

# Strategic Planning of R&D

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# Outline

- Risk Factors in R&D
- Strategic Focus
- Stage-Gate Process
- Technology Choice Case

# Company Births and Deaths\*

- 1995: 594,000 births & 497,000 deaths
- 2002: 580,900 births & 576,200 deaths
- 2005: 670,058 births & 599,333 deaths

\* SBA Office of Advocacy

# Attrition Rate of New-Product Ideas

For every 11 serious ideas

- \* 3 enter development
- \* 1.3 are launched
- \* 1 succeeds

# Attempts to Start New Business

- One success in ten
- The odds are much poorer for new ideas

# The Business Plan Funnel\*

Business Plan Received (600)

Listen to presentation (60)

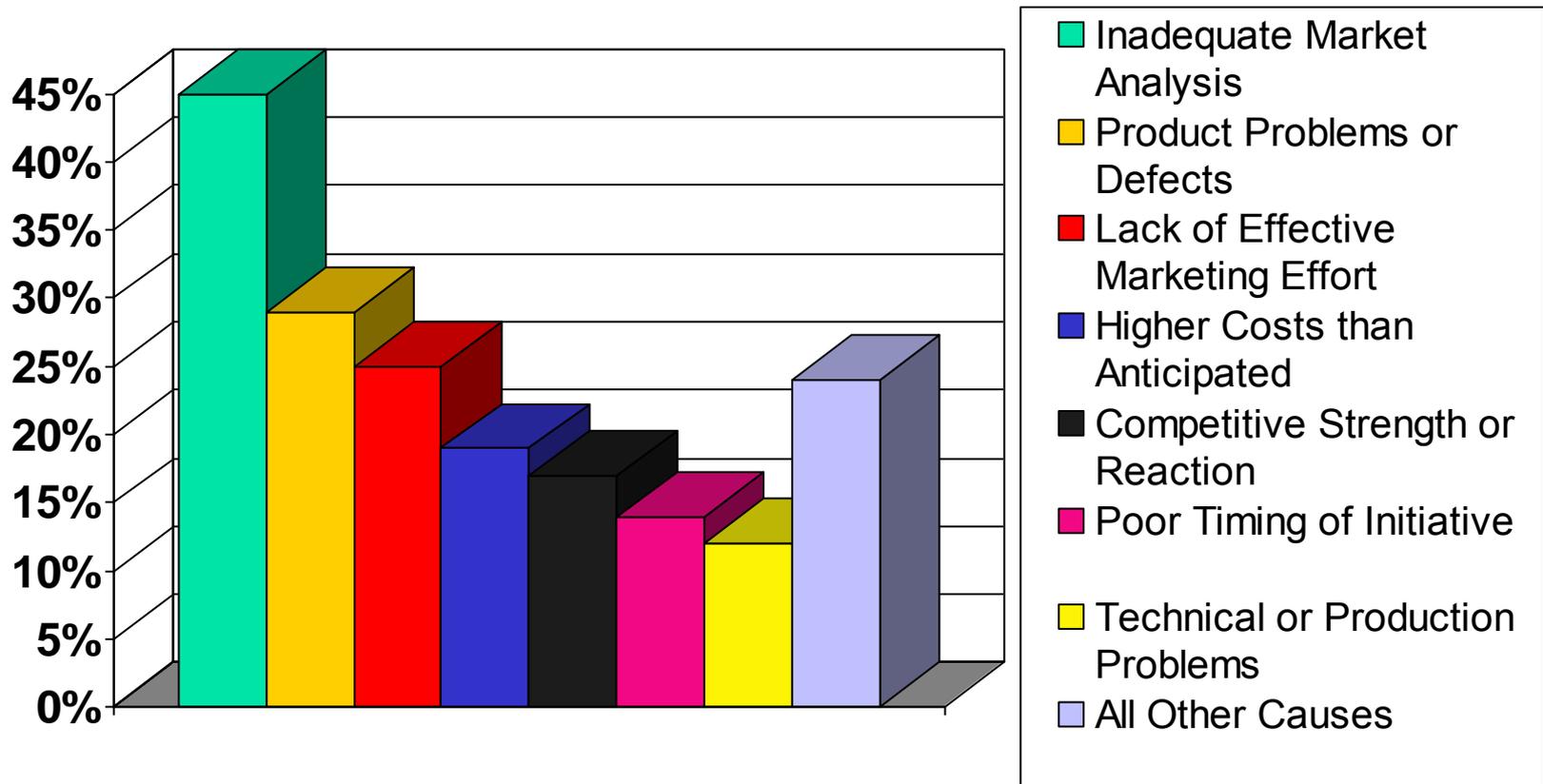
Visit (20)

