
Solid Wood Technologies Symposium

High Point, NC
April 19-21, 2007

Stiles Solid Wood TechnologiesSM
April 19-21, 2007

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Your success is our business.

Art Raymond



- **Art Raymond is a manufacturing consultant to the furniture and cabinet industry. His company, A. G. Raymond & Company, assists its clients in solving management and technical problems in manufacturing strategy, process development, facilities design, materials handling, and supply chain management. The firm has worked with over 180 clients in the United States and 21 foreign countries.**
- **Art graduated from N. C. State University in 1969 where he serves as an adjunct professor and guest lectures on a variety of topics in the furniture and wood products programs. He writes a regular column for *FDM* magazine and the Wood Machinery Manufacturers of America's newsletter, *The Cutting Edge* and publishes a quarterly newsletter, *The Wood World Monitor*.**



The Efficient Factory: Putting It All Together

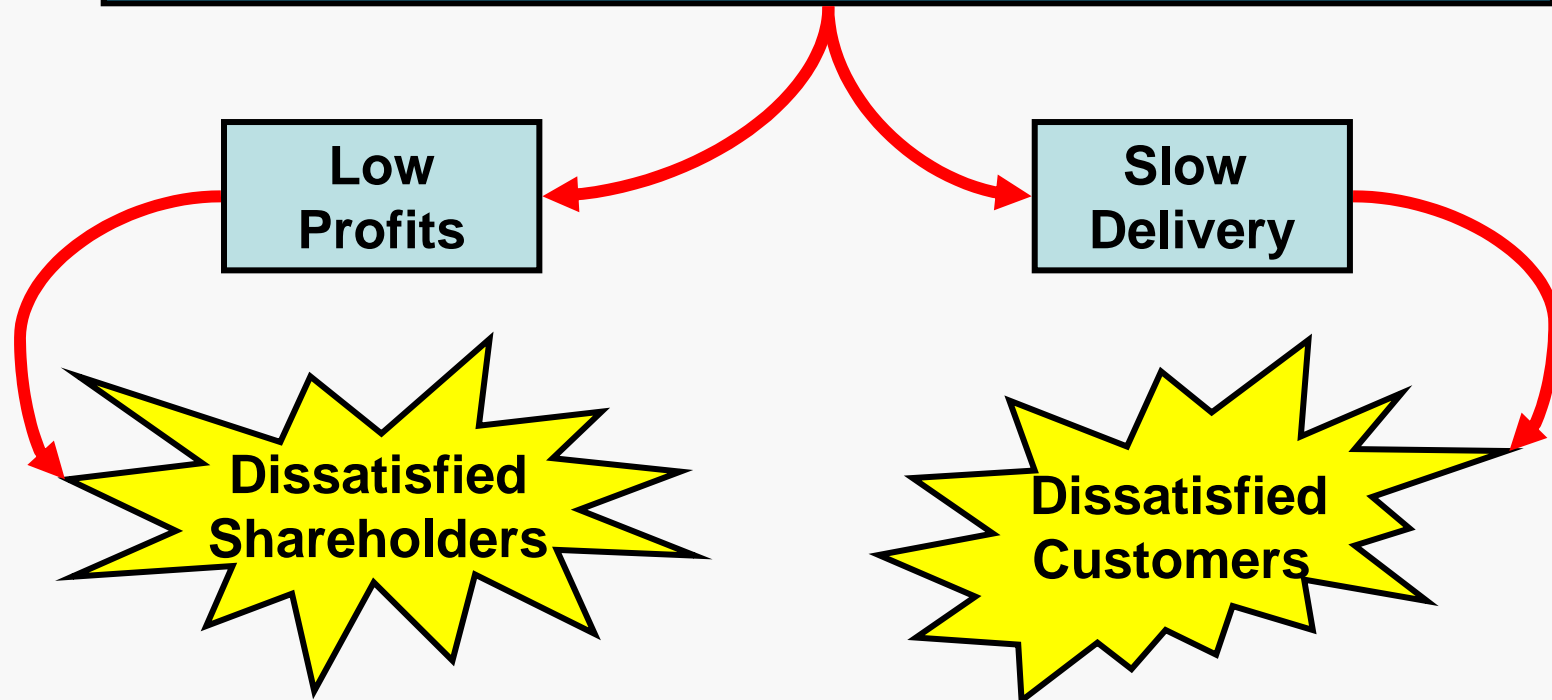
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Typical Results

- Low Labor Productivity
- High Material Costs
- High Inventories
- Inconsistent Quality



Your Challenge

If you intend to be competitive in your market, your factory must profitably deliver **VALUE...**

VALUE = *The Right Product to The Right Place
at The Right Price and Right Time*

Levers of Success

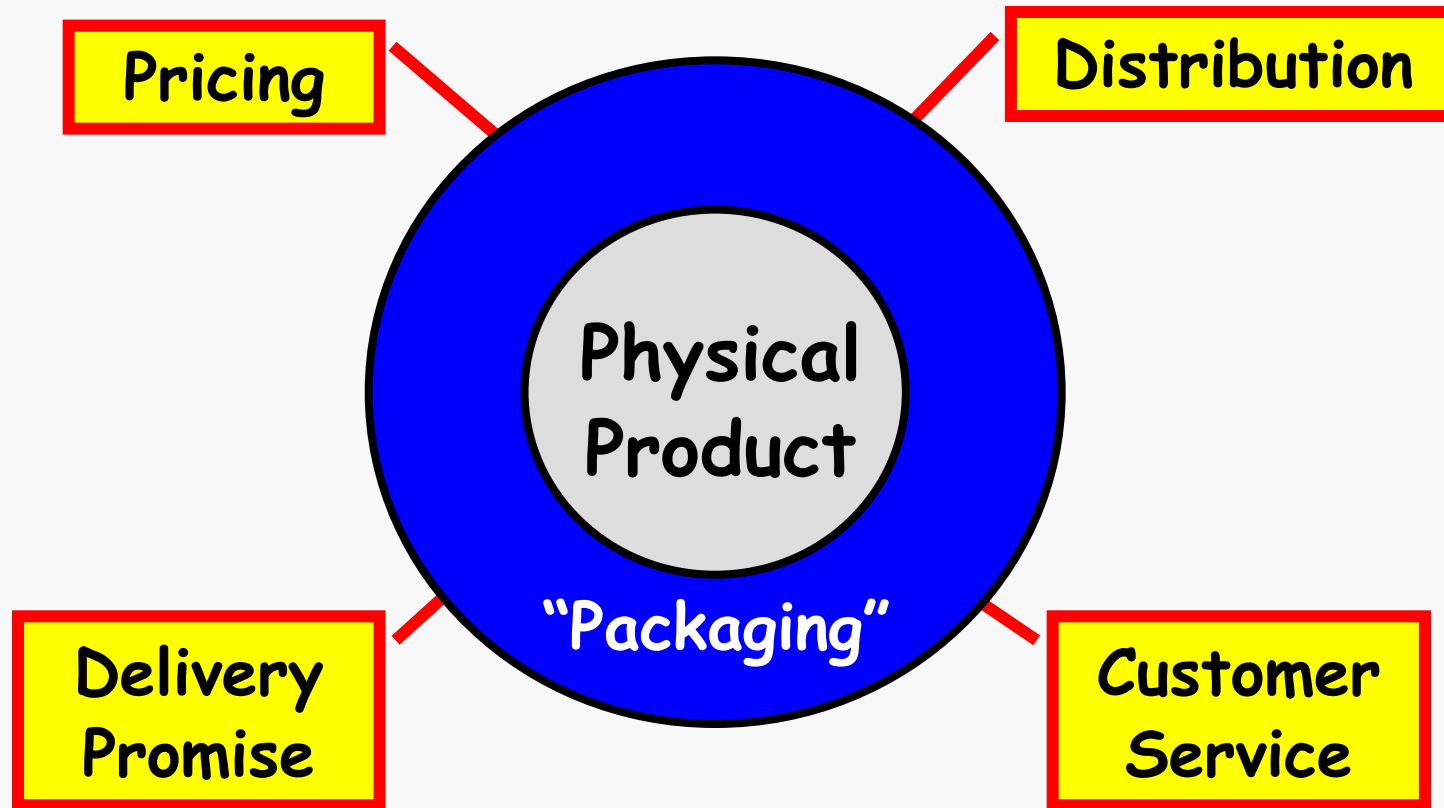
1. *Understand your company's strategy*

→ Know:

