

# Globalization and Competitiveness



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# Agenda

- What is accelerating the pace of Globalization?
- What are the implications?
- Opportunities for Industry, Academia and Government to collaborate
- How has one company (Sigma-Aldrich) addressed these opportunities?

# Globalization

- Globalization - Definition
  - **Process by which the people of the world are unified into a single society and functioning together.**
  - **Integration of national economies into the international economy through trade, foreign direct investment, capital flows, migration and spread of technology.**

# What is accelerating the pace of Globalization?

## Markets

- Global Customers
- Convergence of Life Styles
- Global Market Channels



## Competition

- Global Competitors
- Emerging Economies
- More Alliances



## Costs

- Economies of Scale
- Changing Technology
- Escalating Costs



## Government

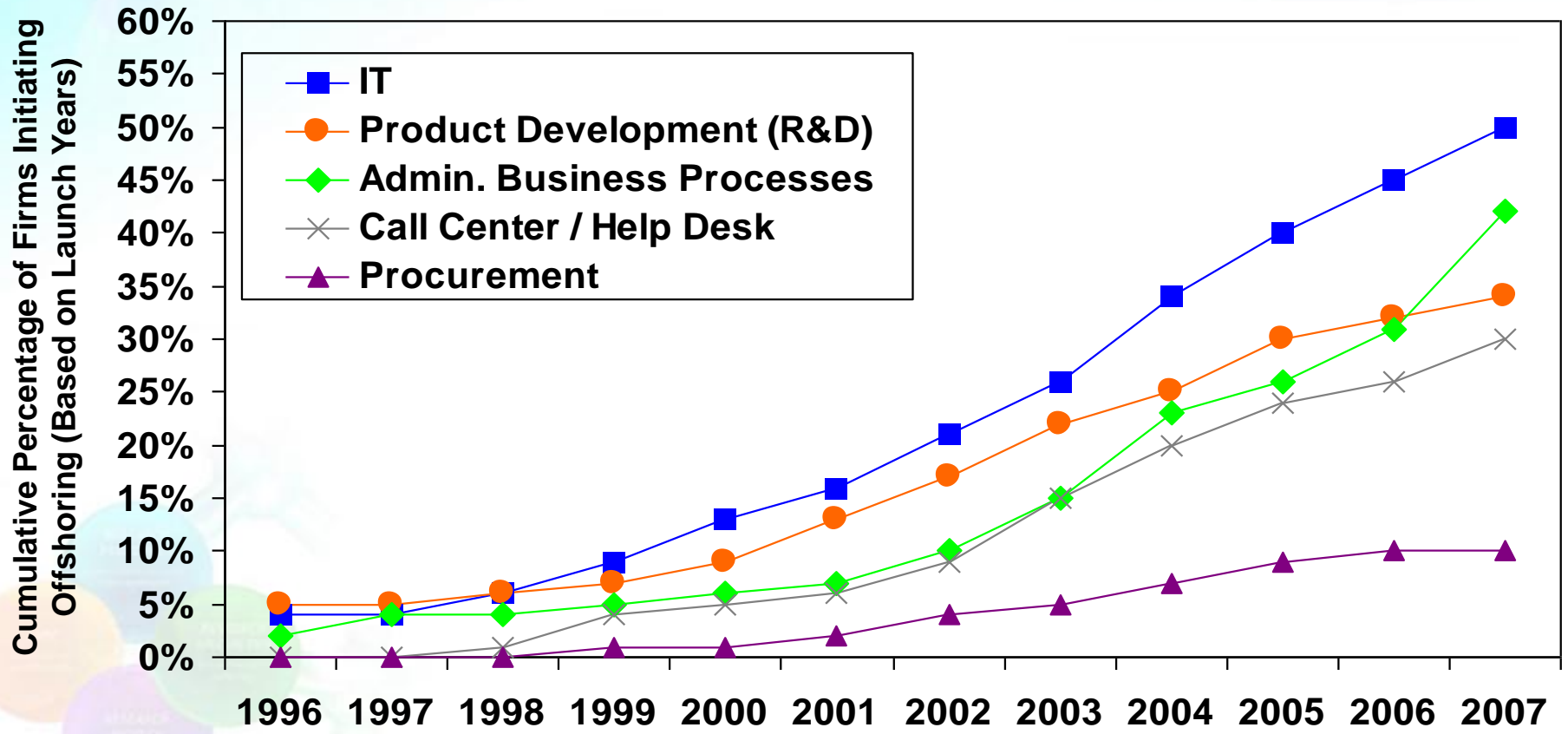
- Changing Trade & Investment Policies
- Standardization & Harmonization
- New Trading Blocs