Due Diligence / Negotiation (12)

Investment (3)

\* Brookwood Partners

# Causes of New Product Failure

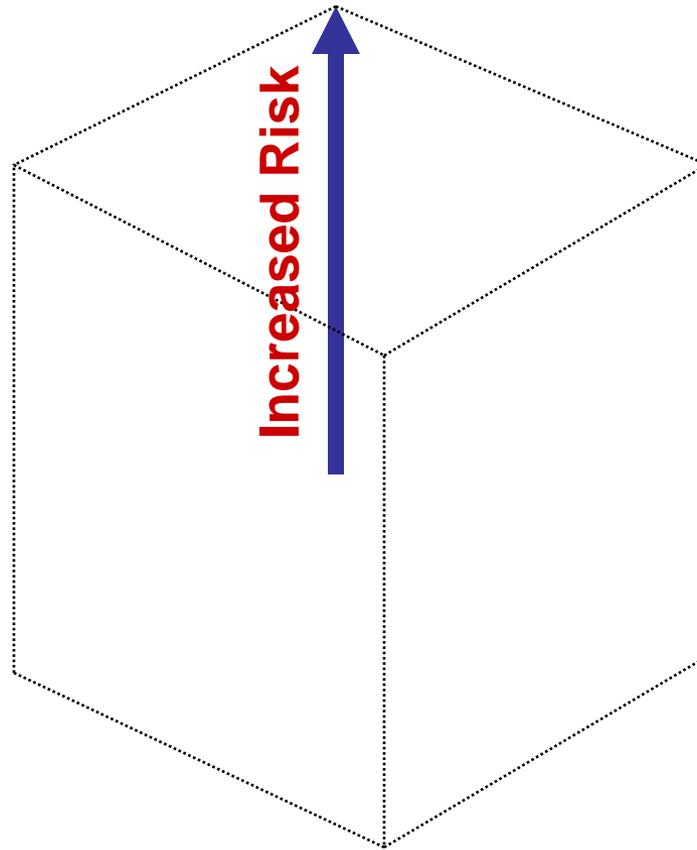


# Failures not merely negligence

- **Attributable to lack of**
  - understanding customer requirements
  - creating dramatic differences in current capabilities
  - understanding additional capabilities

