

# OFFSHORING ENGINEERING

***“A Glocalization Conundrum ?”***



**National Academy of Engineering  
October 24- 25, 2006**

**Jim Porter  
Chief Engineer and VP  
Engineering and Operations**



*The miracles of science™*

# What Does It All Really Mean?????????

- **Globalization**
- **Localization**
- **Out Sourcing**
- **In Sourcing**
- **Smart Sourcing**
- **On Shoring**
- **Off Shoring**





SilverStone®  
non-stick coatings

Pioneer®  
hi-bred seed

Supro®  
isolated soy proteins

Corian®  
surfaces

Kevlar®  
brand fiber

Delrin®  
acetal resins

Tyvek®  
flexible sheet products

Surlyn®  
resins

Teflon®  
fabric protector

Nomex®  
brand fiber and paper

Suva®  
refrigerants

Ti-Pure®  
titanium dioxide

## DuPont Today

- **\$28 Billion Revenue**
- **58,000 Employees**
- **19,000 Engineers**
- **Operations in 70 countries, 6 Continents**
- **200+ Facilities**
- **1600 Trademarks and Brands**



Soy Protein

Mylar®  
polyester film

Inkjet Inks

Biomax®

Zodiaq®  
surfaces

Accent®  
herbicide

Mylar®  
Packaging

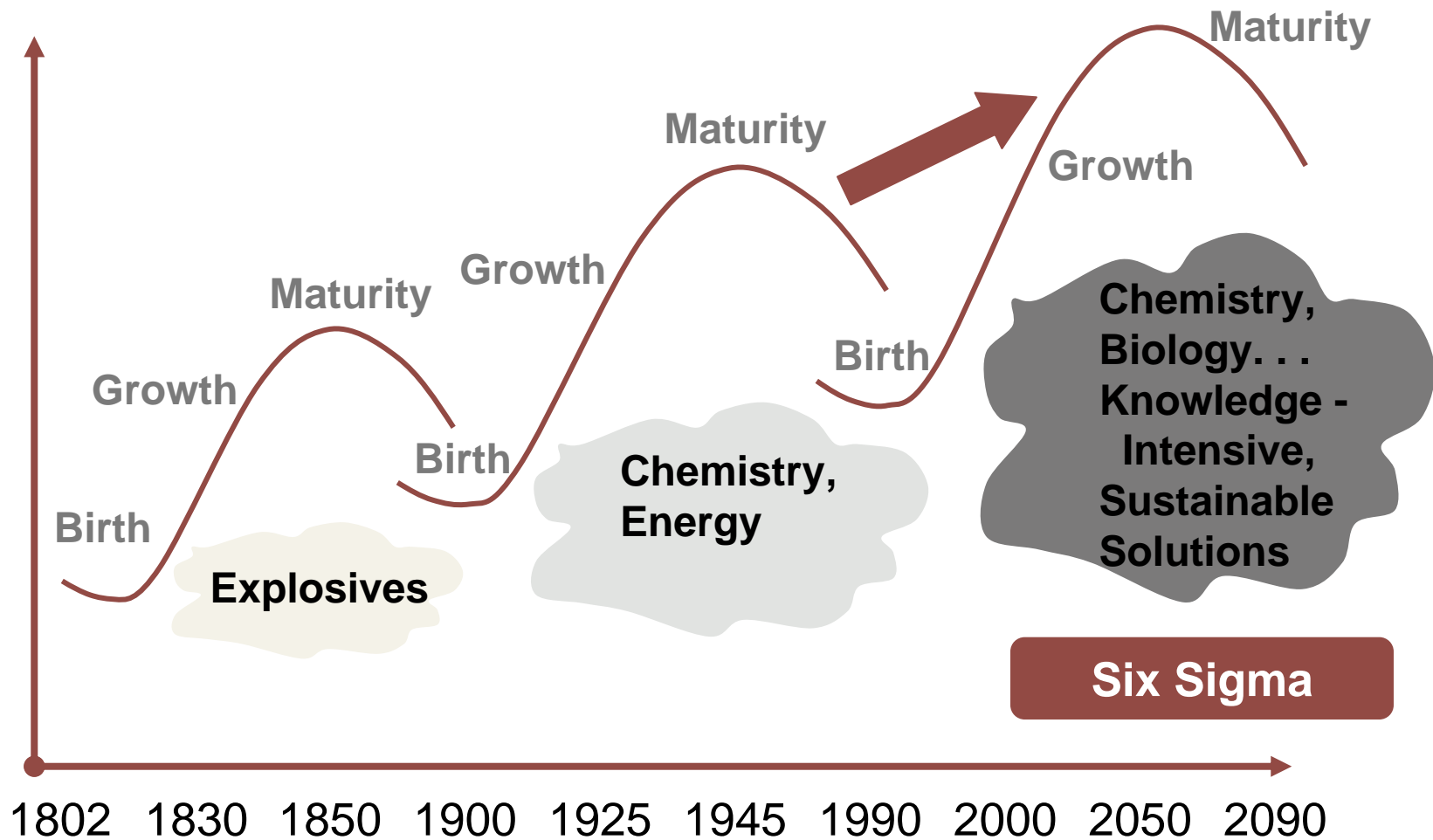
Centari®  
automotive and refinish

SmartPaint®

Sontara®  
spunlaced fabric

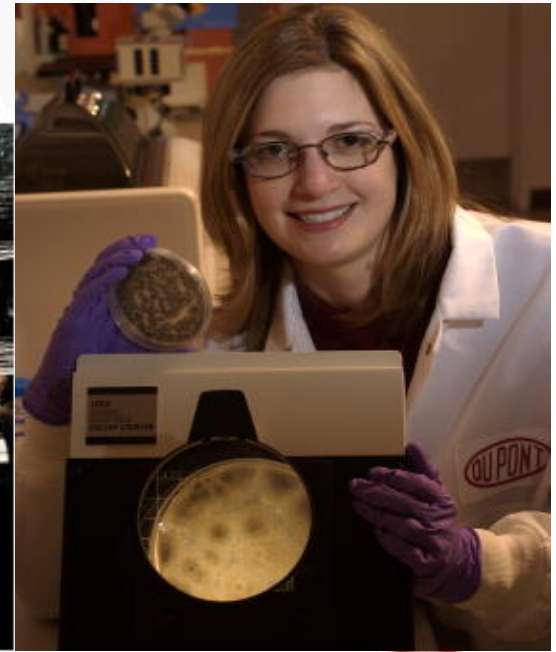
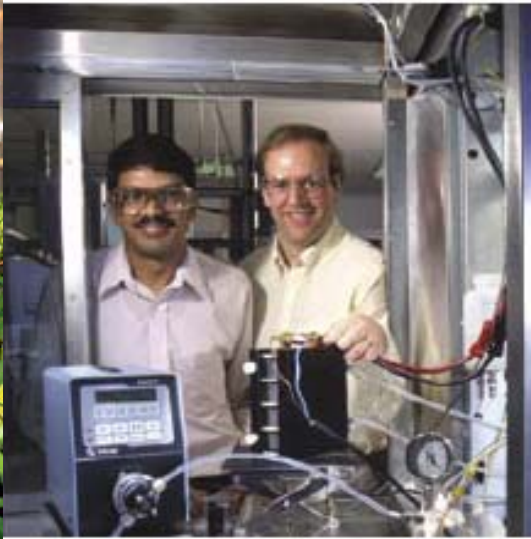
Hytrel®

# Transforming For Our Third Century

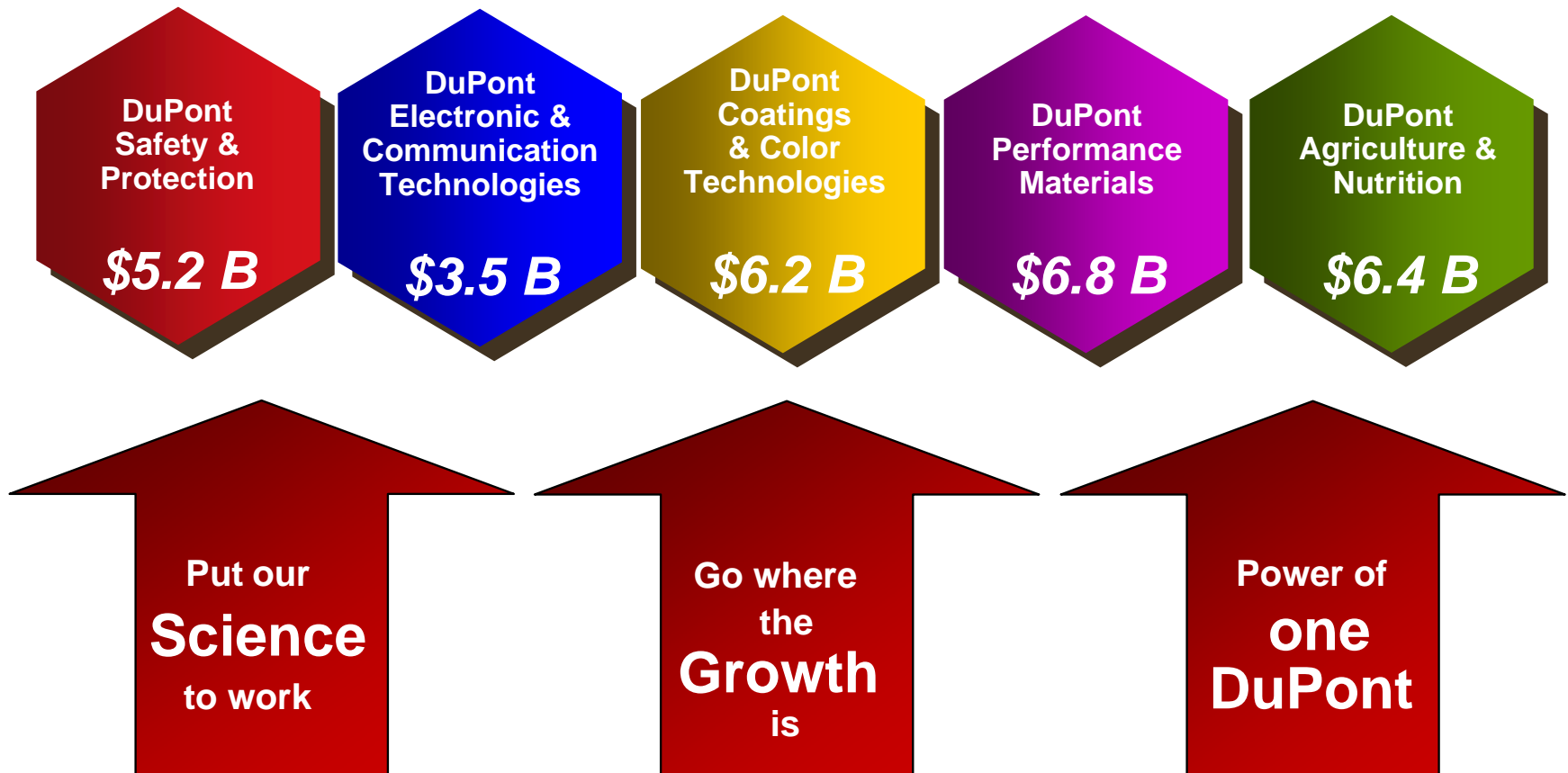


# The Vision of DuPont

To be the world's most dynamic science company, creating *sustainable solutions* essential to a better, safer, healthier life for people everywhere.



