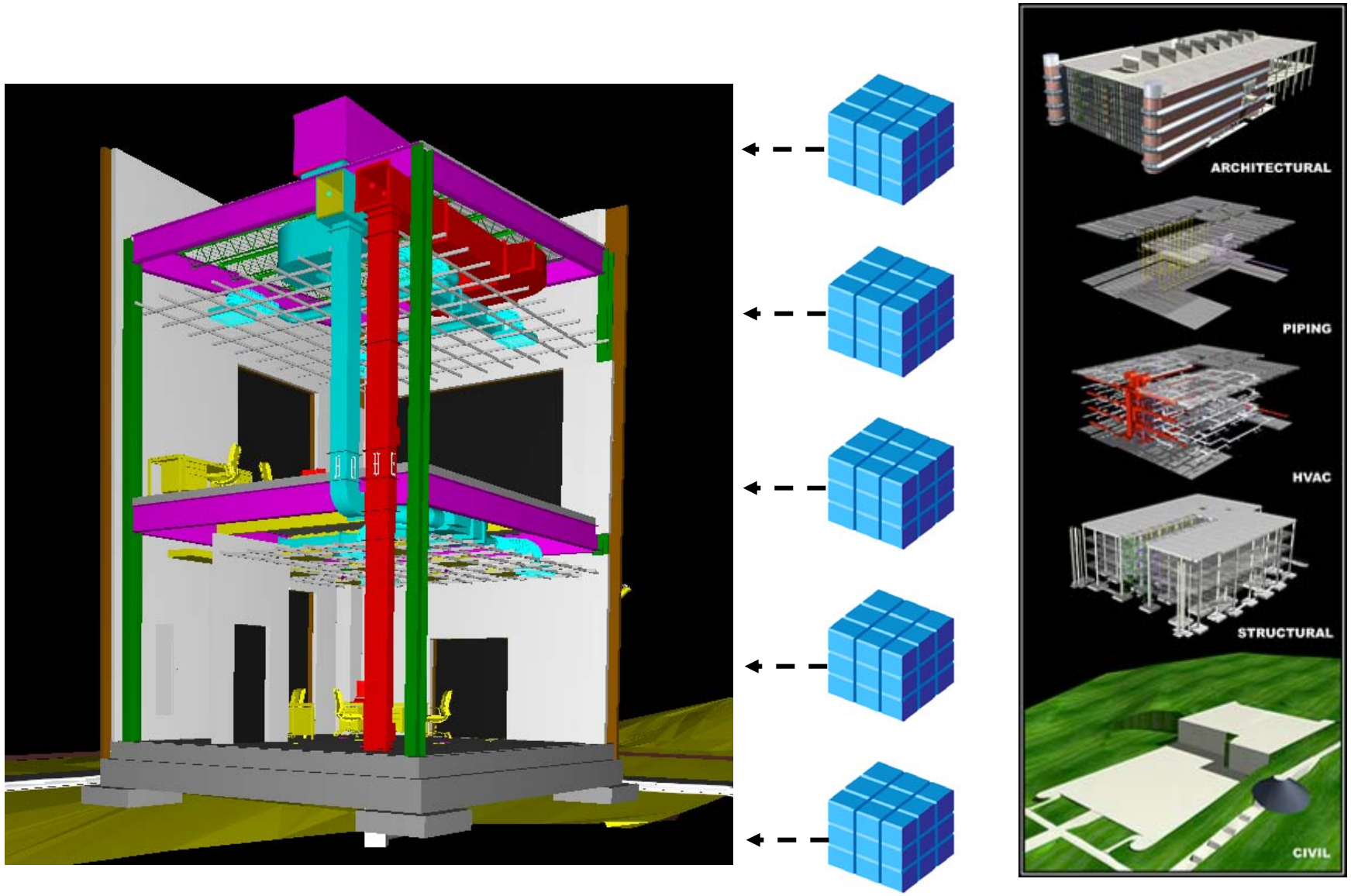

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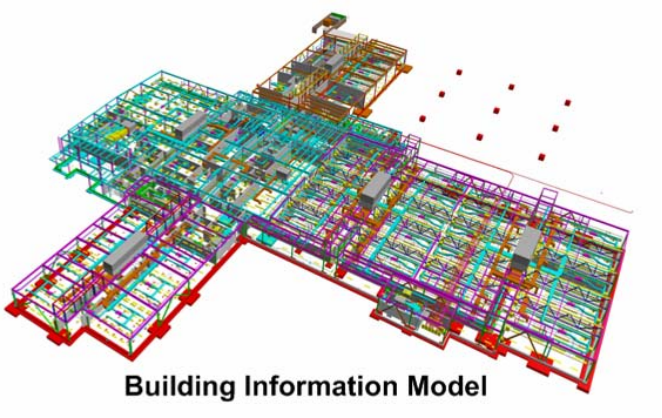
BIM: What It Is and Why It's Important

BIM is an interoperable database



Images: Burt Hill, University Mechanical, Ryan Homes, View By View, Beck Group, IES, SOM