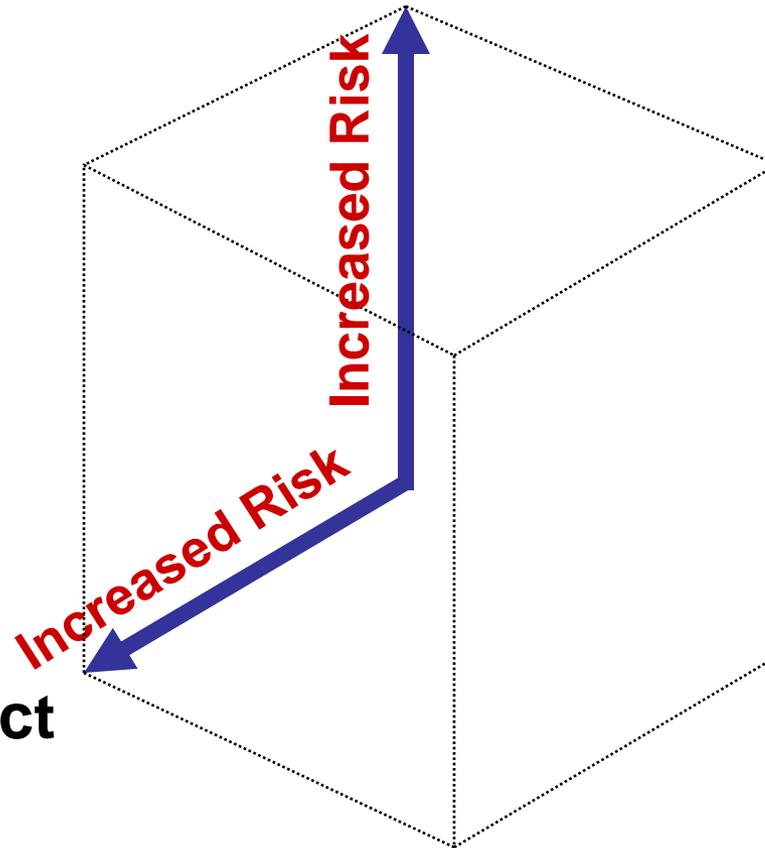
# The Suicide Square

**New Technology**



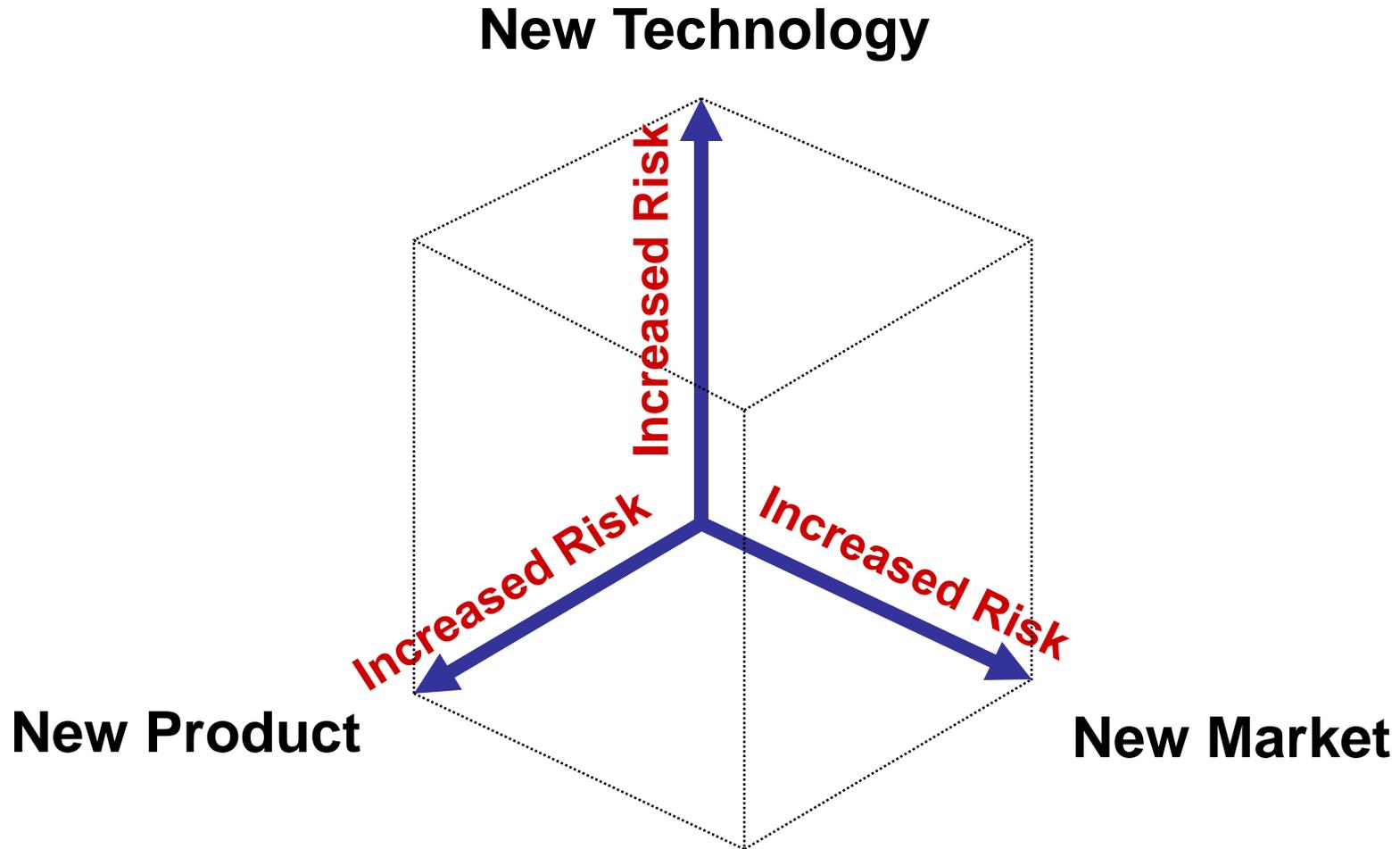
