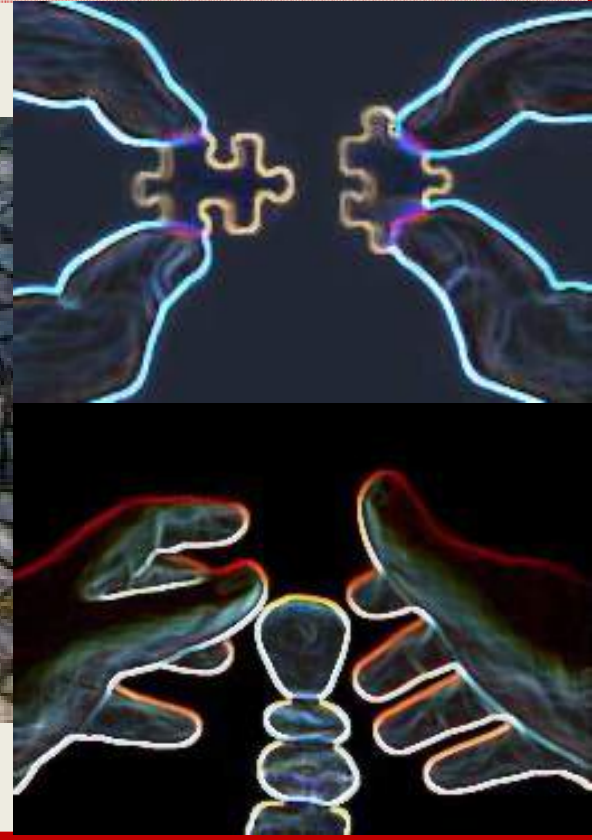
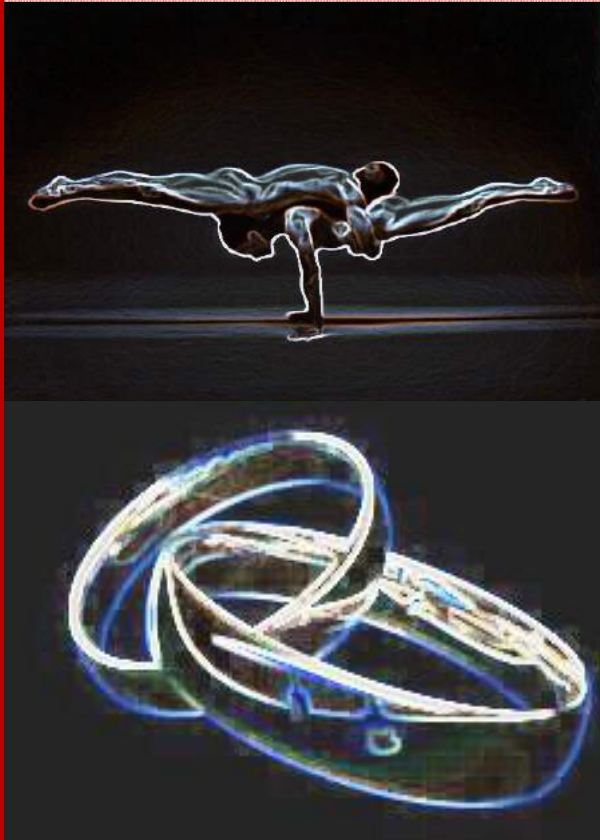


Passiv for the Masses ~

Tunneling Through the Cost Barrier through Innovative Design and Production Methods

Presenter: **Adam J. Cohen**, RA VT, NH, CO, MD, CPHC NA & EU, LEED AP ®



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Why Change?

Do we really need to have this conversation?

Global Energy Supply and Demand

Year	Global Energy Demand (Mtoe)	Global Energy Supply (Mtoe)
1970	~4,000	~6,000
1980	~6,000	~8,000
1990	~8,000	~10,000
2000	~10,000	~12,000
2010	~12,000	~14,000
2020	~14,000	~16,000

Drivers of Climate Change

Category	Relative Contribution
Residential & Commercial Buildings	High
Everything Else (industry, travel, agriculture etc...)	Low

Temperature Increase (°C)

Year	Temperature Increase (°C)
1992	~1.0
2002	~2.0
2007	~3.0

Nope, nope,
so much nope

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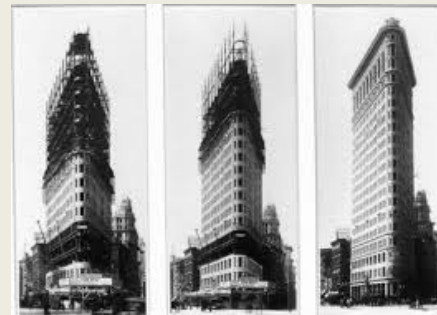


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Proactive or Reactive

It's our choice



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What will YOU do?