# Five Growth Platforms

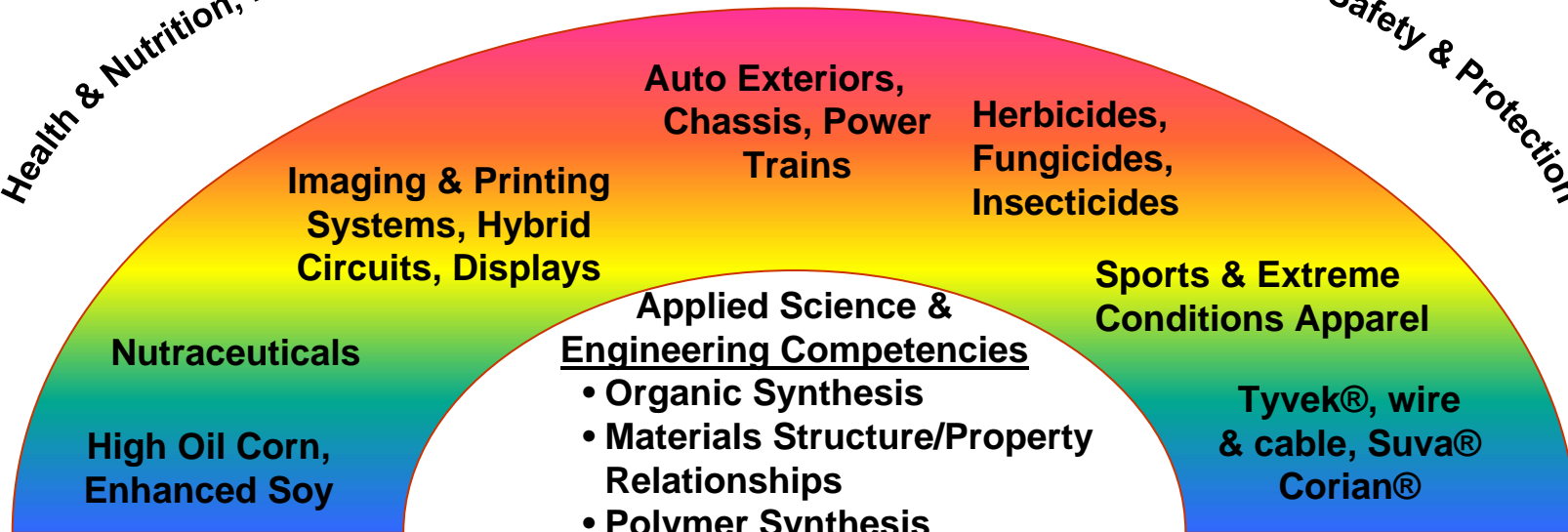


## Three Growth Strategies

# Markets

Health & Nutrition, Electronics, Automotive, Agricultural, Construction, Government, Safety & Protection

Product & Service Applications



## Applied Science & Engineering Competencies

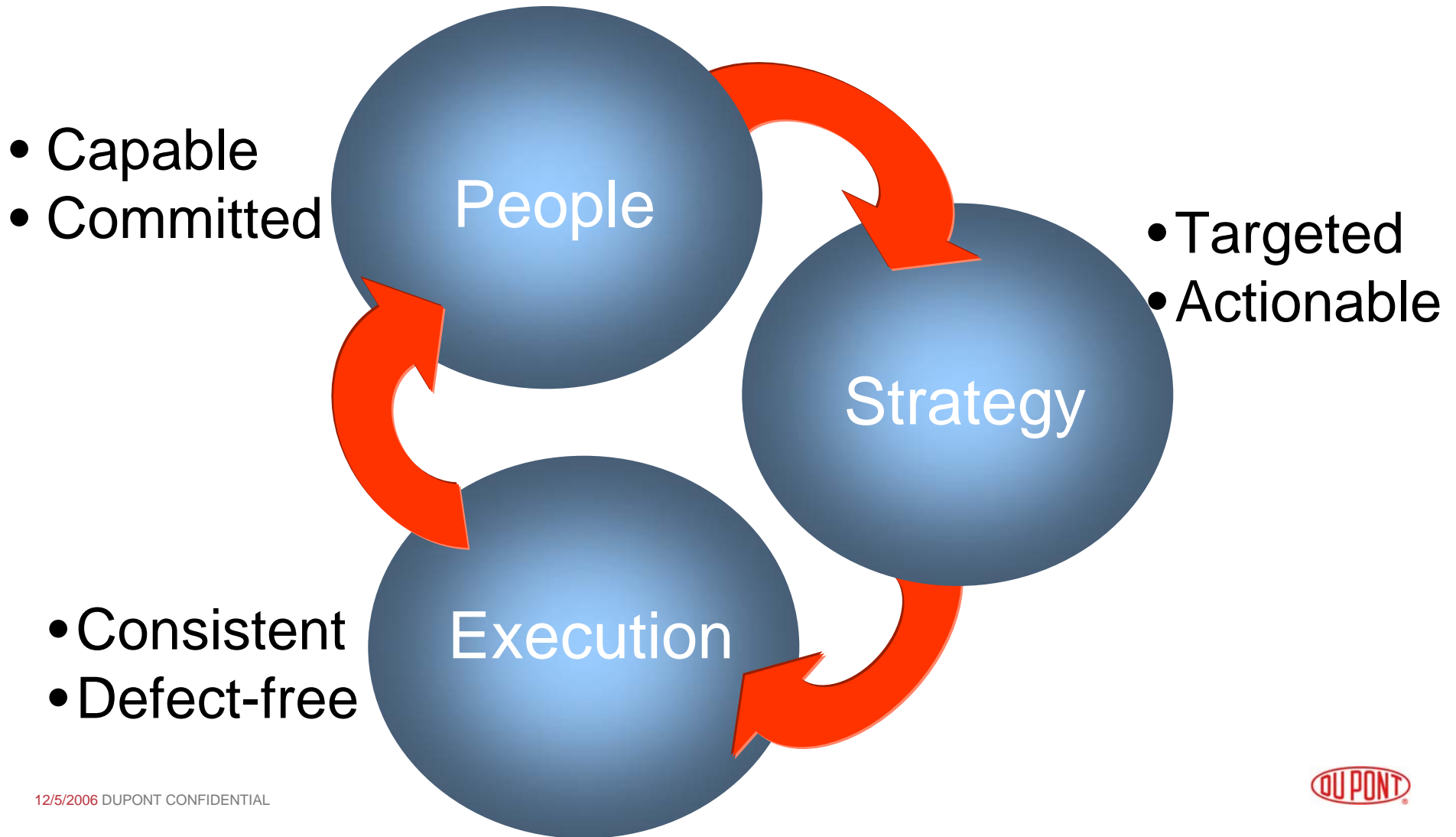
- Organic Synthesis
- Materials Structure/Property Relationships
- Polymer Synthesis
- Polymer Forming & Shaping
- Fluorochemistry
- Metabolic Pathway Engineering
- Genetics, Genomics
- Gene Expression...