- > The customers you are targeting
- > The products you offer
- > How you create value for your customers

“Even the most efficient business cannot succeed if it is efficient at the wrong things.”

Your Offering



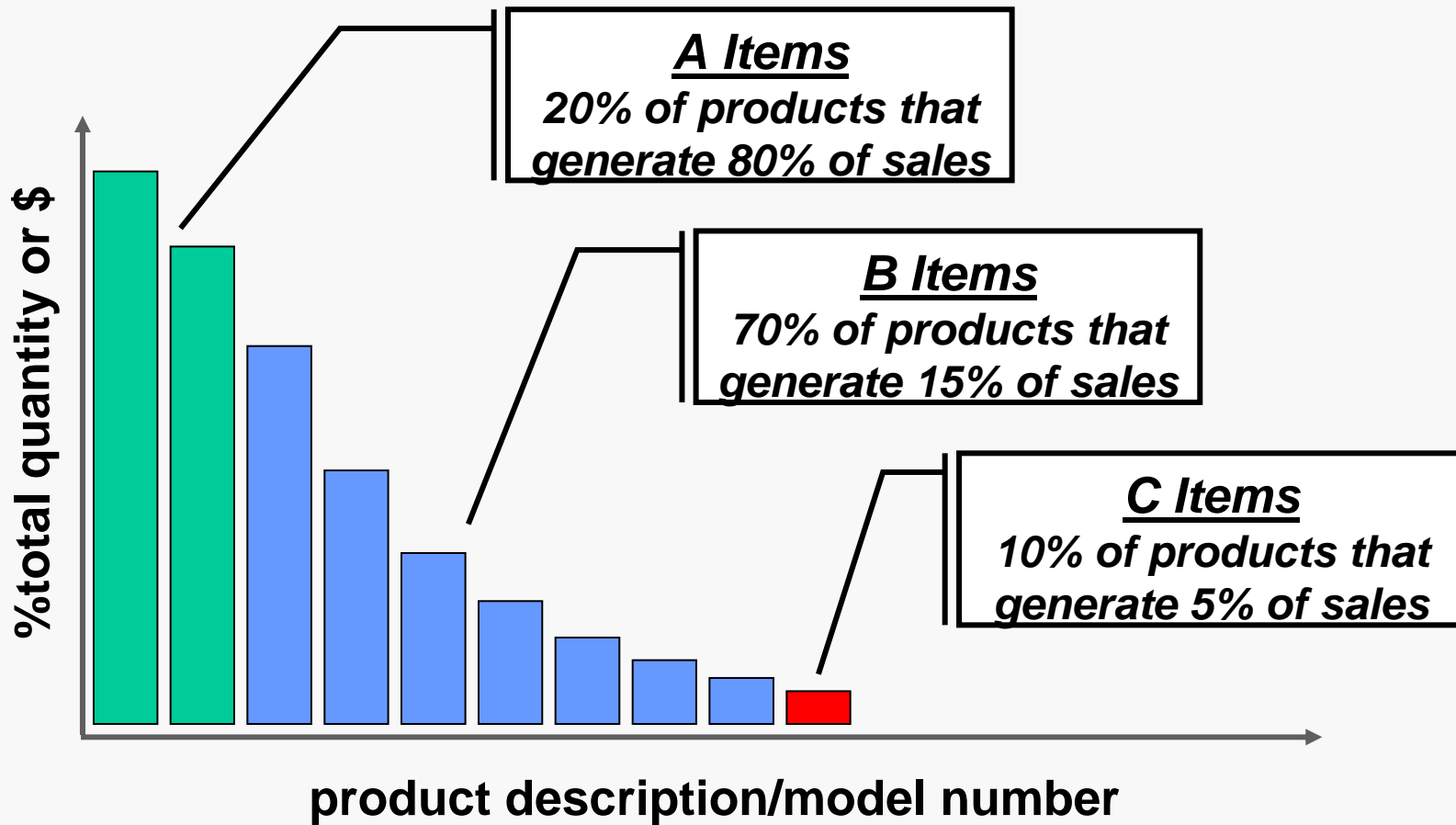
Levers of Success

1a. Focus your plant(s) on your core products



→ Understand the volume relationships in your product line

Volume Relationships



Levers of Success

1a. Focus your plant(s) on your core products

- Understand the volume relationships in your product line
- **Select the type(s) of product focus you can use:**
 - > Product line
 - > Part family
 - > Volume
- **Divide your plants into product-focused work groups and/or “plants within a plant”**

Levers of Success

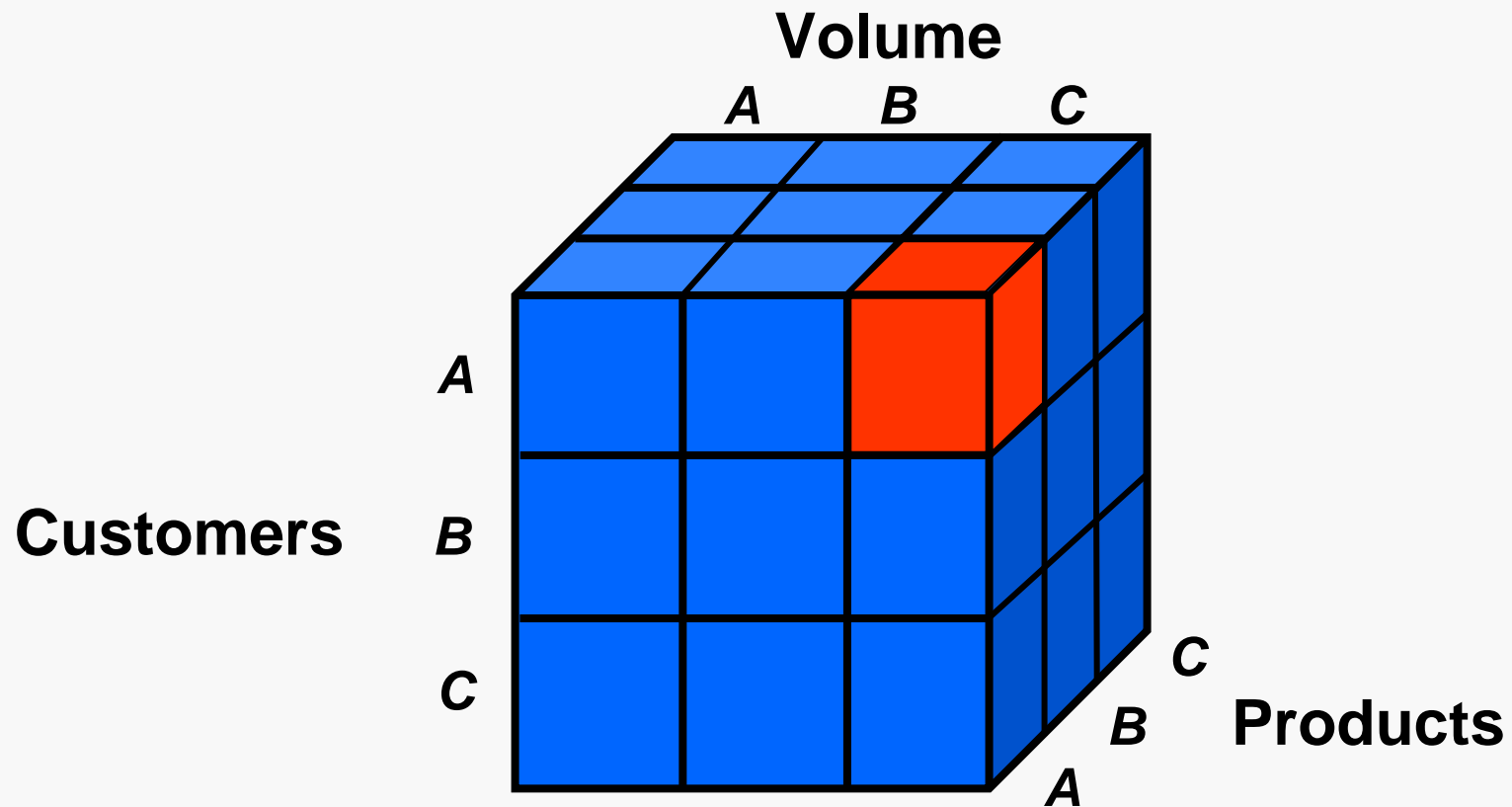
1b. Focus on your core customers.