# The Suicide Square

**New Technology**

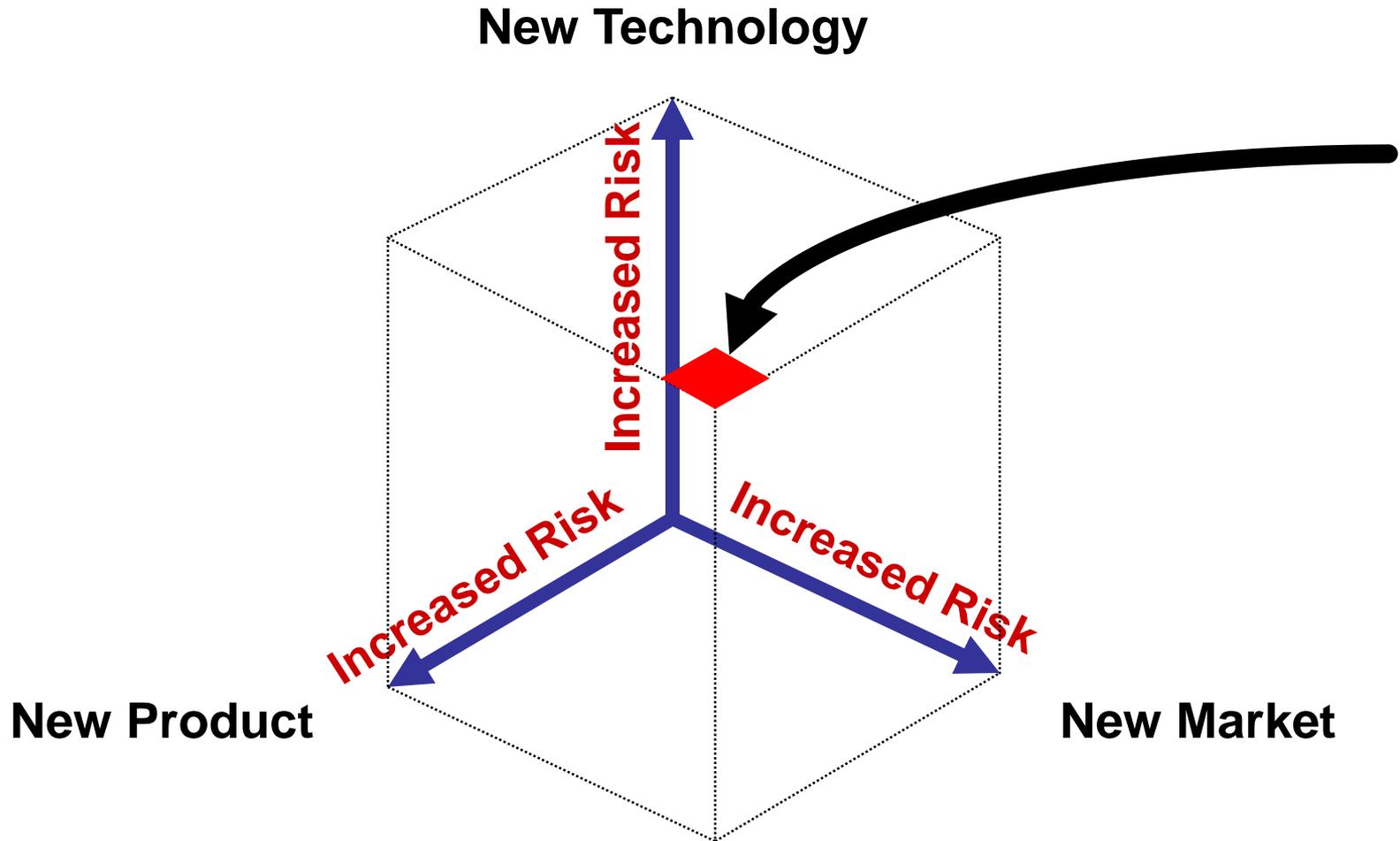