Science Reservoir

Biology Chemistry Physics Mathematics

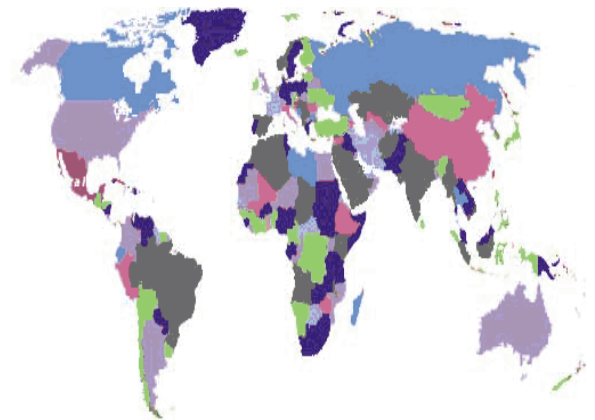


## Delivering Maximum Business and Societal Value....



# Key Questions - Management

1. How must management develop, deploy, and direct the engineering competencies needed to deliver *sustainable solutions* essential to a better, safer, healthier life for people everywhere.
2. How will this be influenced by offshoring?

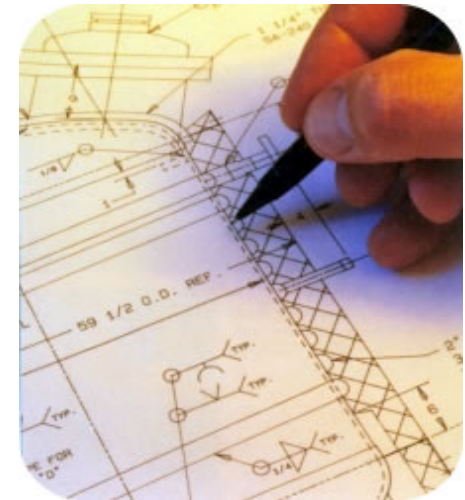


# Core Competencies

- | ➤ <u>Today</u>   | ➤ <u>Tomorrow</u>   |
|--|---|
| <ul style="list-style-type: none"><li>• SHE&amp;E</li><li>• Technical/Analytical Skills</li><li>• Communications</li><li>• Problem Solving</li><li>• Information Management</li><li>• Project Management</li><li>• Teaming</li><li>• Organizational Design</li><li>• Unit Operations</li></ul> | <ul style="list-style-type: none"><li>• SHE&amp;E</li><li>• Technical/Analytical Skills</li><li>• Collaborations</li><li>• Integrated Solutions</li><li>• <b>Knowledge Management</b></li><li>• Business/Risk Management</li><li>• <b>Networking</b></li><li>• <b>Work Process Design</b></li><li>• Integrated Supply Chain</li></ul> |

# Creating Sustainable Business Value

- **Information...f (Data)**
- **Knowledge.....f (Information)**
- **Sustainable Business Value...f (Knowledge)**