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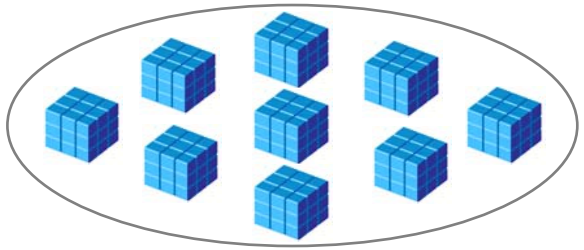
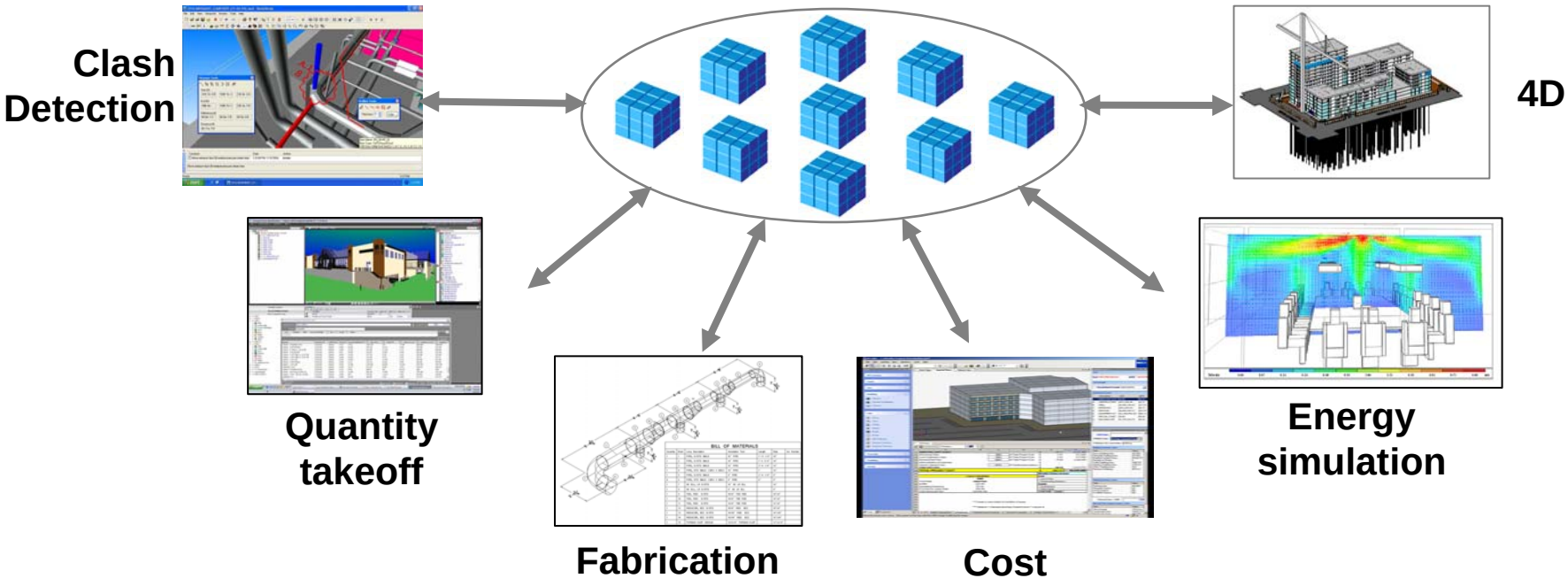