It's our choice



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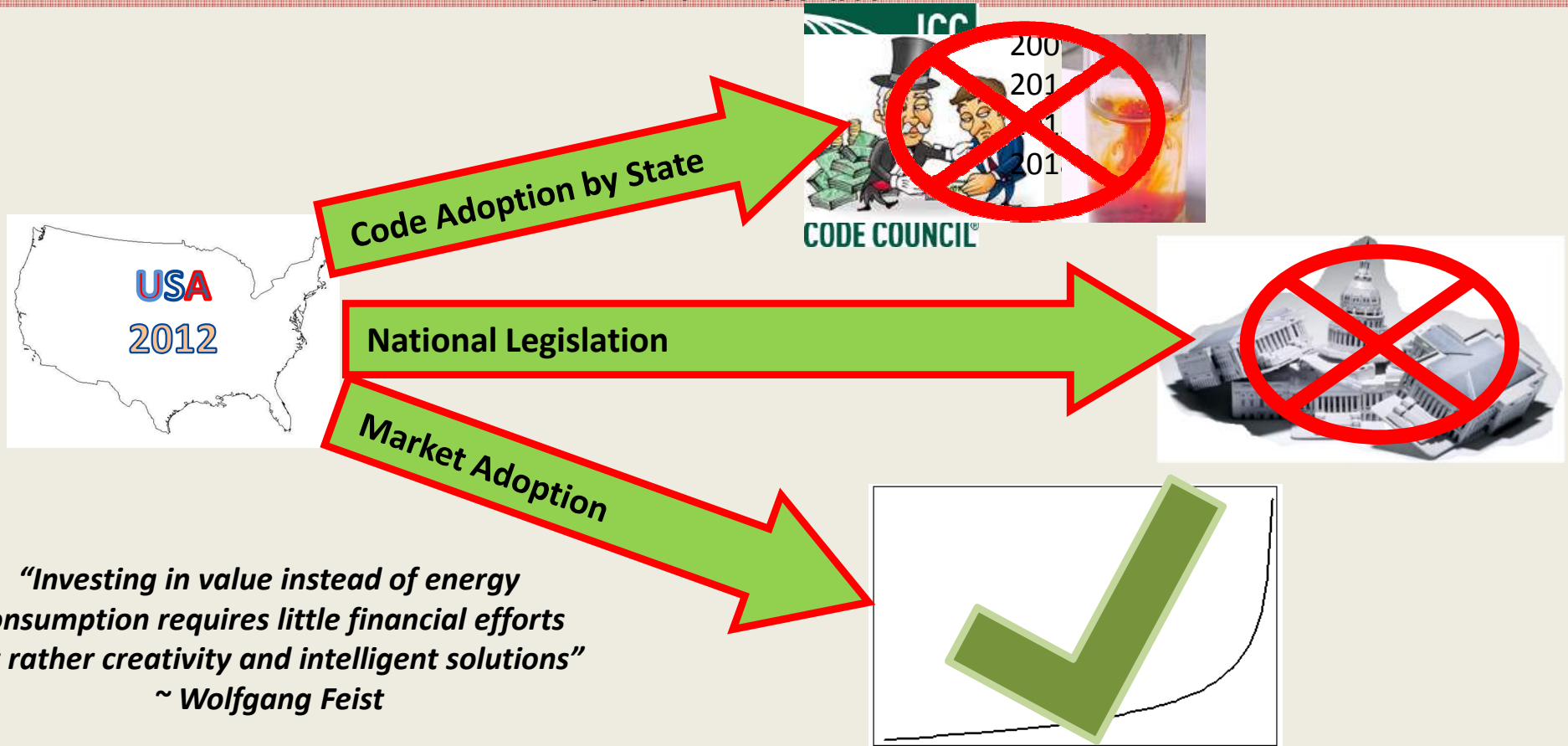
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We have no choice