# What are the implications?

- Participants Pursue Larger Global Share
- Location of Activities Follow Global Drivers
- Standardization In Marketing
- Interrelated & Coordinated Competitive Moves

# What are the implications?

- Offshoring Is Growing Across All Business Functions



# What are the implications?

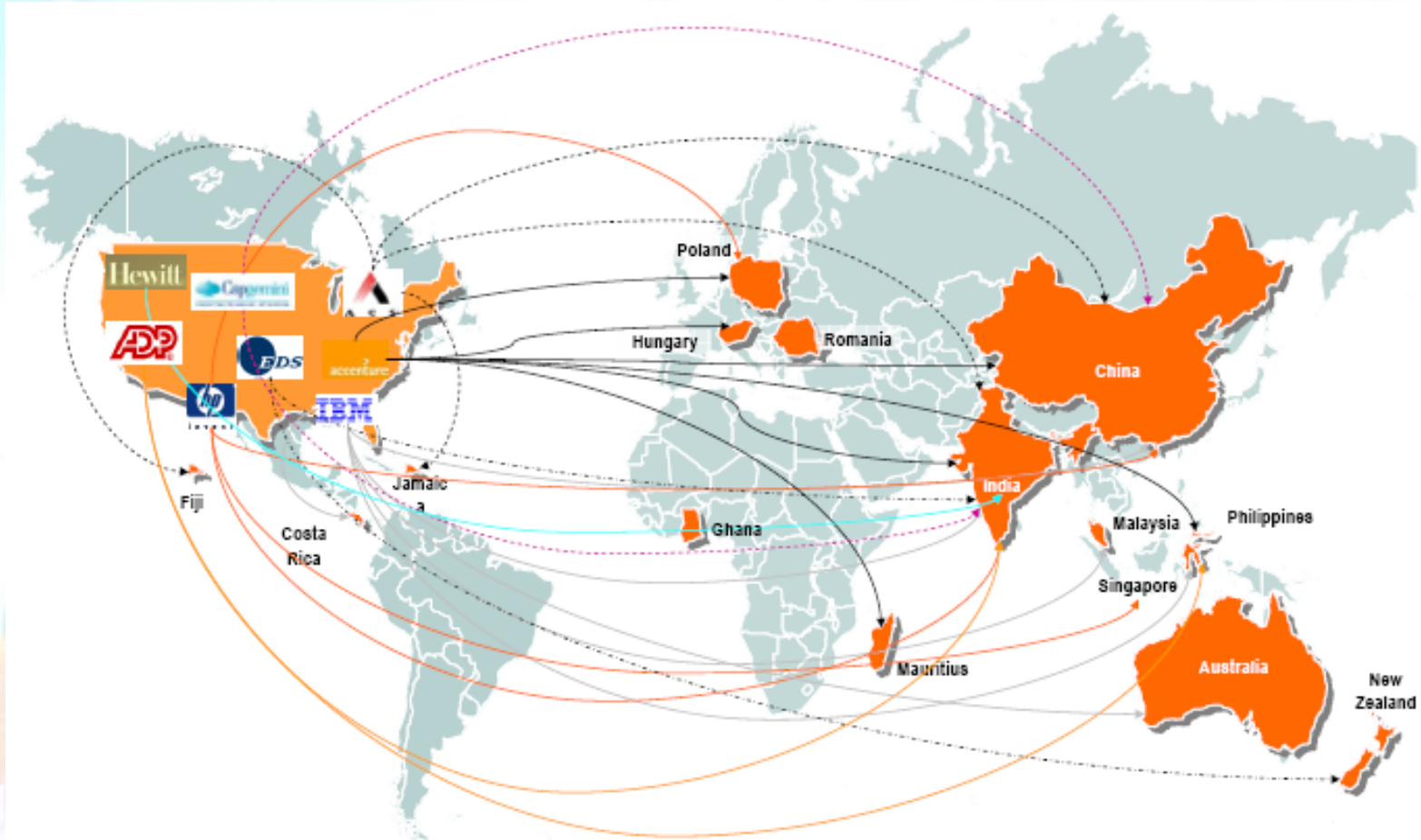
- Increase In Global R&D Spending

<b>Gross Domestic Expenditure on R&amp;D (billions US\$)</b>			
	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>United States</b>	<b>343,000</b>	<b>353,000</b>	<b>365,000</b>
<b>China</b>	<b>141,706</b>	<b>174,958</b>	<b>216,824</b>
<b>Japan</b>	<b>136,692</b>	<b>143,501</b>	<b>150,379</b>
<b>Germany</b>	<b>63,541</b>	<b>64,608</b>	<b>65,694</b>
<b>France</b>	<b>42,143</b>	<b>43,977</b>	<b>45,898</b>