BIM: What It Is and Why It's Important

BIM is an interoperable database

Tools for analysis, simulation, specialty design



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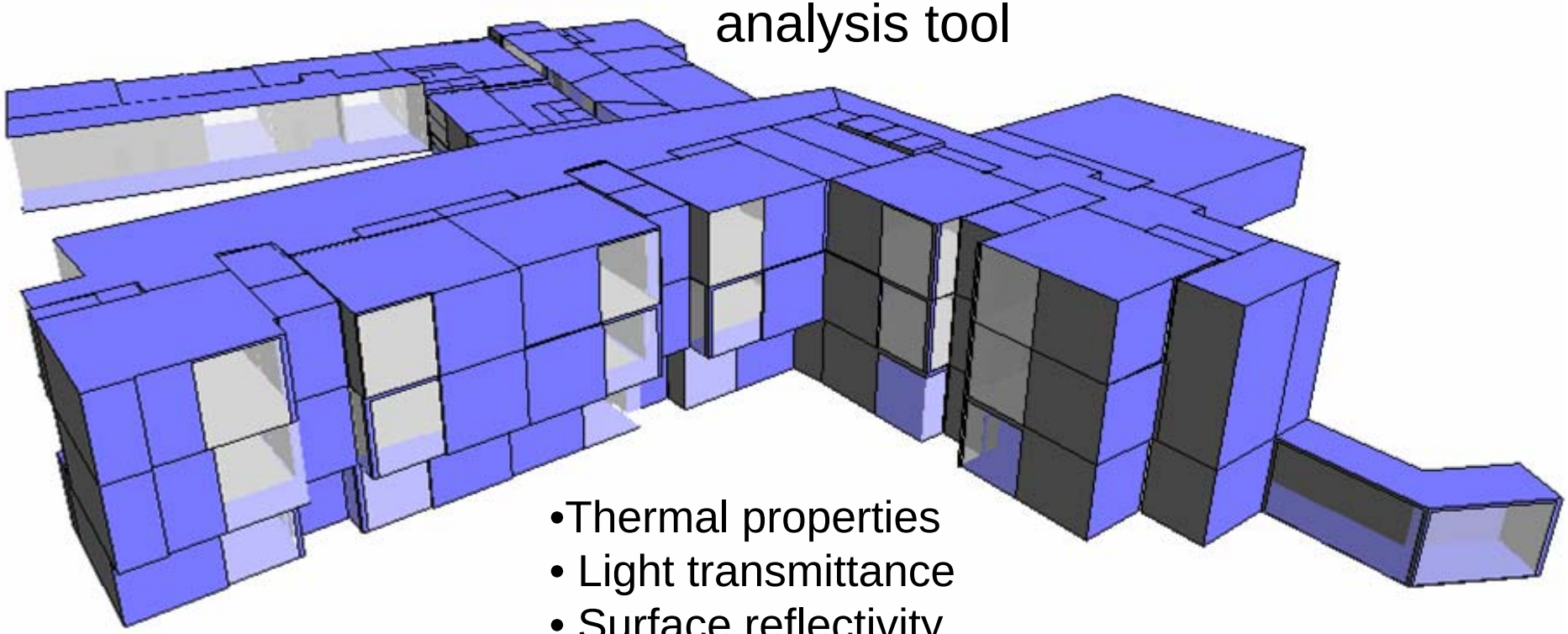
Energy Analysis