# “Knowledge Management”

The **Right Information**

at the **Right Place**

at the **Right Time**

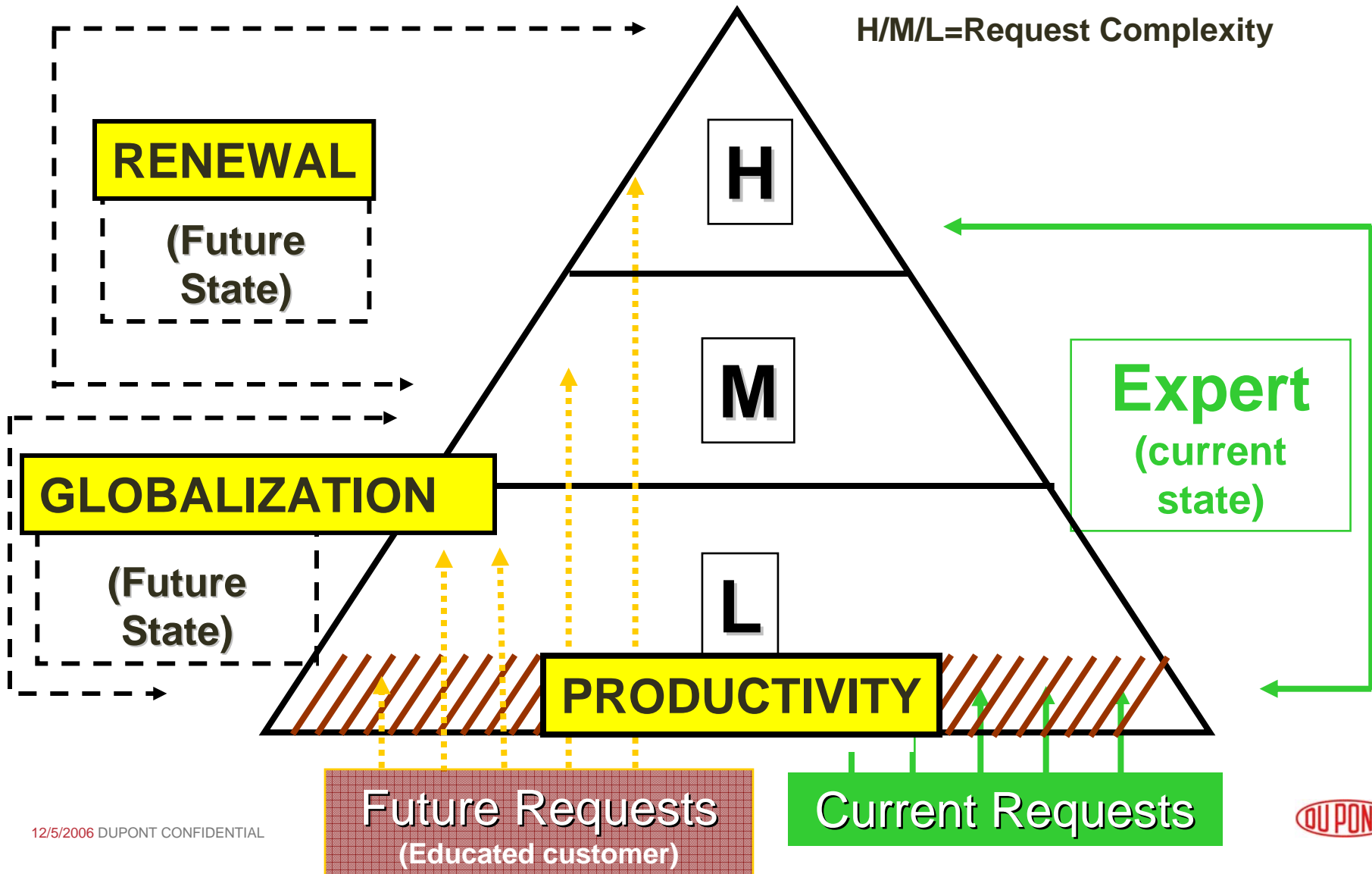
at the **Right Price**

enables rapid, effective **Decision Making**

and **Problem Solving** delivering

**Sustainable Business Results**

# Knowledge Management as a Business Driver



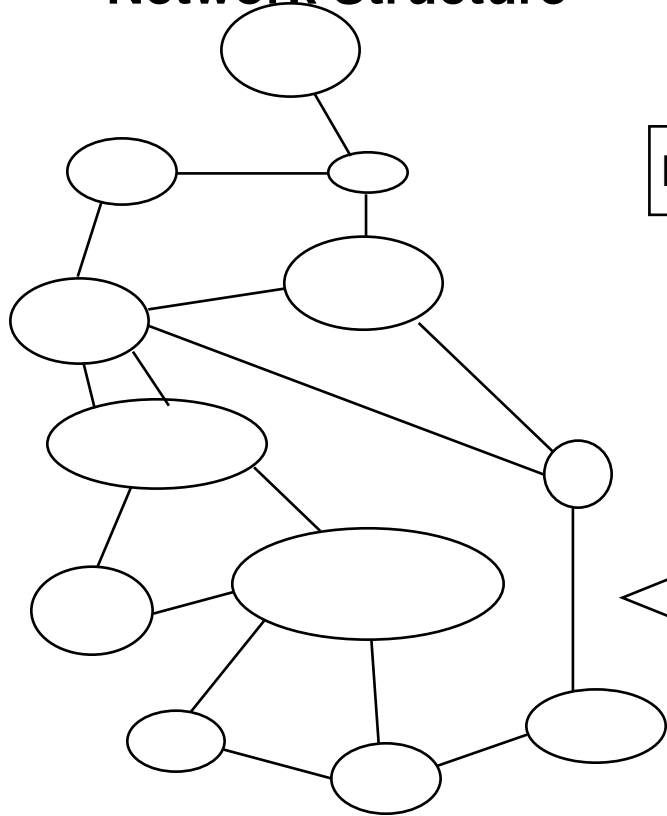
# Knowledge Management Vision

Create a strategy and managing process for accelerating knowledge management that will introduce a culture change as well as effective tools and processes to further enable employees as “knowledge workers,” improve productivity, and use knowledge intensity to achieve sustainable growth.



# Networking Works.....

## Network Structure

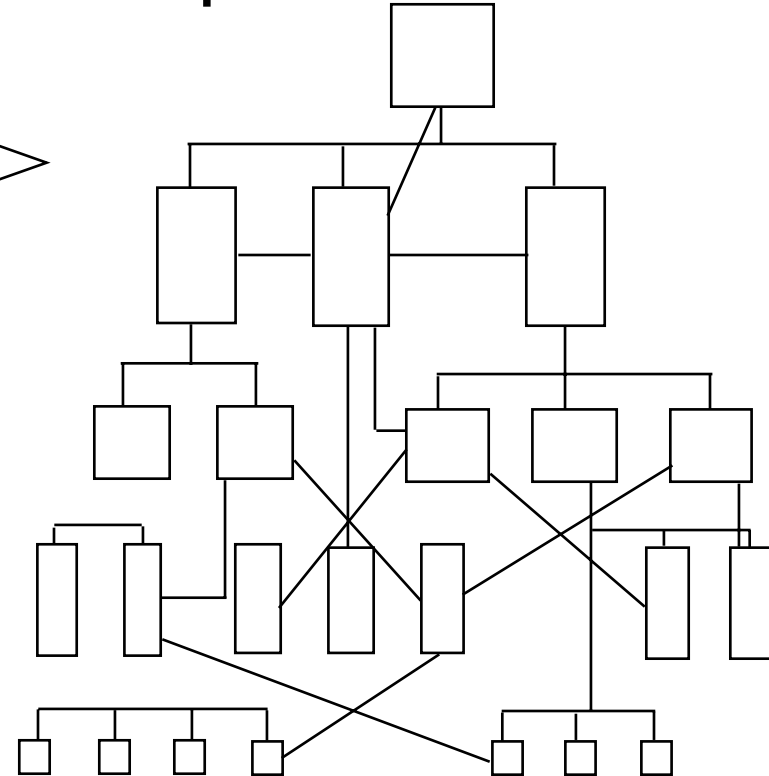


Possibilities

Needs

- Unpredictable relationships
- Innovates
- “How to get the job done better”
- Heterogeneous
- Do the right things