<b>India</b>	<b>38,850</b>	<b>41,810</b>	<b>44,996</b>
<b>United Kingdom</b>	<b>37,540</b>	<b>40,084</b>	<b>42,819</b>
<b>South Korea</b>	<b>34,726</b>	<b>37,733</b>	<b>41,000</b>
<b>Canada</b>	<b>23,058</b>	<b>24,529</b>	<b>26,000</b>
<b>Taiwan</b>	<b>17,913</b>	<b>19,852</b>	<b>22,000</b>
<b>Italy</b>	<b>18,592</b>	<b>19,040</b>	<b>19,500</b>
<b>Russia</b>	<b>17,334</b>	<b>18,000</b>	<b>18,692</b>
<b>Spain</b>	<b>14,120</b>	<b>15,030</b>	<b>16,000</b>
<b>Australia</b>	<b>12,971</b>	<b>13,714</b>	<b>14,500</b>
<b>Sweden</b>	<b>11,831</b>	<b>12,402</b>	<b>13,000</b>

Source: R&D Magazine, September 2007

# What are the implications?

- U.S. Outsourcers Are Extending Global Footprint



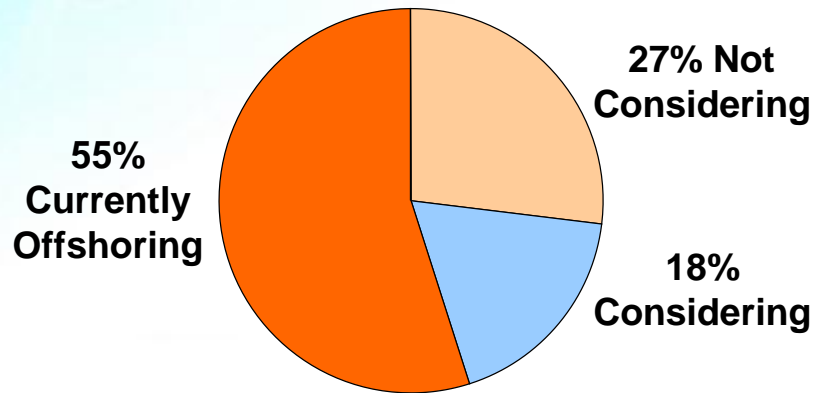
# What are the implications?