Energy Analysis

Export performance characteristics of objects to analysis tool

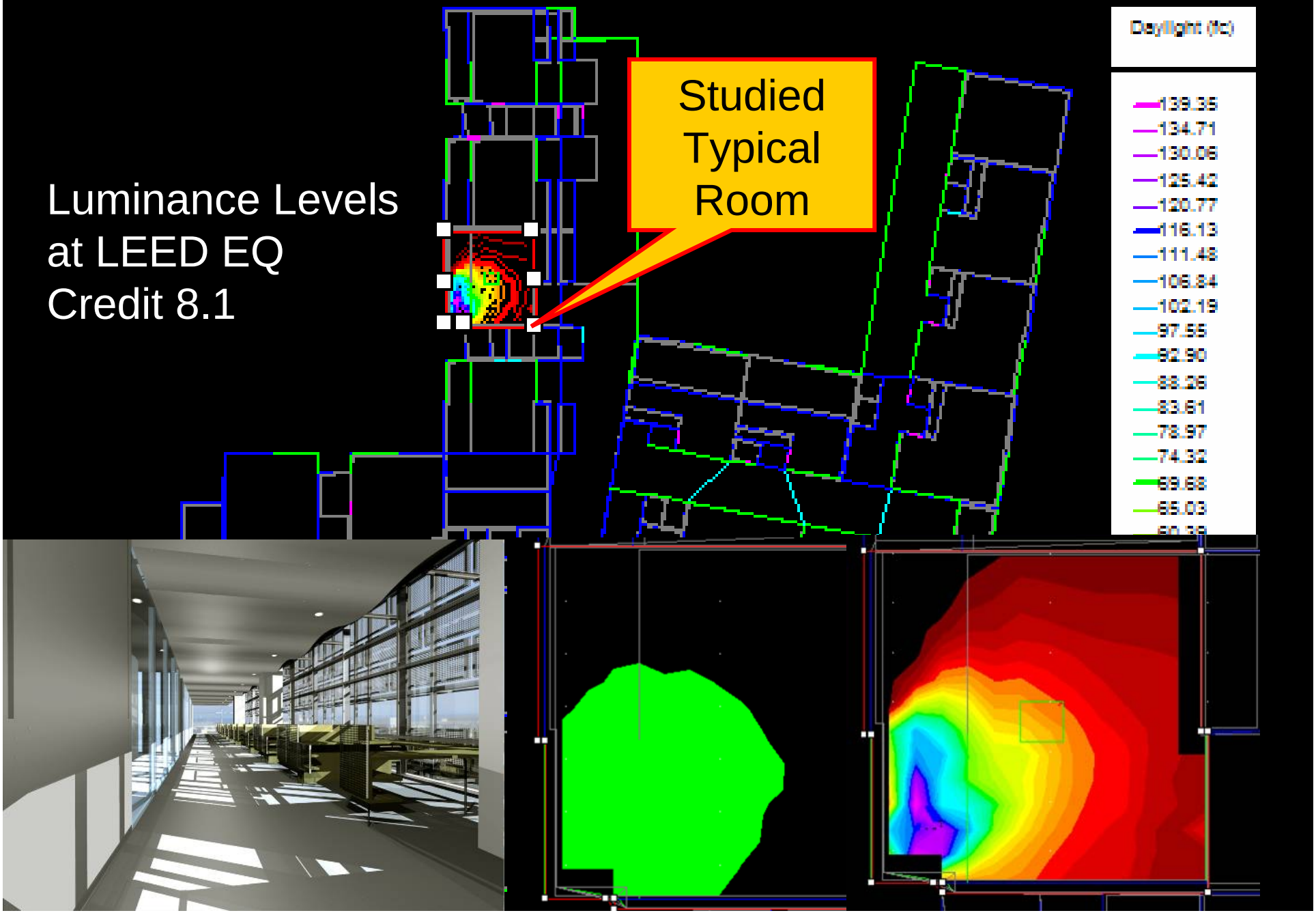


- Thermal properties
- Light transmittance
- Surface reflectivity

Source: Burt Hill

Daylight Assessment

Luminance Levels at LEED EQ Credit 8.1



Energy Analysis

LEED NC 2.2 credit 8.1

Daylight simulation model data:

Project file: c:\mytemp~1\spring~1\ies\spring~1\Springfield 4_11.mit
Calculated at Friday, April 13, 2007, 8:40 AM
Sky model: CIE Clear Sky on 21 Mar at 12:00
Location: Philadelphia, Pennsylvania (39.87N, 75.25W)
Working plane height: 30 inches
Grid size: 2 feet
Illuminance threshold = 25.000 fc

Eligible rooms for daylighting

Room ID	Room name	Floor area (ft²)	Minimum illumination (fc)	Working plane area > threshold (ft²)
0003A2BC	6 CLASSROOM	669.209	1.229	252.899

Total area (ft²)	669.209
Total area above threshold (ft²)	252.899
Percentage	37.8%

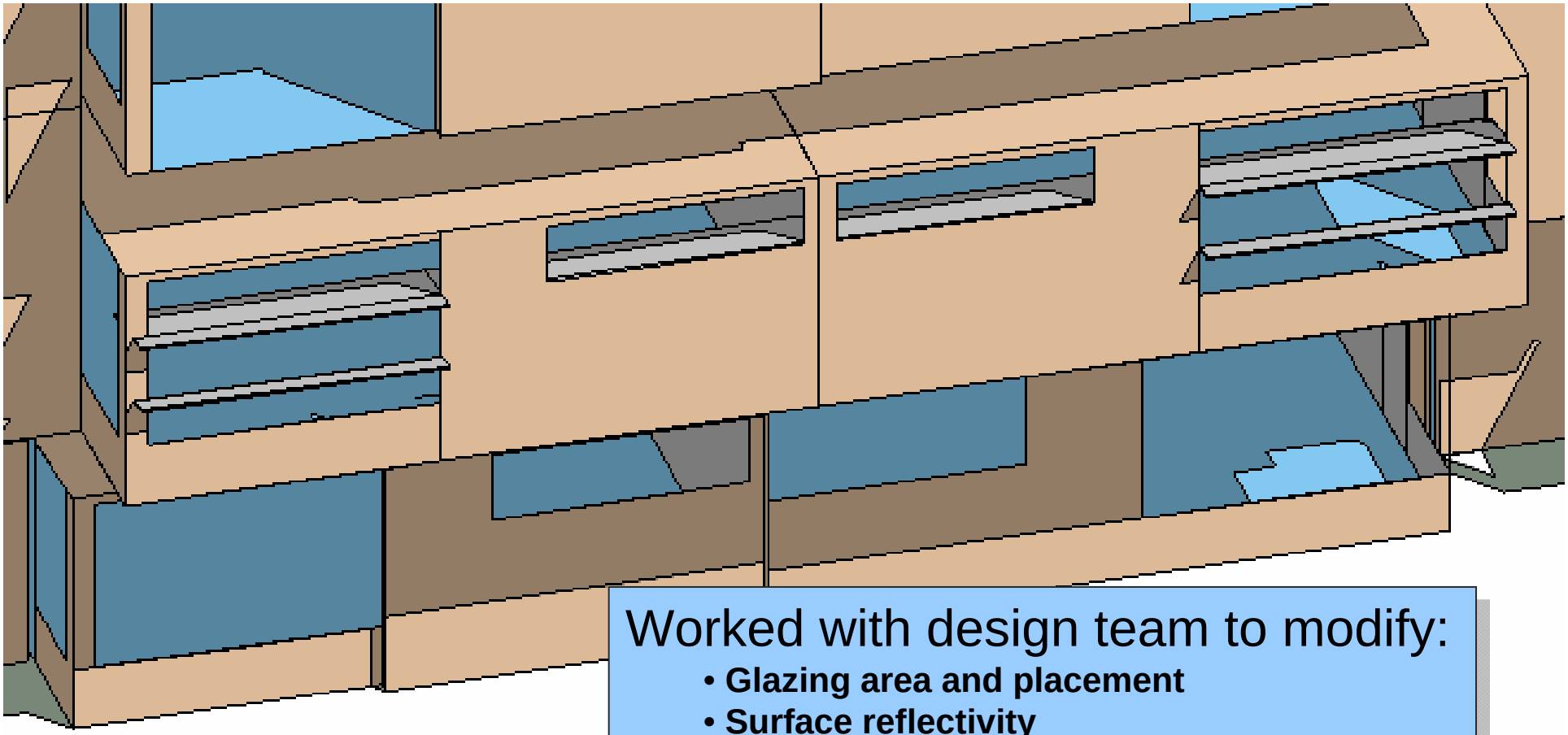
LEED NC 2.2 EQ credit 8.1 daylight and views: FAIL

A pass requires 75% or more of the total area to be over the threshold.