→ Remember that 20% of your customers generate 80% of your sales and perhaps more of your profits.

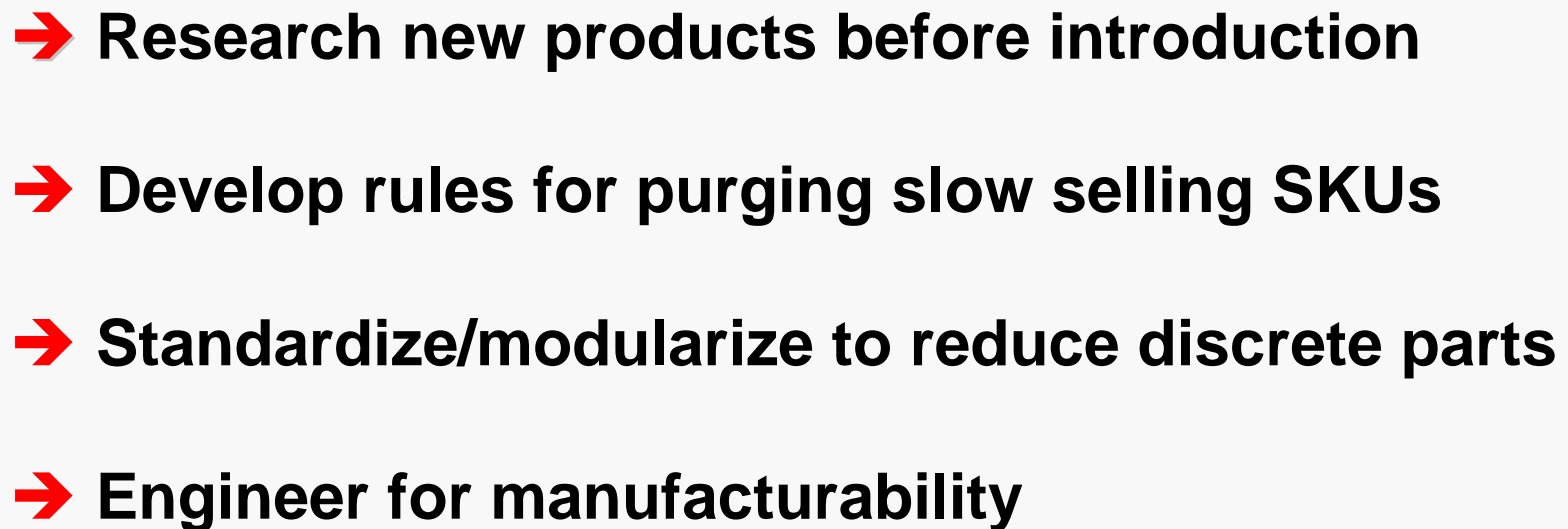
Profit from Focus

Achieve efficiency by focusing on all three elements...



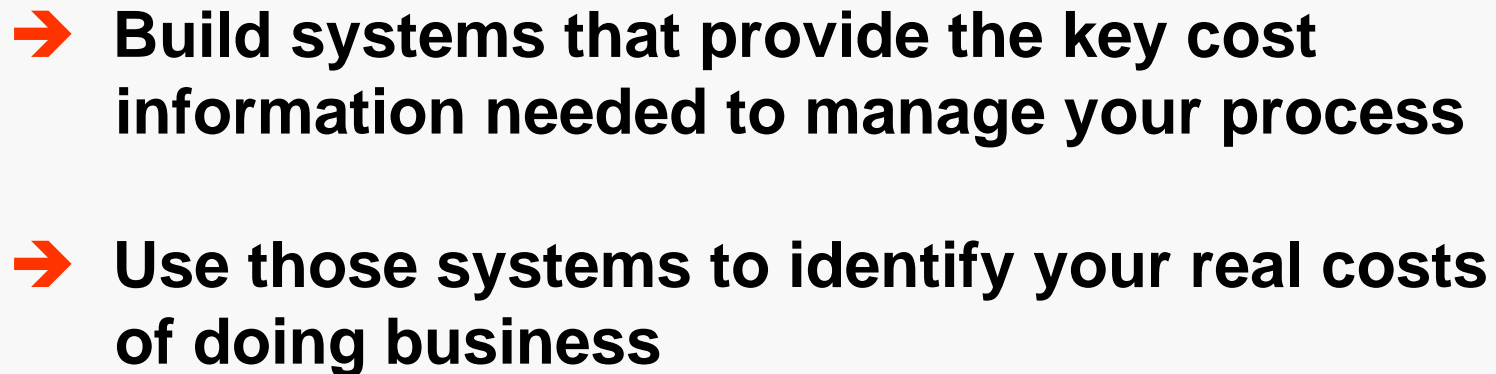
Levers of Success

2. *Manage and engineer your products carefully*

- 
- Research new products before introduction
 - Develop rules for purging slow selling SKUs
 - Standardize/modularize to reduce discrete parts
 - Engineer for manufacturability