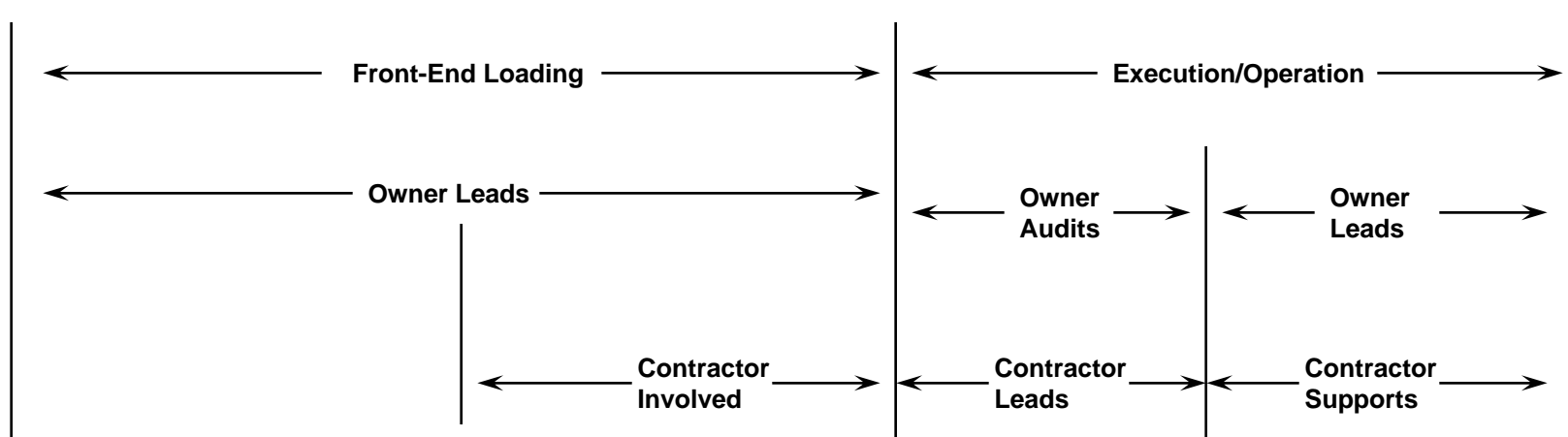
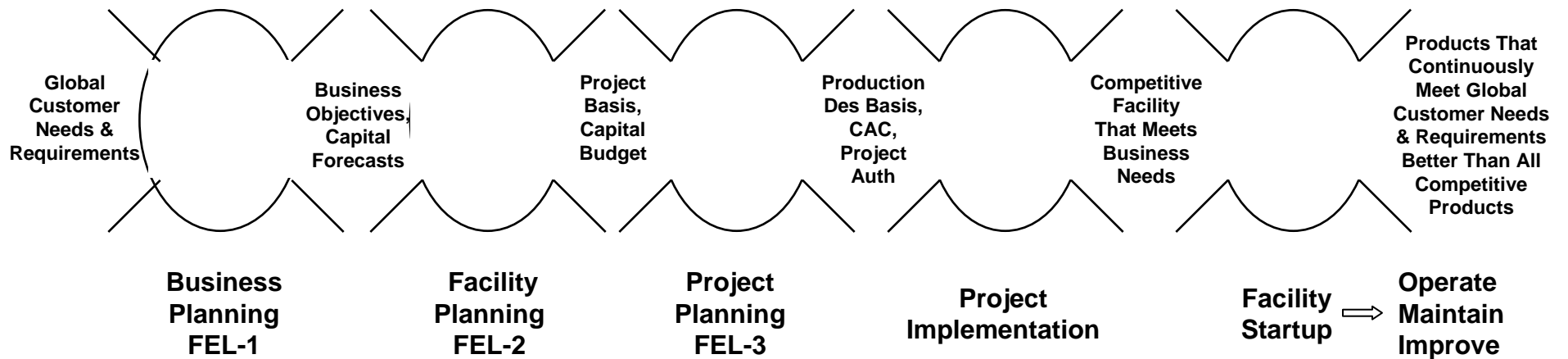
## Implementation Structure



- Drives form vs. function
- Implements
- “Get the job done”
- Homogenous
- Do it right