Original Design Failed

Source: Burt Hill

Energy Analysis

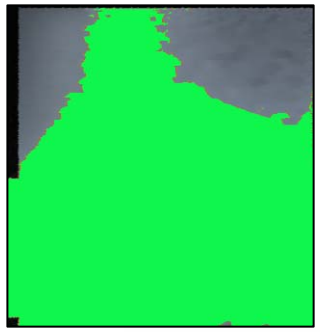


Worked with design team to modify:

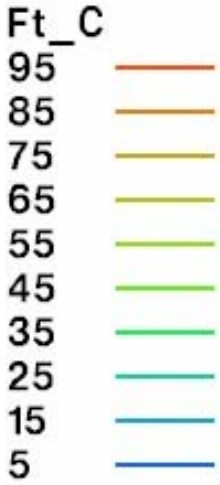
- **Glazing area and placement**
- **Surface reflectivity**
- **Lightshelves**
- **External shading**

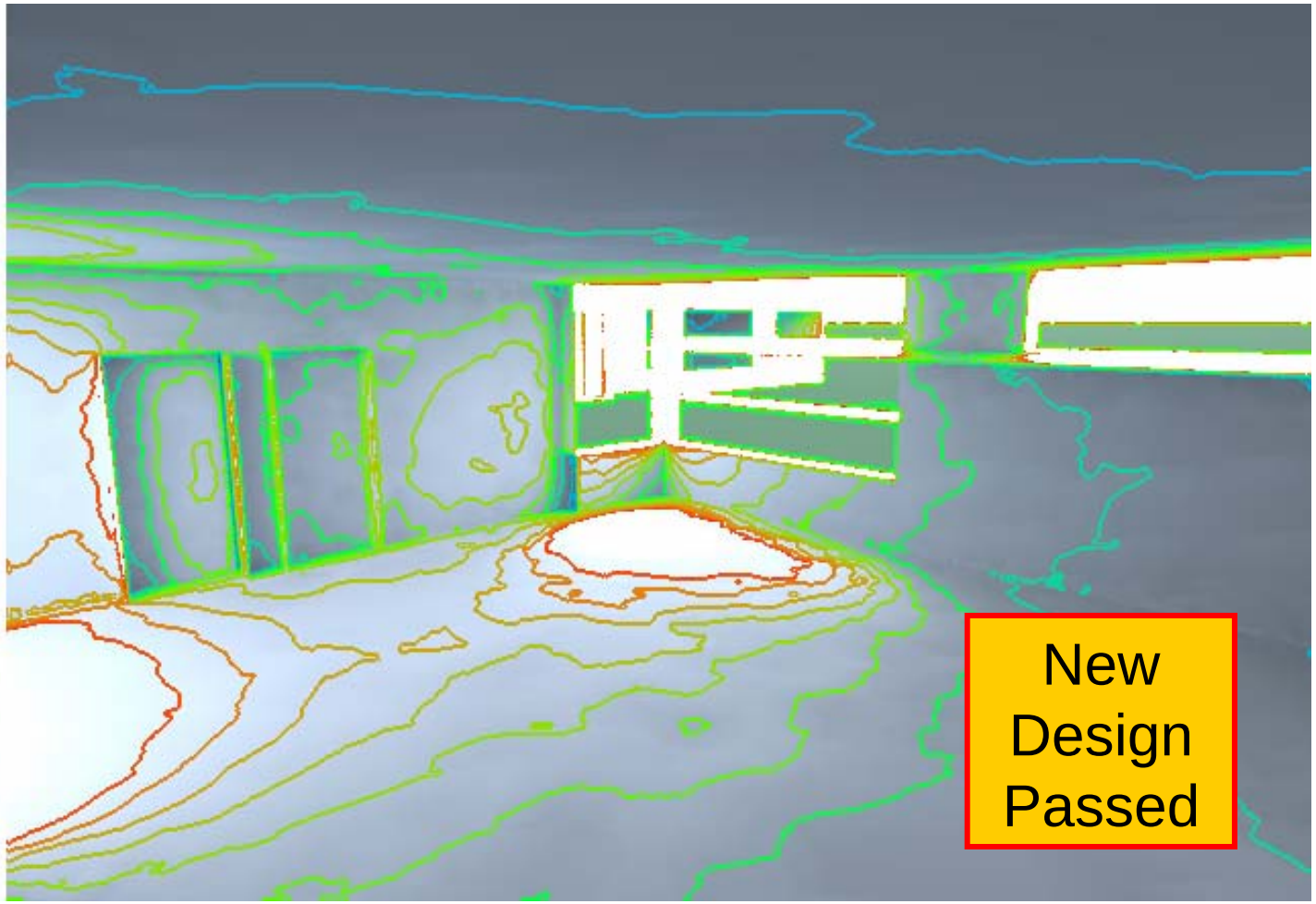