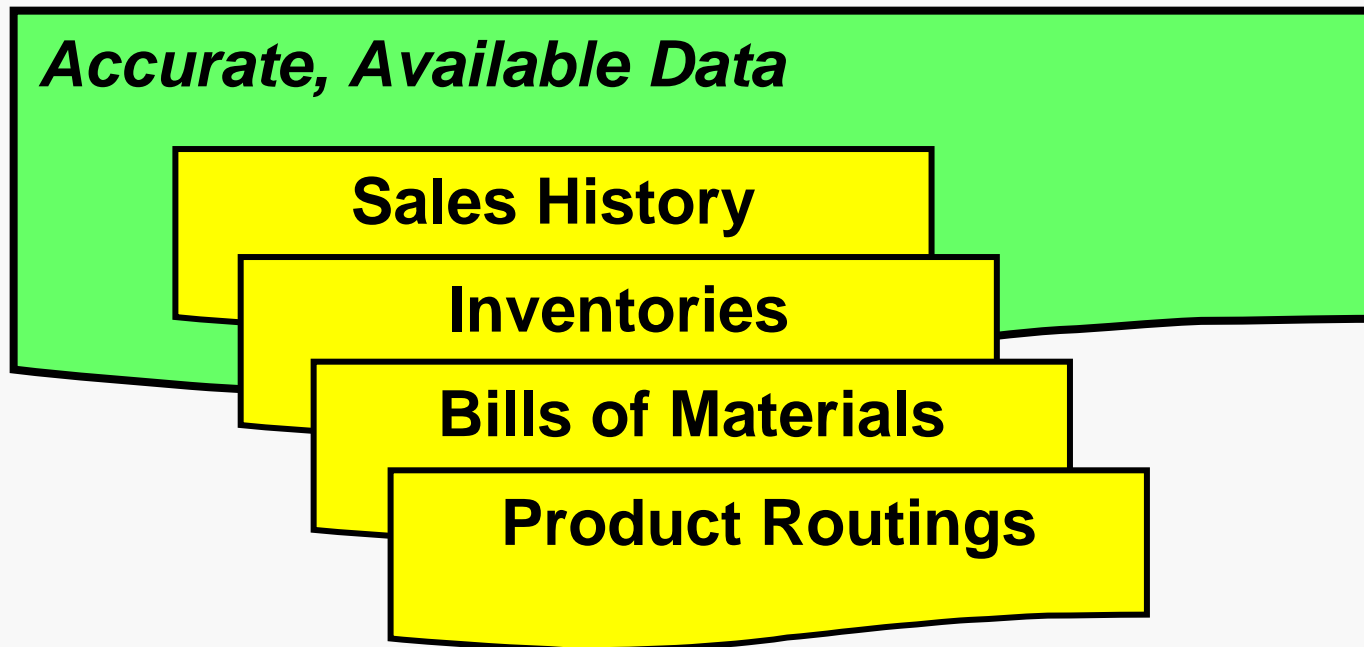
Levers of Success

3. Know your real costs

- 
- Build systems that provide the key cost information needed to manage your process
 - Use those systems to identify your real costs of doing business

Data Requirements

The information you need to manage effectively include these source data...



Levers of Success

4. Capitalize on your manufacturing strengths



→ Focus your manpower and capital on doing those tasks that you do well and buy the rest