# Facilities Engineering Process

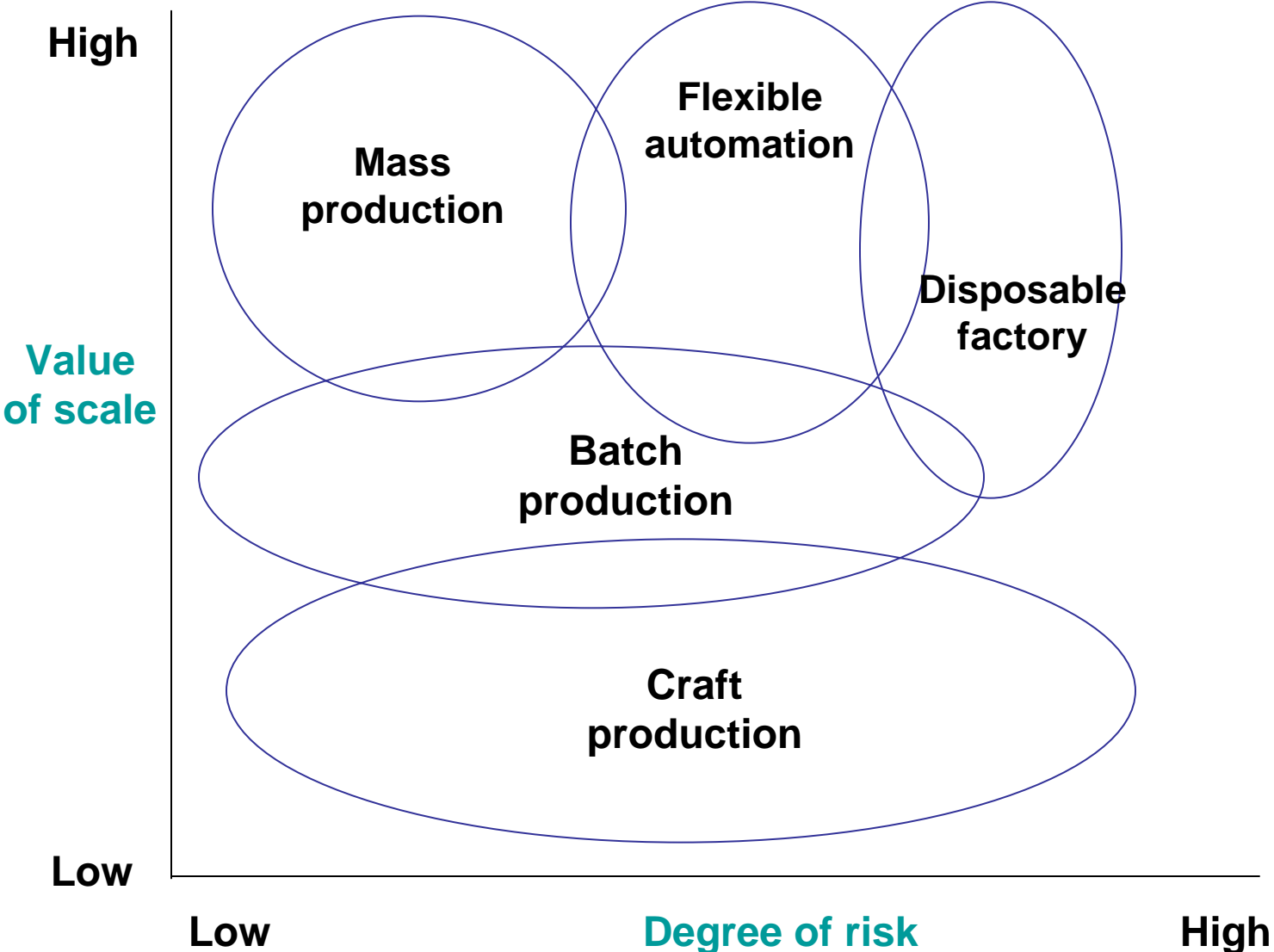


# Key Questions - Education

- 1. What capabilities will engineers need in the future to best meet business and societal needs?**
- 2. How is this going to be affected by offshoring?**

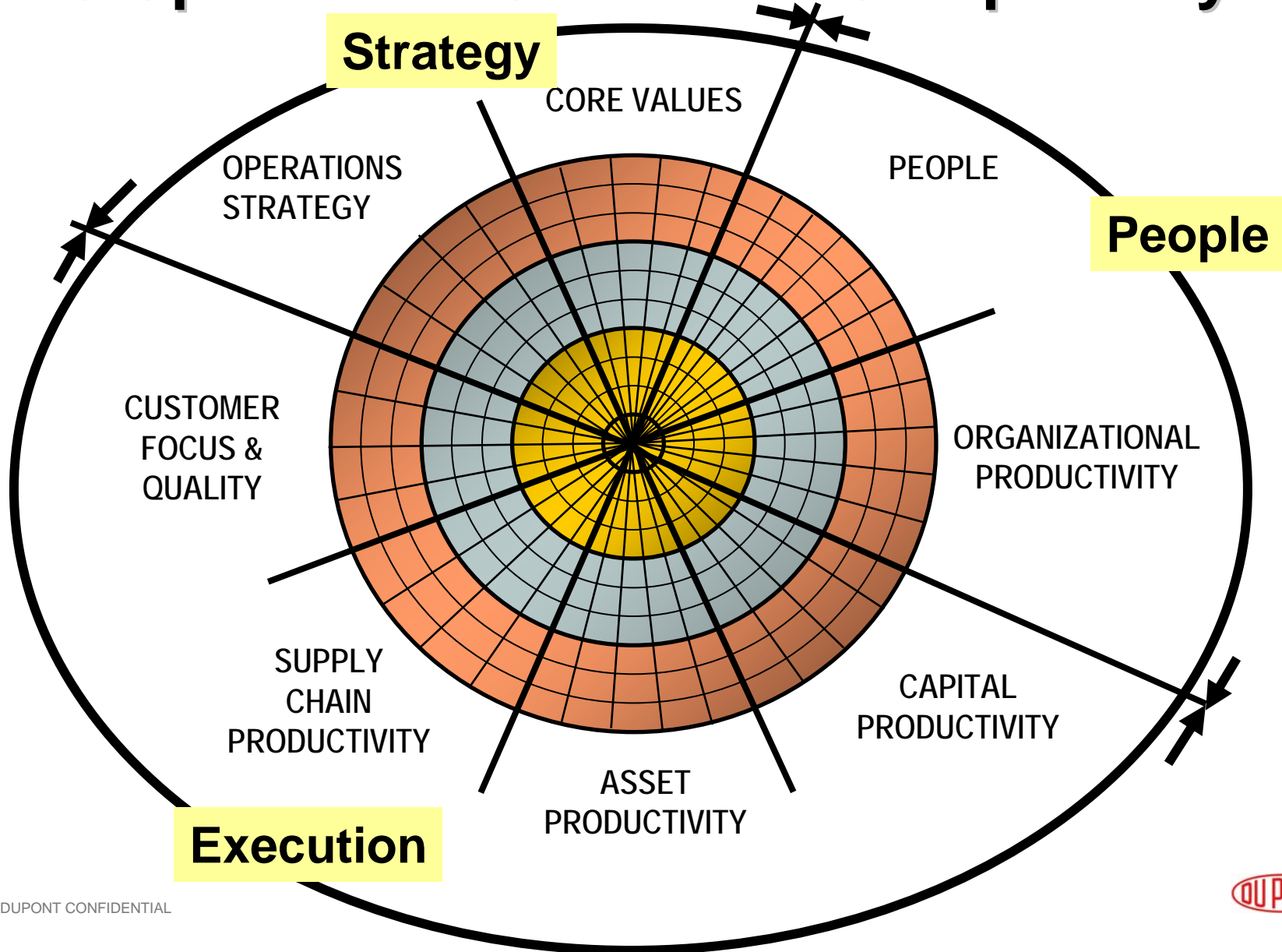


# Production Model Selection



Source: BCG analysis.