Source: Burt Hill

Energy Analysis



75% of 3’ work plane above 25 fc threshold

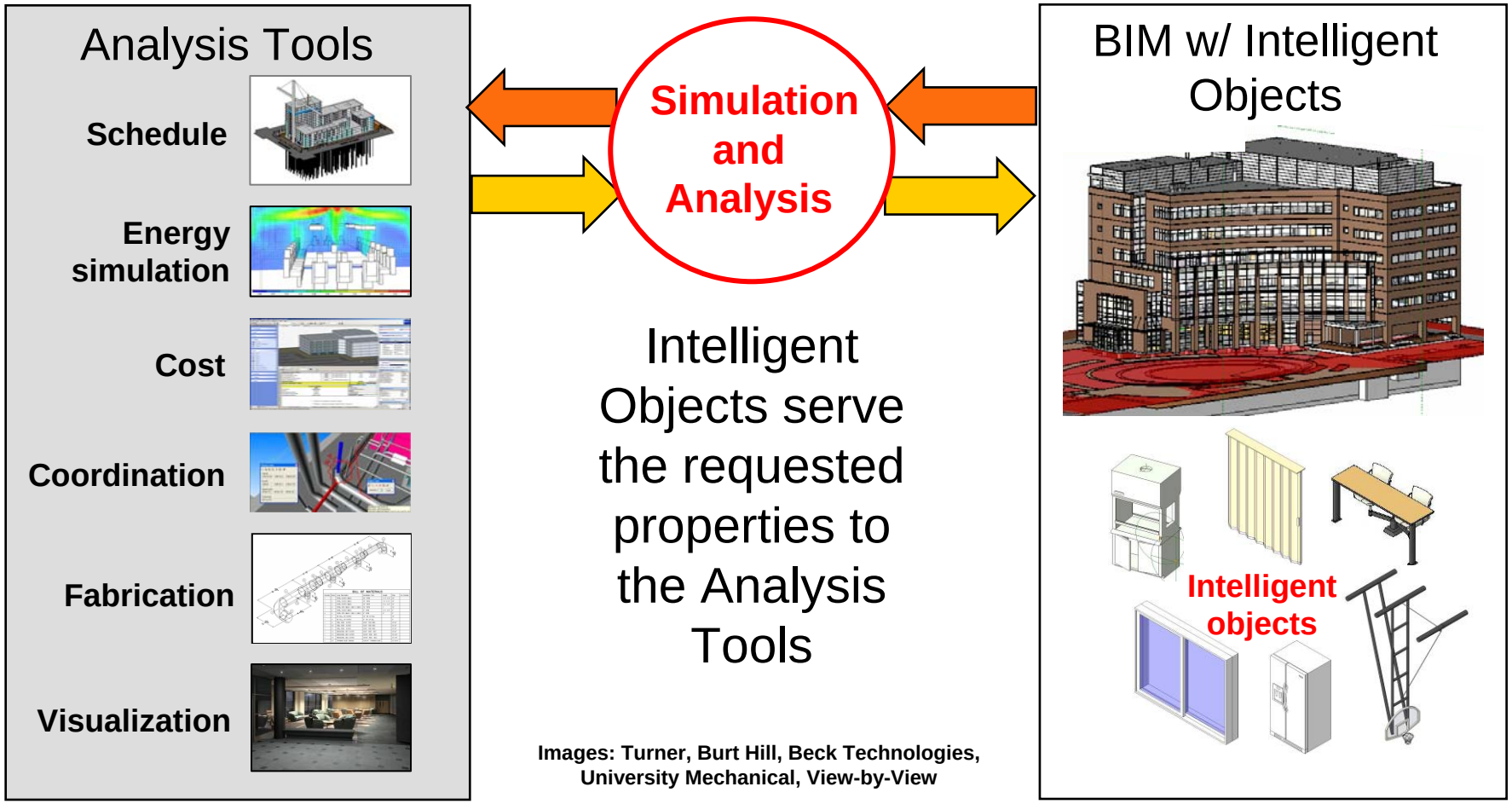




Source: Burt Hill

BIM: What It Is and Why It's Important

BIM content (intelligent product objects) is critical to BIM value



Images: Turner, Burt Hill, Beck Technologies, University Mechanical, View-by-View