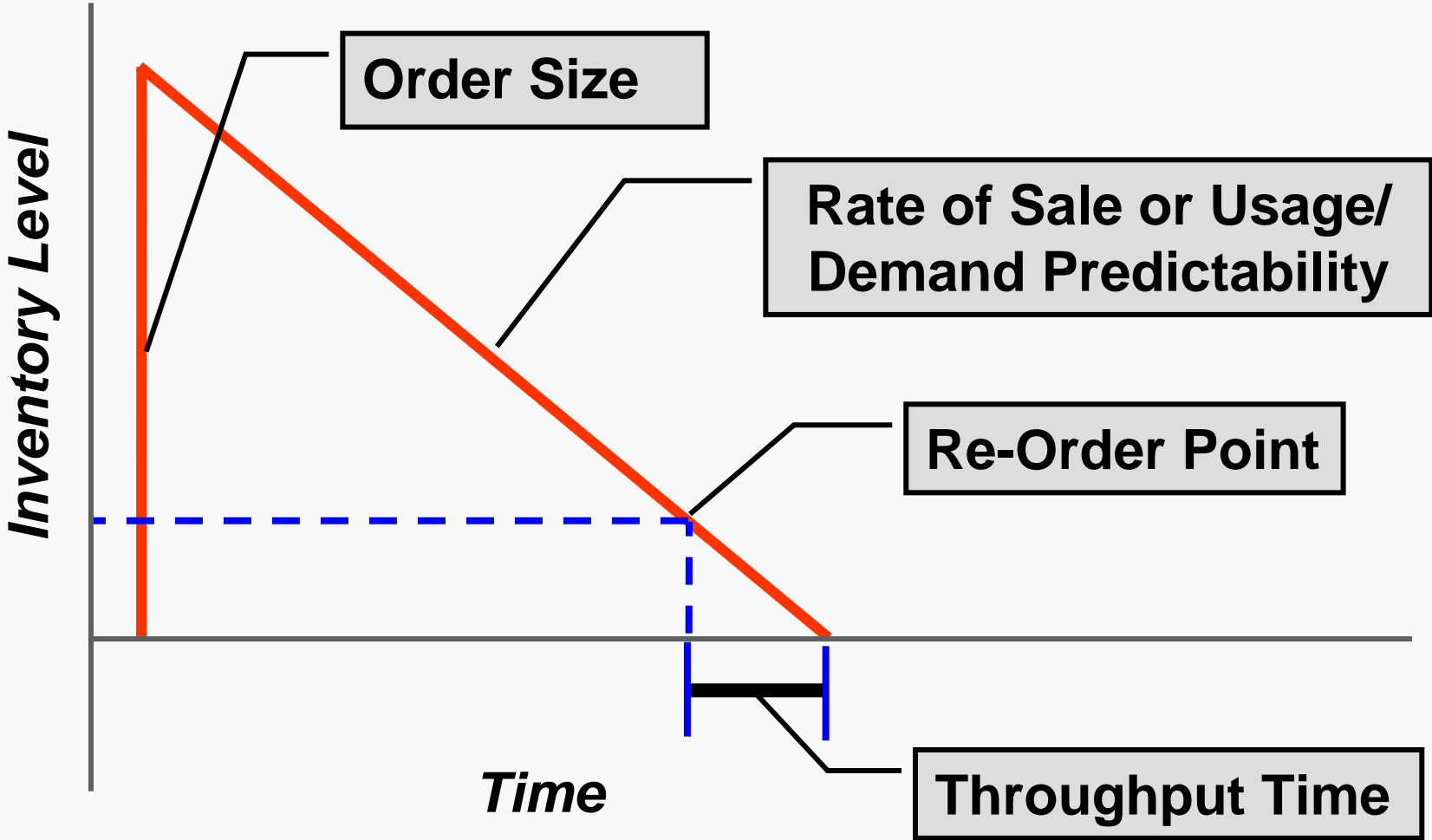
Levers of Success

5. Lean out your process

- 
- **Eliminate waste**
 - > **Material**
 - > **Labor**
 - > **Space**

 - **Right size inventory**

Inventory Drivers



Levers of Success

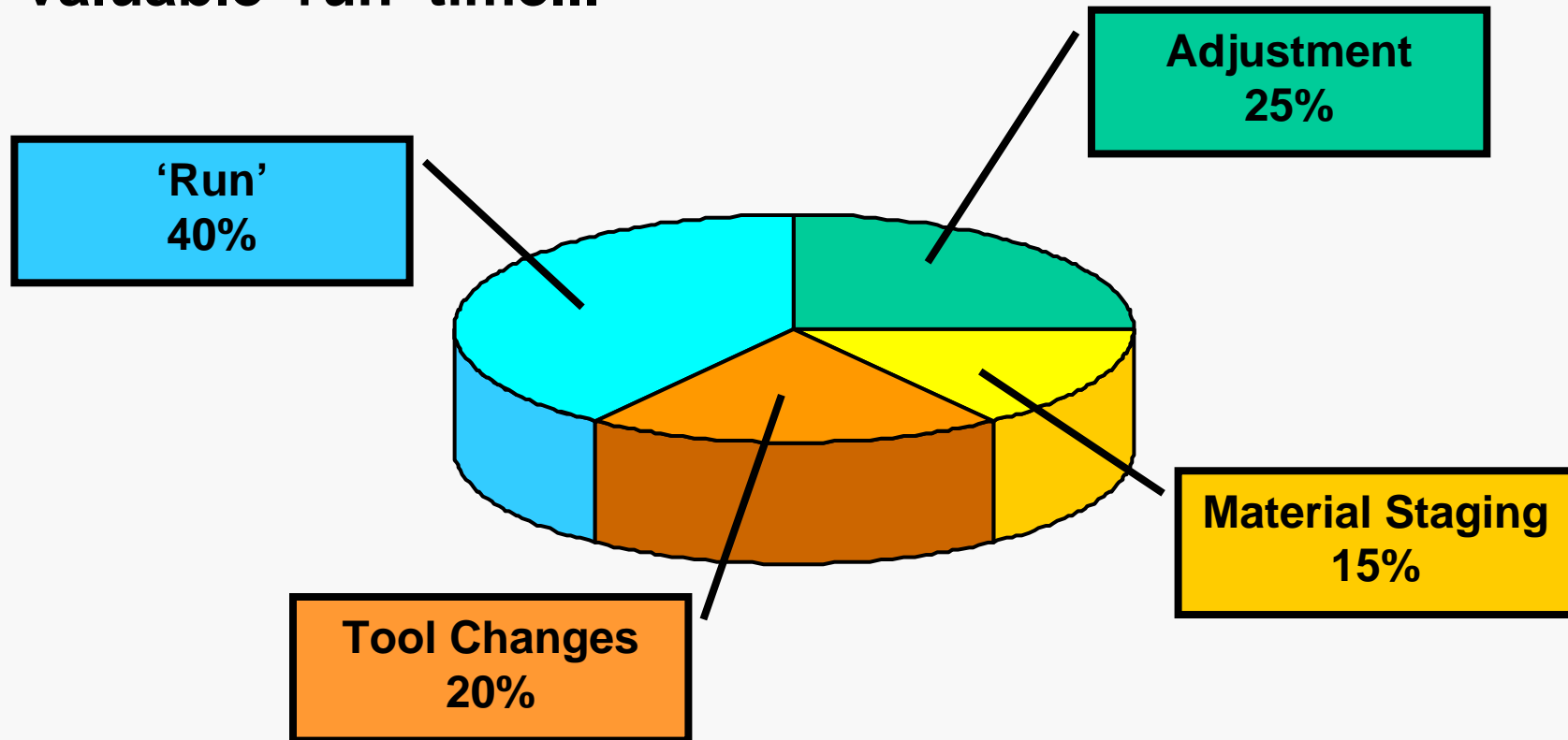
6. Choose machinery to match your demands



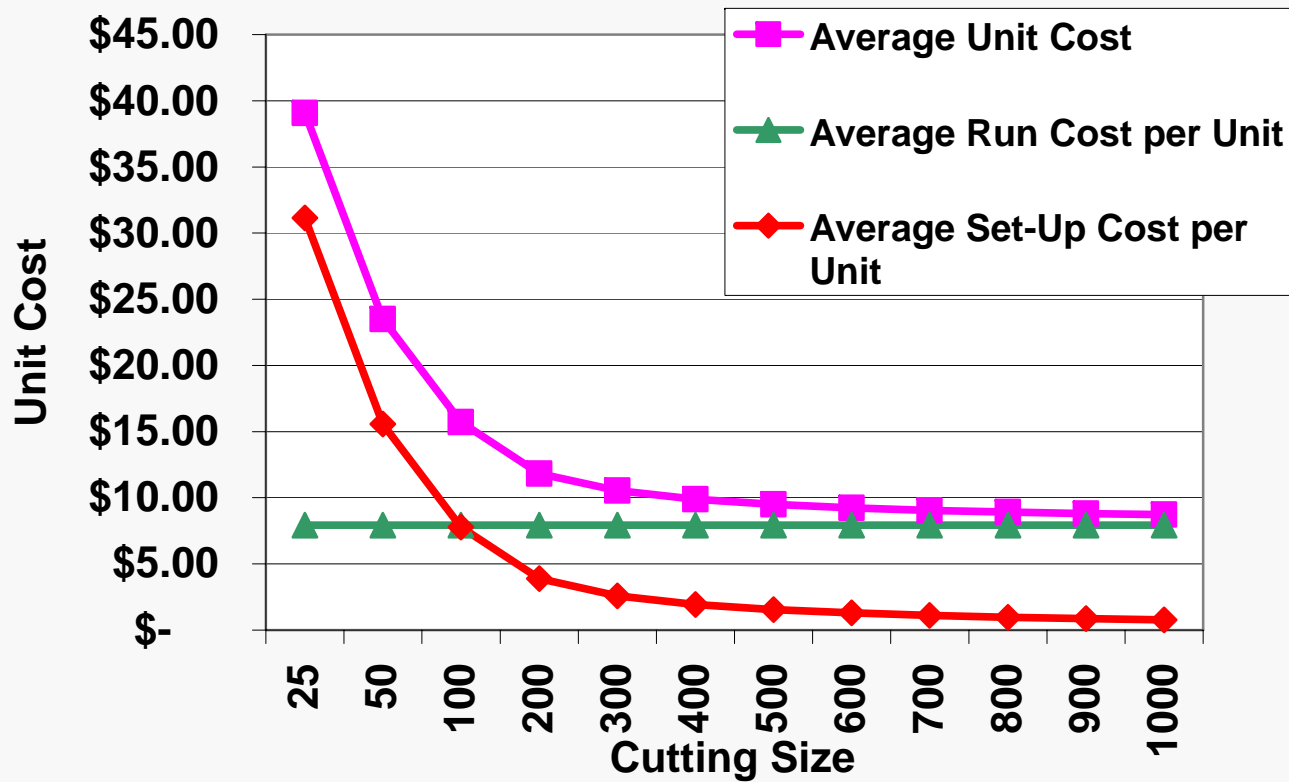
→ Understand your set-up economics

Set-Up Economics

Time spent in set-up and tool changes consumes valuable 'run' time...



Set-Up Economics



Levers of Success

6. Choose machinery to match your demands

- Understand your set-up economics
- **Customize conventional machines**
- View “bigger, faster” machines with caution
- **Match machines to your volume demands**
- **Use conventional machinery creatively**

Levers of Success

7. Engineer your plant floor carefully

- Organize for optimum process proximity
- Select optimal handling equipment
- Remember support infrastructure needs
- Create a place for everything so that everything can be kept in its place

Organizing The Factory Floor

- **Divide your process into logical activities/sub-activities**
- **List the process machinery required for each activity**
- **Understand the production rate of each activity**
- **List the material/process flows within and between the activities**
- **Define the type of organization for each activity**

Organization Types

The general organization types are...