# 8 Operations Centers of Competency



# Behavior Shifts

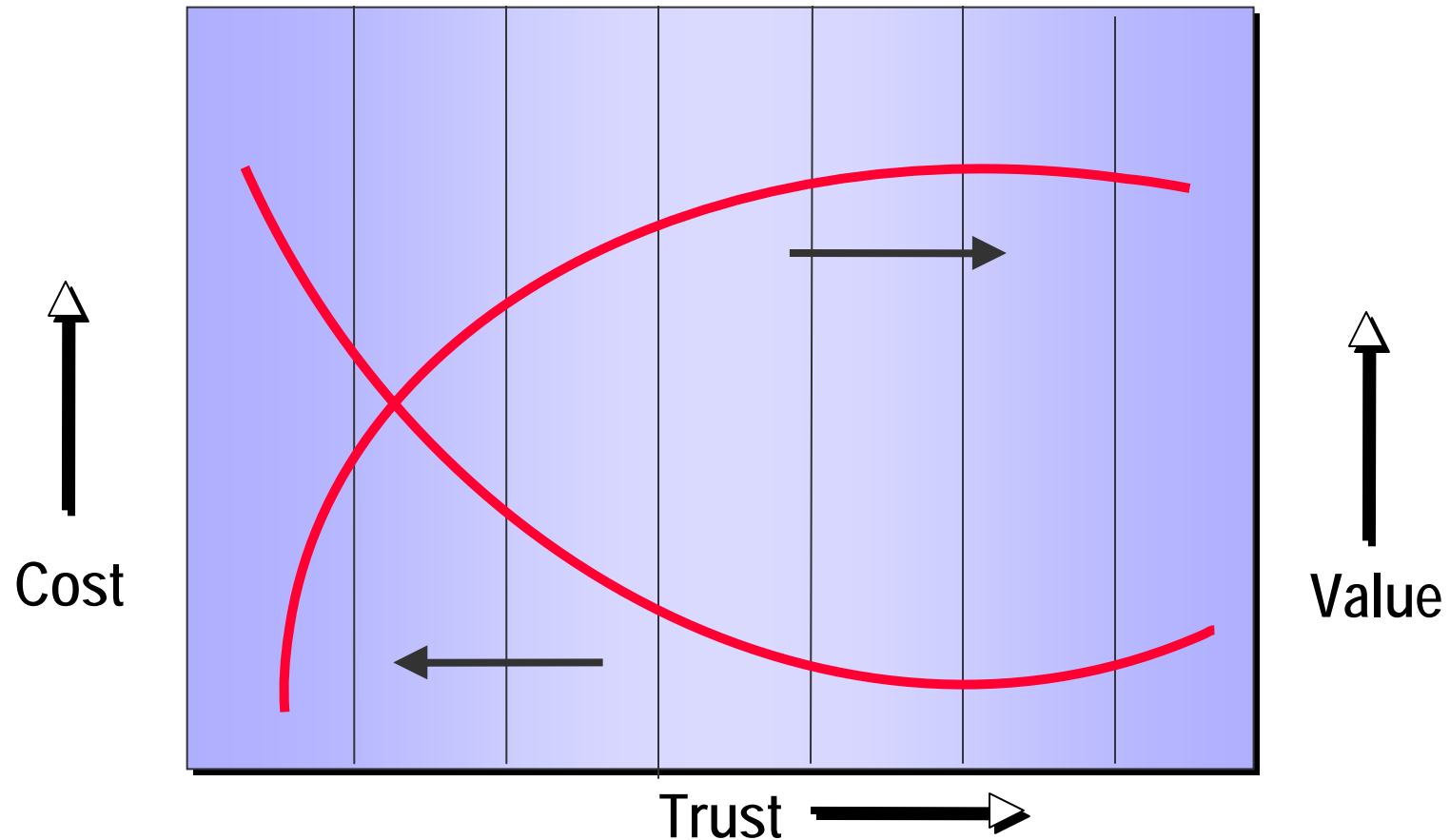
## From

- Flexible
- Internally Focused
- Replication Oriented
- Control
- Value Status Quo
- Coopetition

## To

- Agile
- Externally Focused
- Innovation Driven
- Influence
- Value Diversity
- Collaboration

# Competitive/Trust Relationships



$$\text{Trust} = f \left( \frac{\text{Intimacy X Competency}}{\text{Risk}} \right)$$

# Education Implications.....



- ★ **Engineers must understand and appreciate history, philosophy, culture, and the arts along with the creative elements of their technical discipline.**
- ★ **Curriculums must be responsive to disparate learning styles.**

# Process Industry Owner Engineering Operating Principles.....

- **Engineering competencies are critical to business success.**
- **Engineering must have the right mix of engineering competencies available at the right time and place capable of delivering sustainable competitive advantage.**
- **Engineering must help businesses leaders understand and capture the value .... run a “pull” process.**



## My Reflections.....

- **Must see resourcing processes holistically**
- **Business value defines the pathway**
- **Leadership is learn/teach/learn**
- **It's never over**
- **Positive attitude critical**

**“People don't resist change,  
they resist being changed!”**



*The miracles of science™*