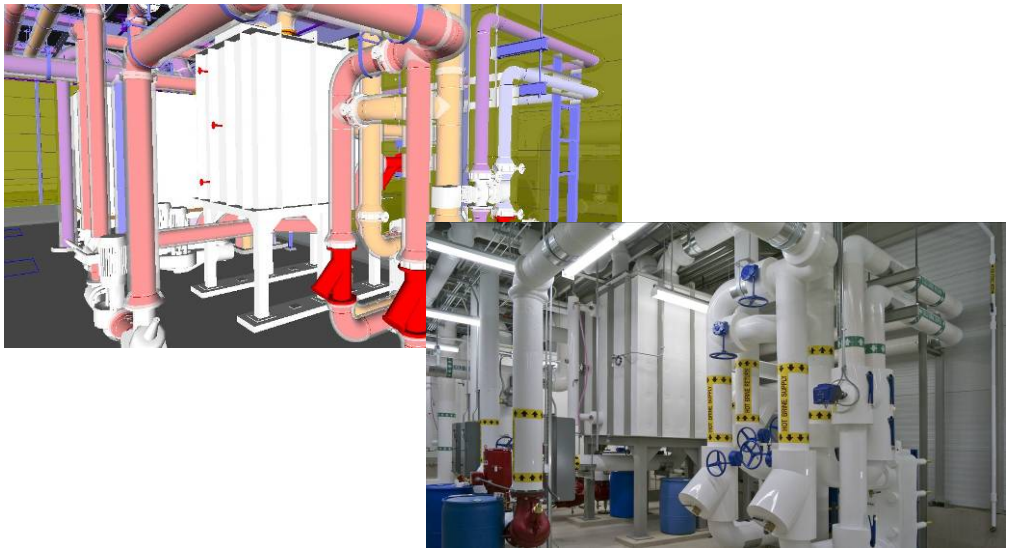
BIM: What It Is and Why It's Important

- Highlights of the Findings:
  - Almost 50% of the industry is now using BIM.
  - All BIM users plan significant increases in their use.
  - Two-thirds of BIM users say they see positive ROI on their overall investment in BIM.
  - Skill level directly relates to experience of value.
  - 40% of non-users plan to adopt within 2 years.

McGraw Hill
SmartMarket Report: The Business Value of BIM
Getting Building Information Modeling to the Bottom Line

BIM: What It Is and Why It's Important

- Owners are Mandating BIM:
  - Federal:
    - GSA, VA, US Army Corps of Engineering, State Department
  - State:
    - Wisconsin, Texas
  - Private:
    - Health care, Retail



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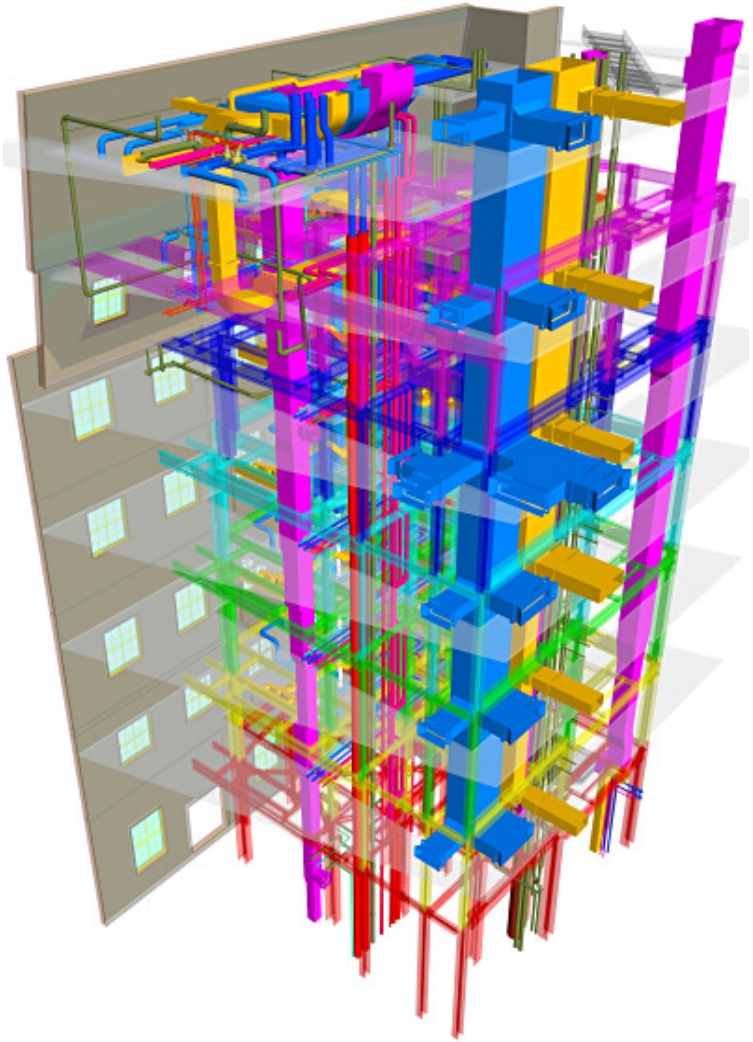


BIM: What it is and Why it's Important

- Find your place in the BIM process
- Work different – Collaborate – Partner
- Be prepared to build subassemblies in shop conditions