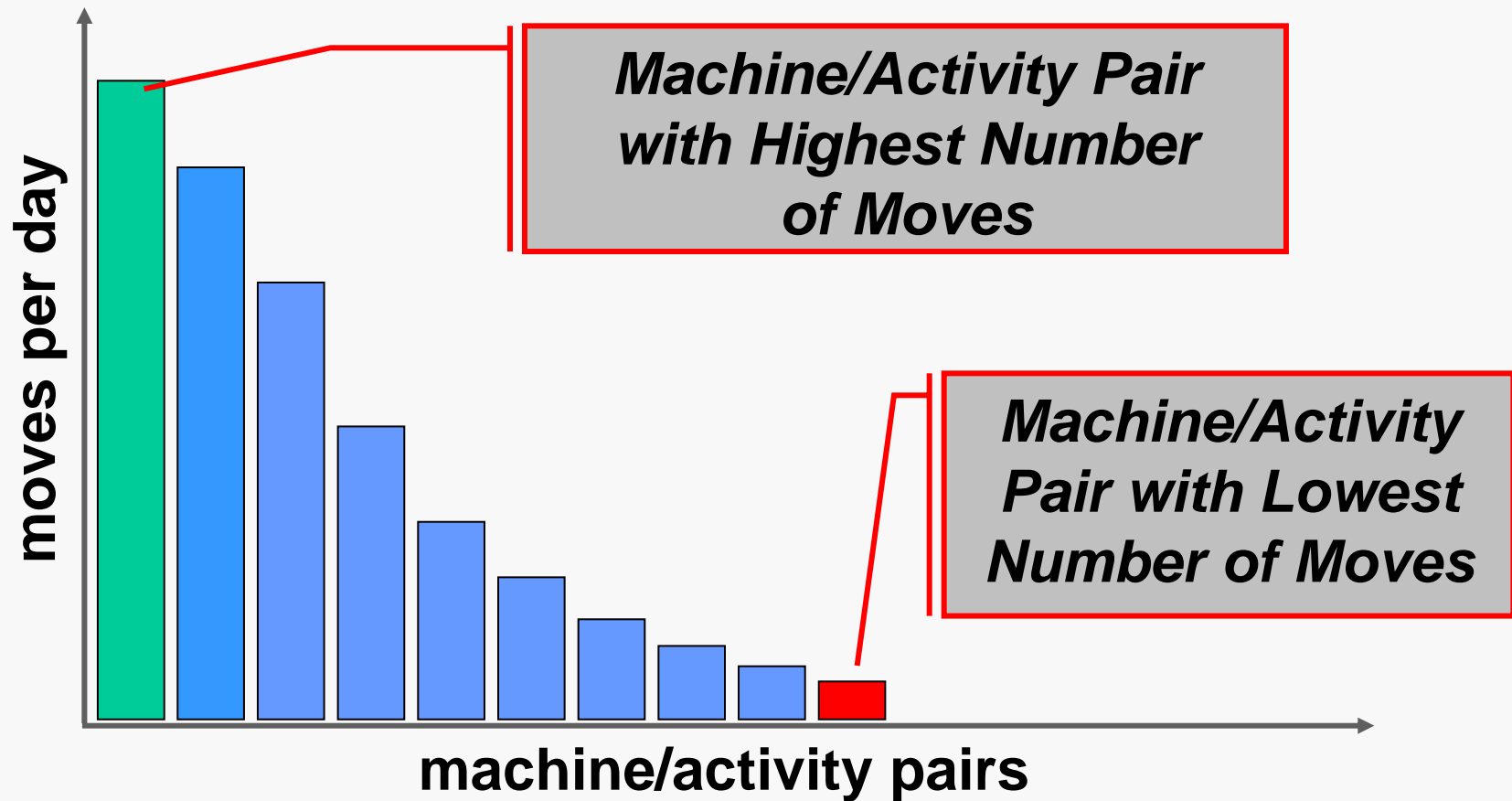
- **Process Layout**
- **Part or Product-Focused Job Shop**
- **Semi-Cell**
- **Cell**
- **Flow Line**
- **Super Machine**

The From-To Chart

A *From-To Chart* tracks the movement of parts...

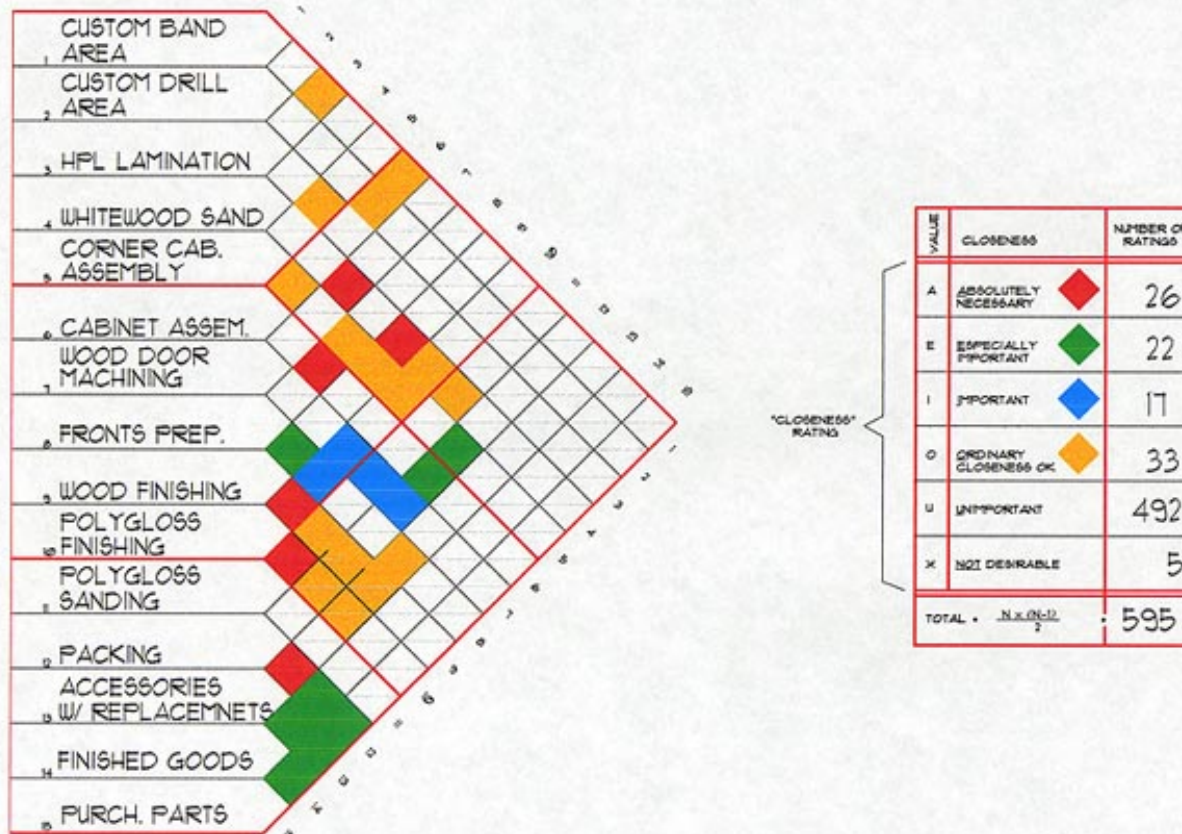
From \ To	In	Gang Rip Saw	Resaw	Cut-Off Saw	A. Planer	Moulder	DE Tenoner	Band Saw	Hubber
In		11	2		9	20	5		
Gang Rip Saw					1	4	5		
Resaw						2			
Cut-Off Saw							1		
A. Planer		1					8		
Moulder				1			27	3	
DE Tenoner		3				10			
Band Saw							2		
Hubber									

Using From-To Chart Data



The Activity Relationship Chart

An *Activity Relationship Chart* illustrates the optimal proximity of various operations and functions...