From a 2012 Presentation



“Investing in value instead of energy consumption requires little financial efforts but rather creativity and intelligent solutions”
~ Wolfgang Feist



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Define the Problem

The first step in solving a problem

- Design & Construction

- Broken process
- Lack of integration
- Lack of respect
- Lack of basic physics
- Lack of a useful feedback mechanism
- Lack of components

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“Forget everything you know and walk in backwards” ~ Katrin Klingenberg



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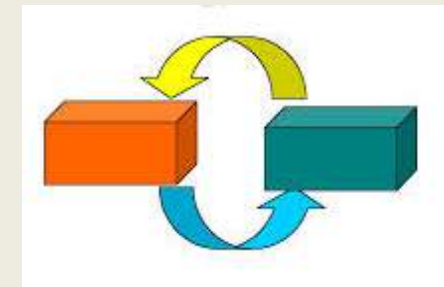
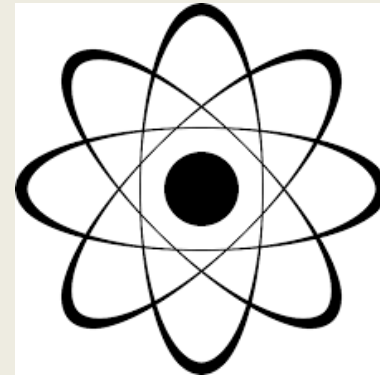
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What do we need to do?

- Break a better process
- Create a system for integration
- Lack of respect, humility and understanding
- Lack of basic physics in the profession in basic physics
- Design and use of feedback mechanisms
- Create test, projects and market components



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What do we need to do?

Create, test, refine and
market components



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Craft Solutions

Eliminate non-value added work

- Envision the product properties
 - The product will seek to create and leverage efficiencies in design, manufacturing and construction to create a market rate product as part of a solution for high performance construction in sector being served.
- Design
 - The product will allow designers flexibility but will allow designer to trade flexibility for reliable cost savings, quality control, ease of detailing, ease of energy modeling, robust durability
- Manufacturing
 - The product will embrace a lean standardized approach with minimized shop drawing, automated parts creation, single point entry, efficiency in factory motion
- Construction
 - The product will be intuitive to North American trades, consolidate or eliminate site labor, create simple solutions to complex issues



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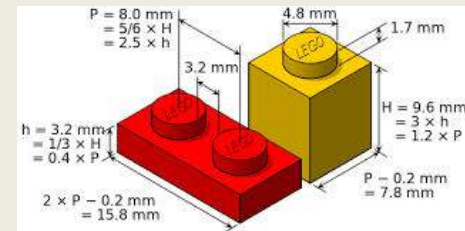
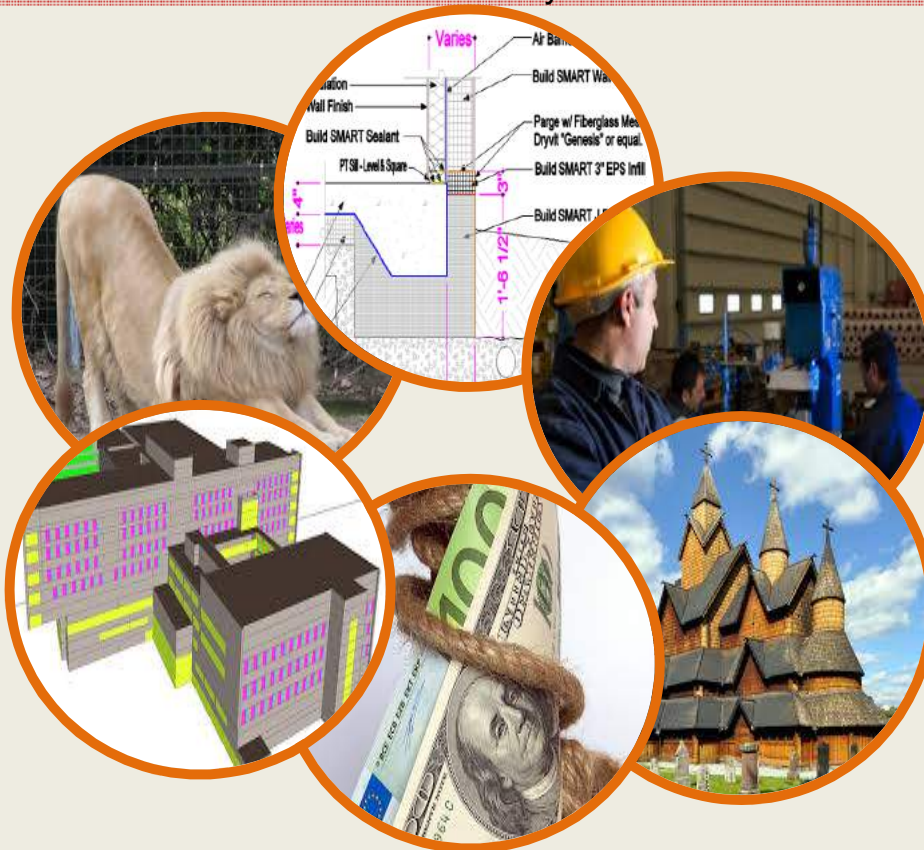