- BIM is here to stay – Be part of it

Saving Energy and the Team Concept

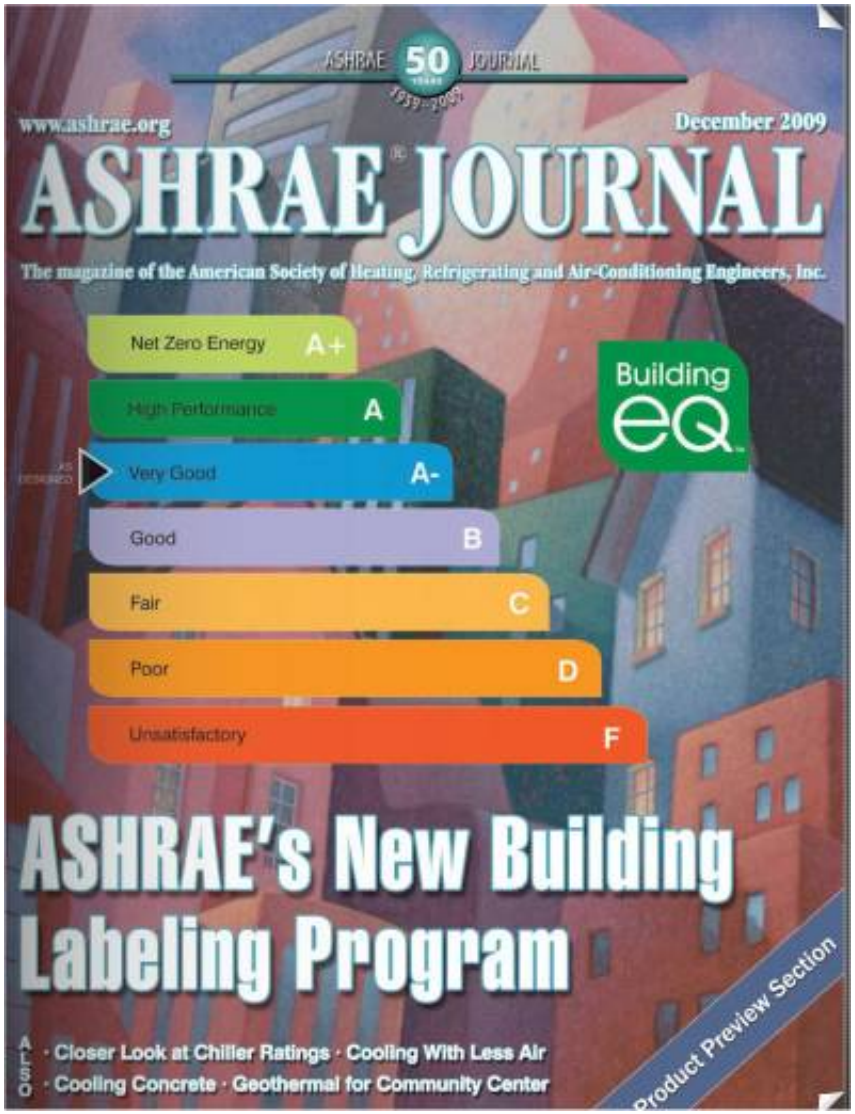
How you design Vs. How you operate

Did you get what you paid for?

Saving Energy and the Team Concept

ASHRAE

Building EQ



Source: ASHRAE Journal

People

People – Your Workforce

Source: ACHR NEWS

People – Your Workforce

- Retaining and Recruiting
- Support your schools
- Use products that are easier to install and repair
- Use technology to reduce field labor

People - Healthcare

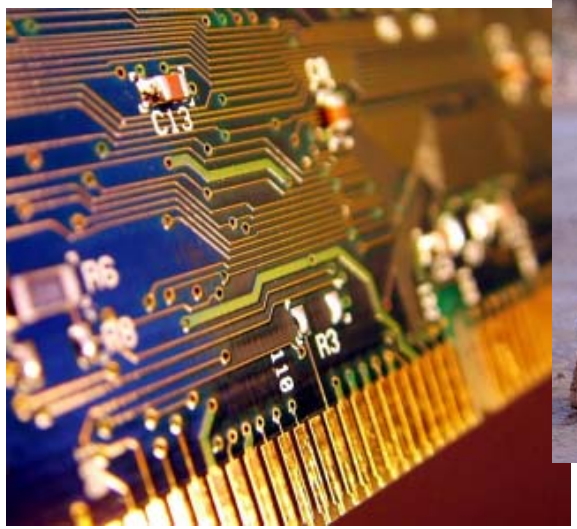
Wellness, Sickness and Aging
- A Growing Opportunity

People - Healthcare

- 66 % of hospitals say they will grow
- 50% will add bricks and mortar
- $12 – $14 Billion dollar business – could be $30 Billion by 2020
- 70 % are planning renovation
- Annual energy bill is over $5 Billion

- Save Healthcare energy – a Real opportunity

Energy
Technology
People



Thank You