Materials Handling Principles

Remember these principles in selecting handling equipment...

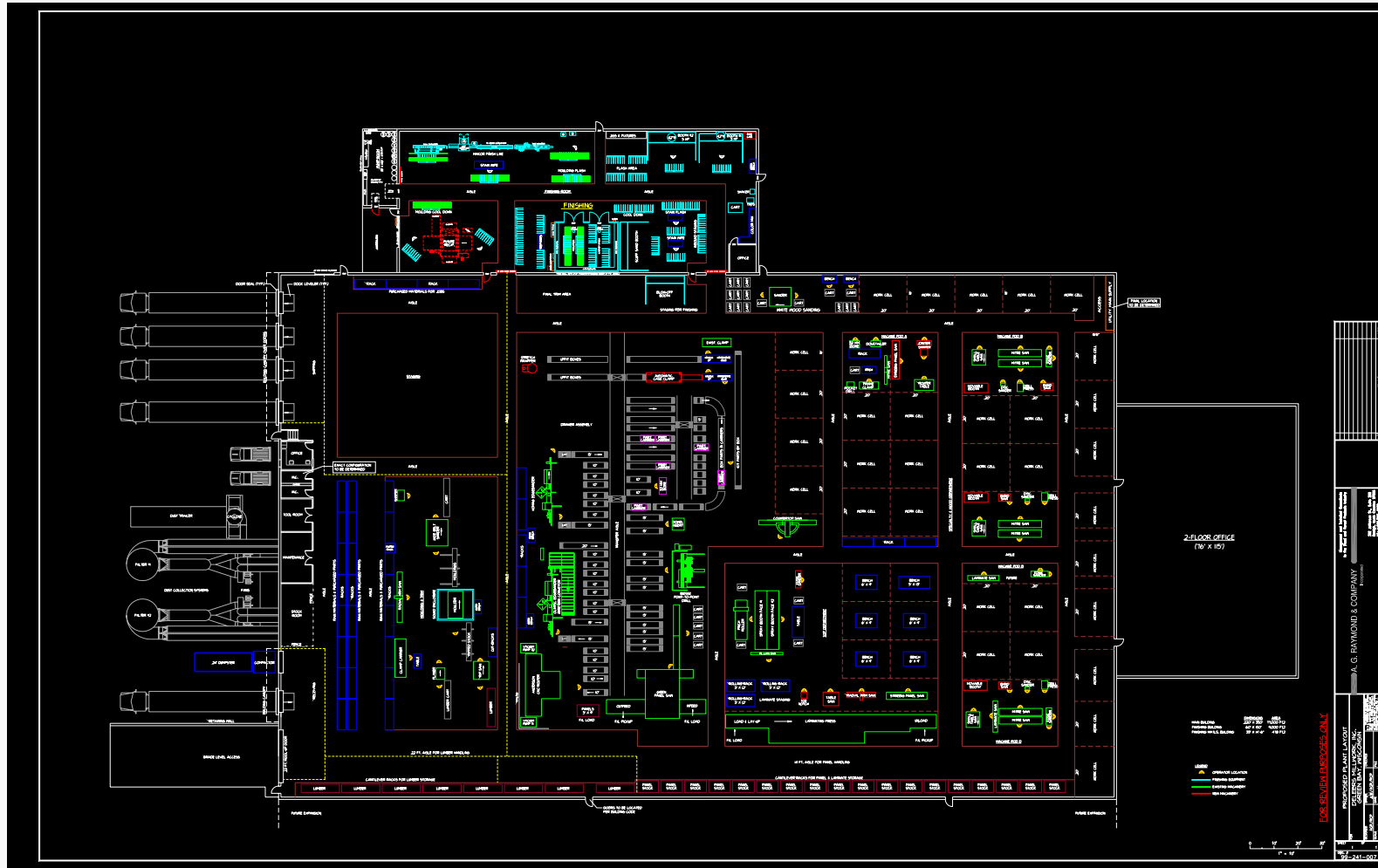
- **Handling adds cost not value**
- **The best system is no handling at all**
- **Hazardous handling activities must be eliminated**
- **Handling equipment should utilize space effectively**

Infrastructure Requirements

More than process machinery must be considered in creating an efficient factory...

- **Dust Extraction**
- **Air Compressors & Piping**
- **Heating/Ventilation/Air Conditioning**
- **Lighting**
- **Process Electric**

The Detailed Layout



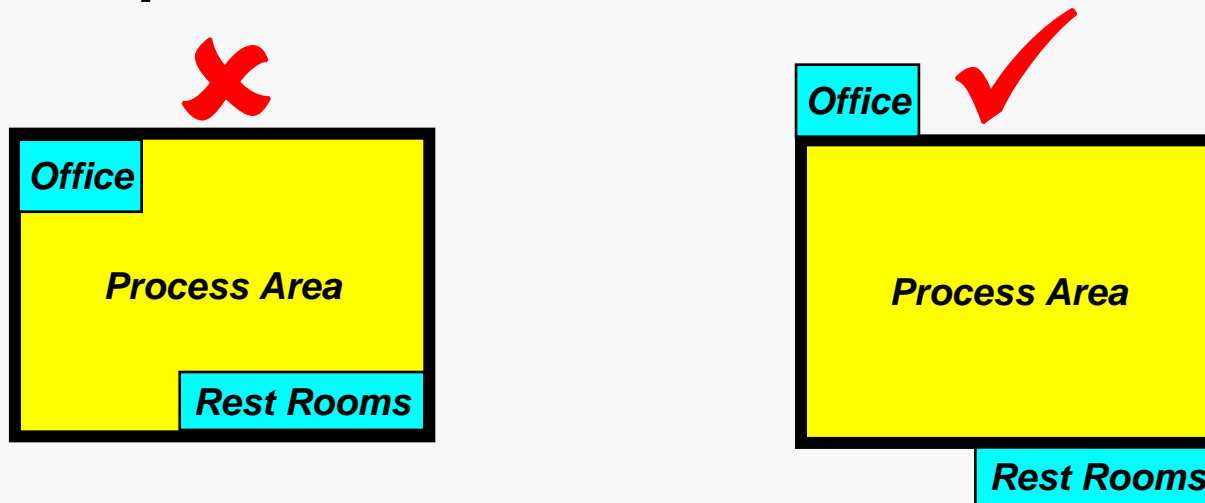
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Sidebar - Building Design Rules