- Offshore Companies Expanding Westwards

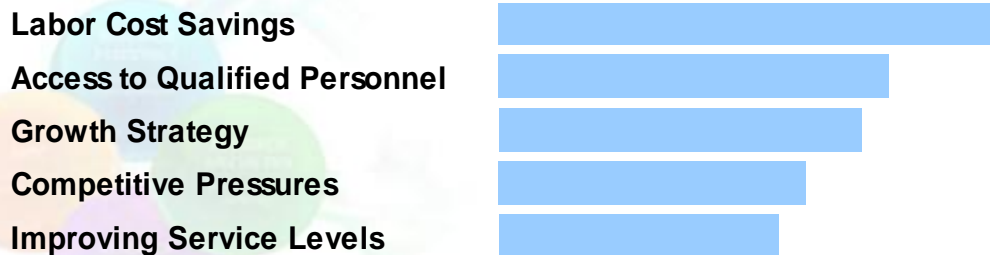


# Globalization

## 73% of 537 Multinational Companies Surveyed Currently or Considering Offshoring



## Top 5 Reasons For Outsourcing & Offshoring



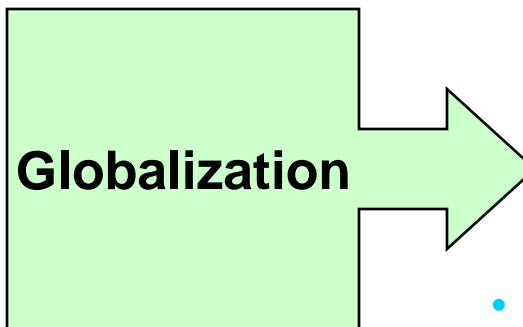
## Perceived Risks of Outsourcing & Offshoring

- Concerns About Operational Efficiency
- Loss of Management Control
- Control of Intellectual Property
- Cultural Differences
- Wage Inflation
- Offshore Employee Turnover
- Political Backlash & Instability

# Opportunities for Industry, Academia and Government to Collaborate

## Drivers

- Talent Shortage
  - Declining MS & Ph.D. Science & Engineering Graduates
  - Foreign Nationals with MS & Ph.D.'s Returning Home
  - High Demand & Cost of Domestic Talent
  - Aging Population – Retirement of Baby Boomers
- Competitive Pressures Increasing Global Competitiveness
- Increased Standardization
- Technological Advances



## Opportunities

- Build Human Capital
  - Revitalize Graduate Curriculum
  - Create Interest in Science In Grade School
  - Expand Training & H1B Visa Programs
  - Use Globalization As Opportunity To Develop Talent
- Extend & Expand R&D Credit to Industries in Targeted Areas
- Make Leadership in Some Selected Emerging Technologies a National Priority

*Every Challenge Presents An Opportunity  
Drive Success Thru Collaboration*

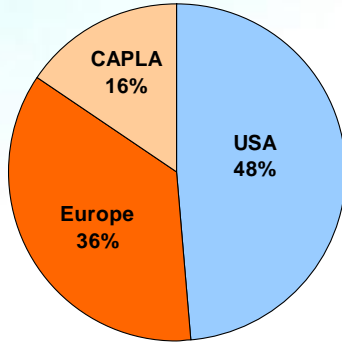
# How Has Sigma-Aldrich Addressed Opportunities?



- Created Centers of Excellence
- Enhanced Service & Relationships With Global Customers
- Opportunity To Build Management Depth
- Exchanged Best Practices Across Geographic Boundaries

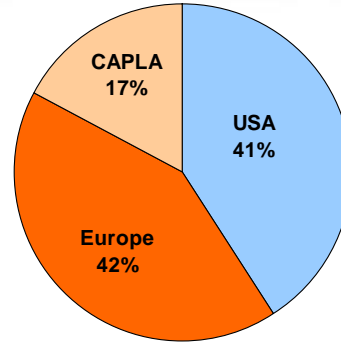
# Sigma-Aldrich Perspective

## Sales



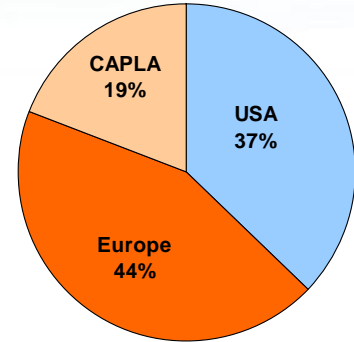
**2002**

\$1,207 mil



**2005**


\$1,666 mil



**2007**

\$2,038 mil

## Staffing

USA  3,205

Europe  2,244

CAPLA  491

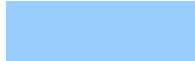
**TOTAL** 5,940

USA  3,658

Europe  2,560

CAPLA  631

**TOTAL** 6,849

USA  4,049

Europe  2,873

CAPLA  940

**TOTAL** 7,862

**Questions???**