Design

Allows designers flexibility, constrains flexibility for reliable cost, quality control, ease of detailing, ease of energy modeling, robust durability

Standard System

- Think Lego ®
 - Design Flexibility
 - Ease of Detailing
 - Quality Control
 - Robust & Durable
 - Reliable Cost
 - Easy Energy Models



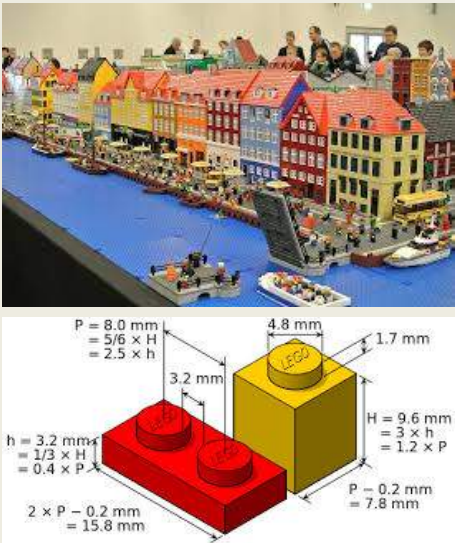
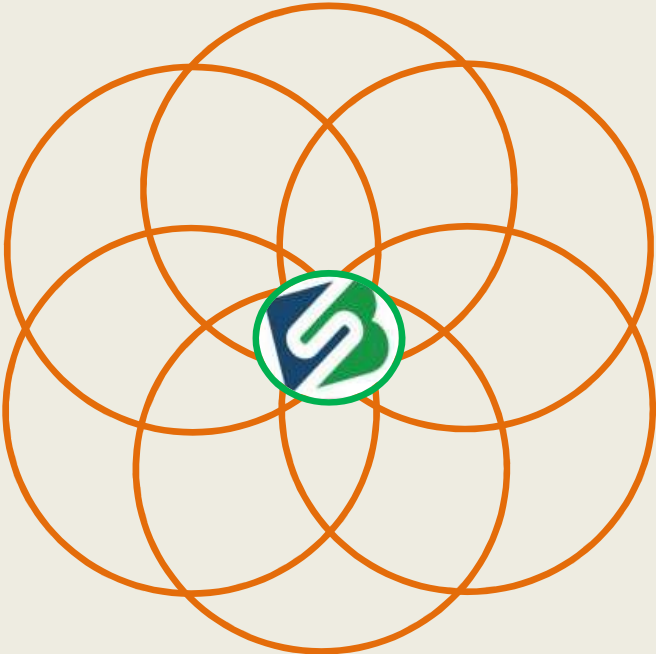
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Design