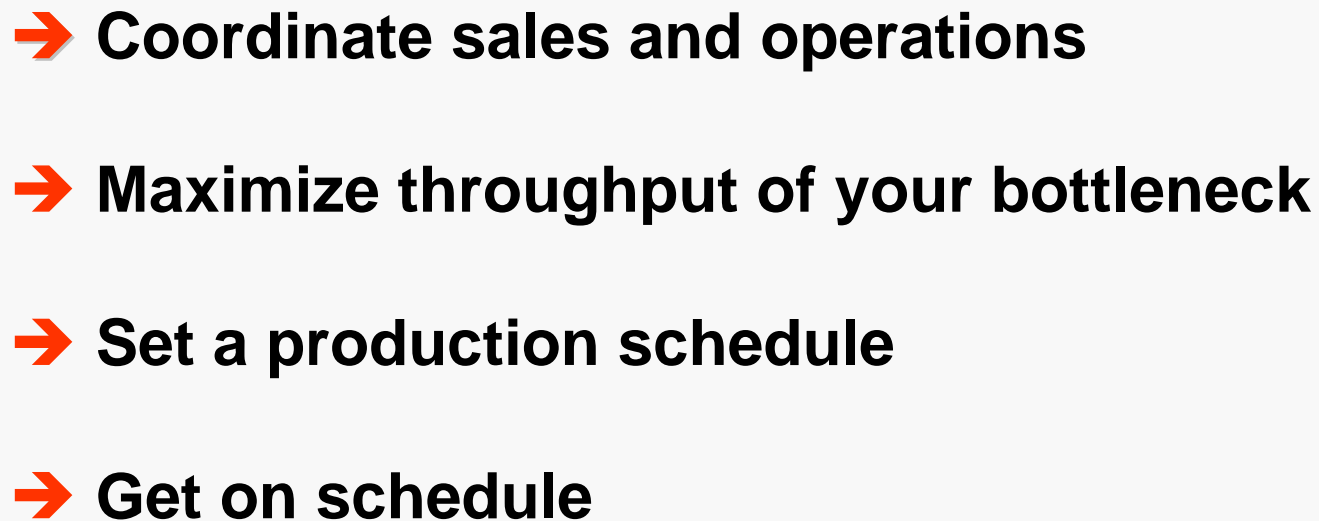
- Don't build a monument to architectural design
- Keep the process areas clear



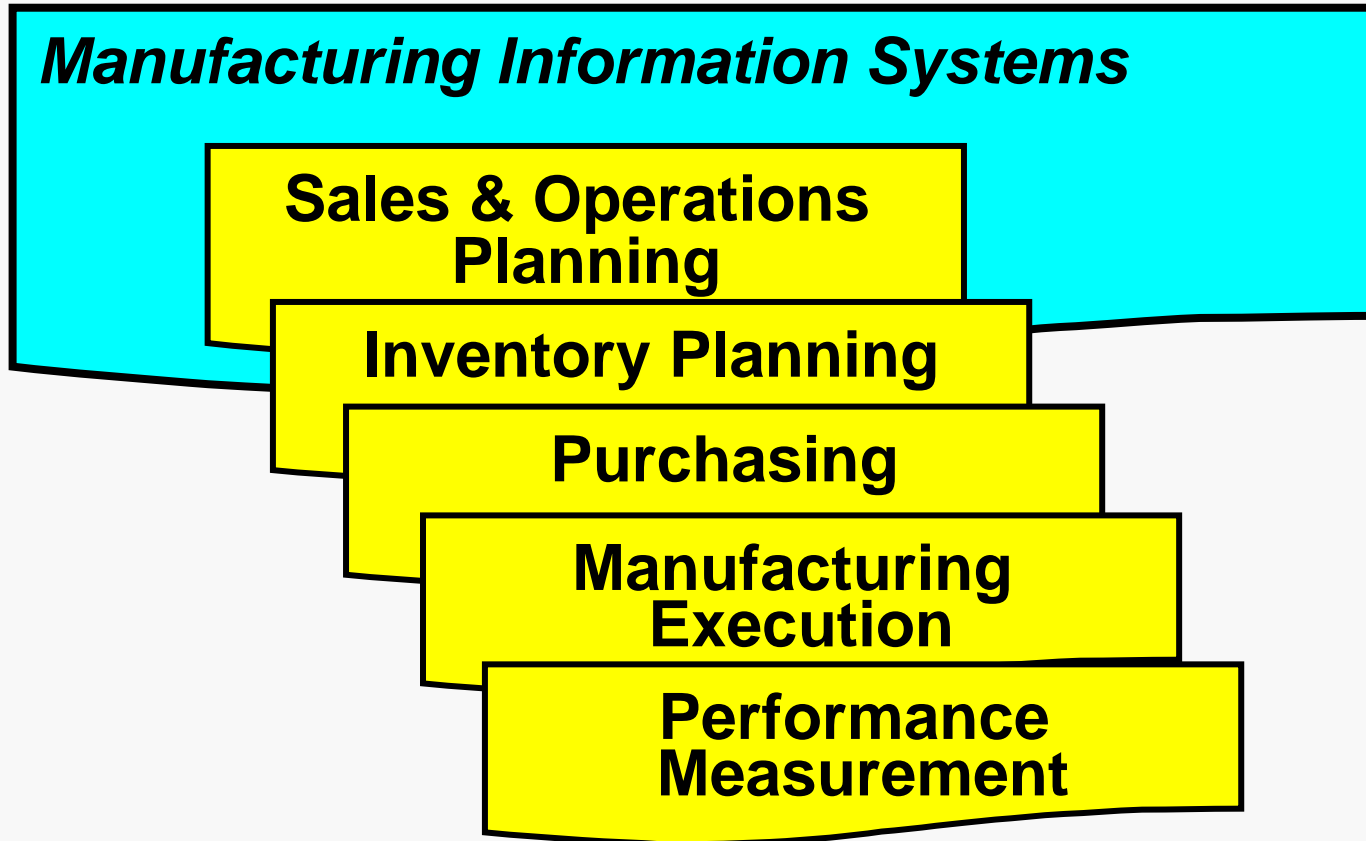
- Complete the process layout before finalizing the building design

Levers of Success

8. *Systemize operations management*

- 
- **Coordinate sales and operations**
 - **Maximize throughput of your bottleneck**
 - **Set a production schedule**
 - **Get on schedule**

Manufacturing Management Tools



Levers of Success

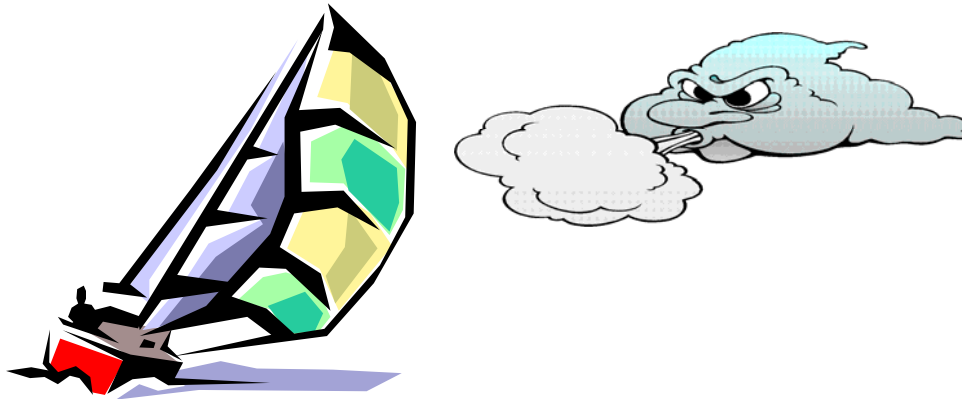
9. Educate, inform, and motivate your workers.

- Conduct a formal employee education program
- Develop leadership throughout your company
- Empower your workforce
- Publish your key performance indicators
- Pay for new skills

Levers of Success

10. Improve continuously

“We cannot direct the wind ...



but we can adjust the sails.”

- K. Suzuki

Benefits

A well-managed plant has these advantages...

- **Lower inventories**
- **Higher capacity utilization vs. plan**
- **Less plant space**
- **Shorter throughput time**
- **Reduced scrap and rework**
- **Higher labor productivity**

One More Thought

Be creative in developing your strategy and process, selecting equipment, and designing your factory...

“A company can’t outperform its rivals if it competes the same way they do.”

**For more information on creating a world class factory
contact...**

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