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- **Standard System**
 - Think Lego ®
 - Design Flexibility
 - Ease of Detailing
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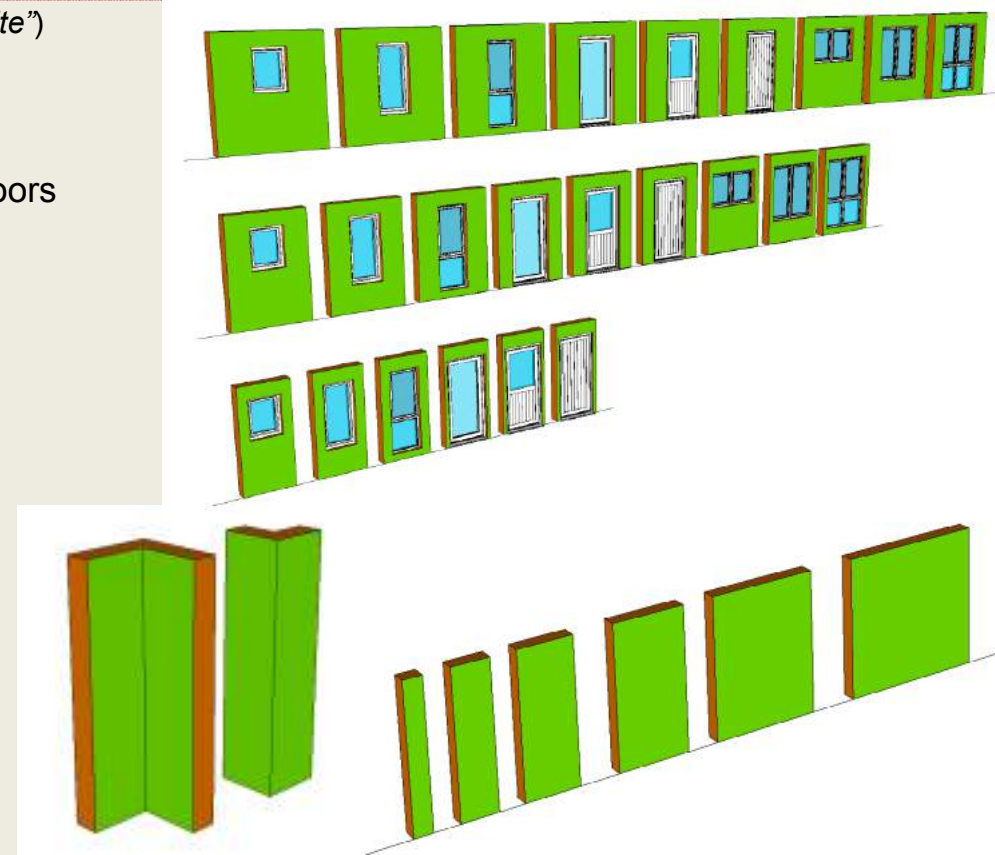


Manufacturing

Embrace a lean standardized work approach, minimized shop drawing, automate parts creation, single point entry, efficiency in factory motion

- **Standard System** (inspired by Henry Ford – “Any color as long as it’s white”)

- 8' & 9' Heights
- 1', 2', 3', 4', 6', 8' Straight Panels
- 2' Inside and Outside Corners
- Standard Passivhaus Certified Single & Twin Windows and Doors
- Affordable (Data from 54 projects priced)
 - Single Family \$20-\$30 (USD) per sq ft floor area
 - Multi Family - \$8-\$15 (USD) per sq ft floor area
 - Eliminates Shop Drawings
 - Components pre-cut & jigged to reduce production time
- EU Windows & Doors
 - Simplified Purchase
 - Delivered Installed & Airtight



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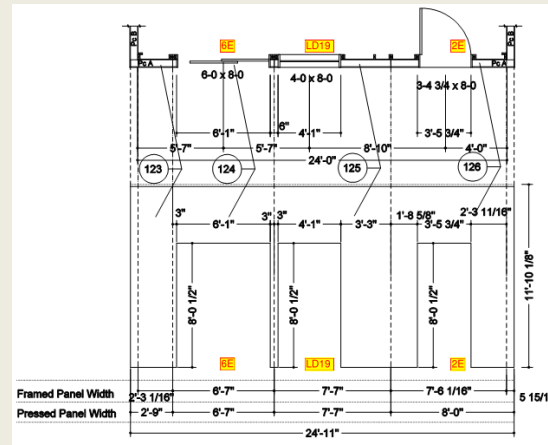
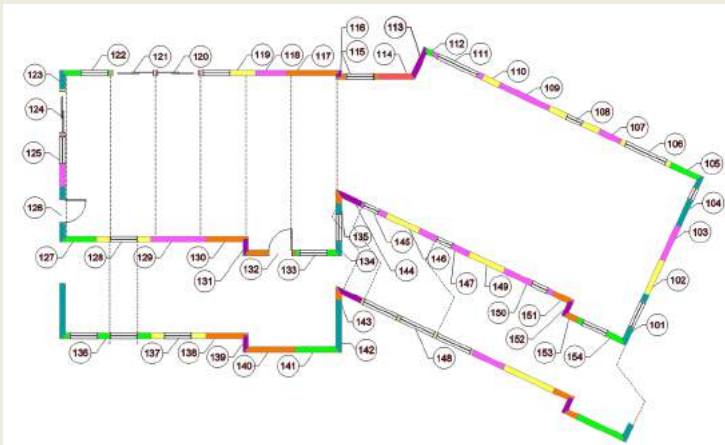
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Manufacturing

Two Systems, One Purpose – Making Passivhaus accessible to a larger market

• Custom System

- ANY Height
- ANY Configuration
- ANY Munster Joinery Passivhaus Certified Windows and Doors
- Affordable? - \$40-\$60 (USD) per sq ft floor area
 - NEED Shop Drawings
 - ALL Components - custom cut and layout
 - EU Windows & Doors –
 - Simplified Purchase
 - Delivered Installed & Airtight (when size allows)



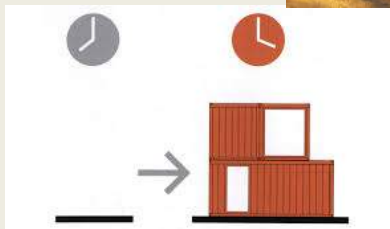
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Construction

The product will be intuitive to North American trades, consolidate or eliminate site labor, create simple solutions to complex issues

- Modular systems
 - Slab Foundations
 - Basement Foundation
 - Framed Walls
- Require basic skills
- Requires less labor
- Allows faster construction



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Construction

J Form



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Construction

J Form ~ Bottom Plate



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Construction

Walls



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Construction

Band



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Construction

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Construction

Basement



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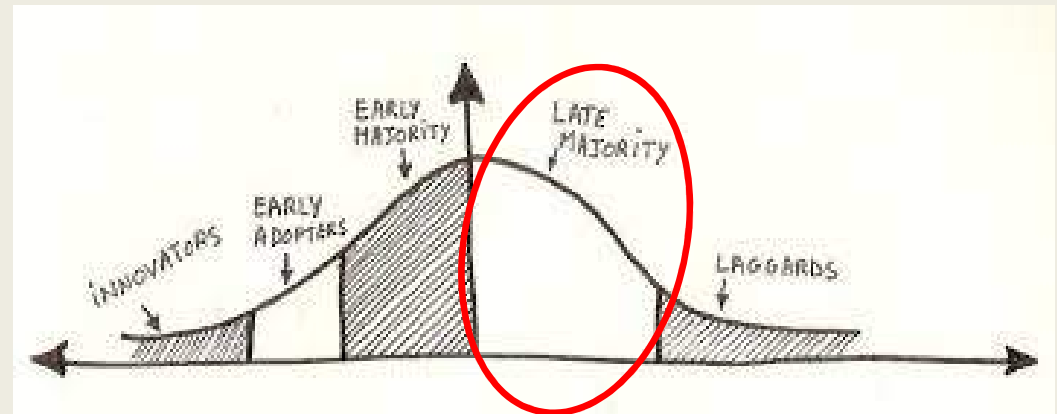
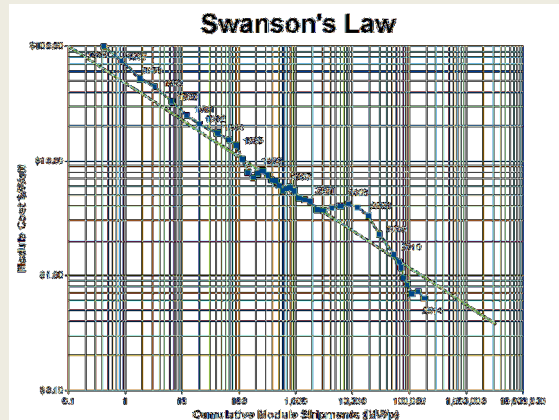
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Is this really the solution?

Of course not, it's a step on the way!



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Questions & Contact



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