**New Product**

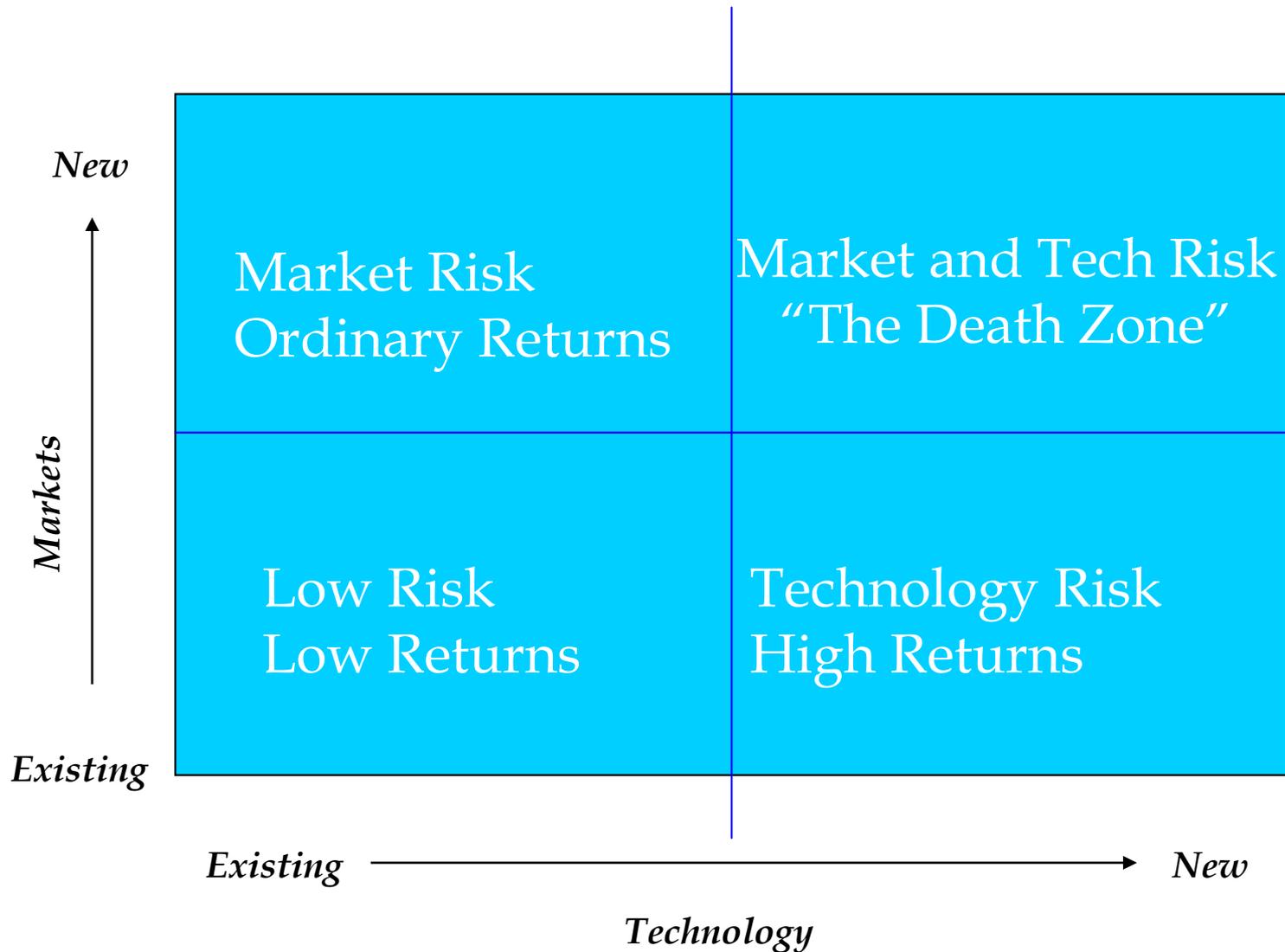
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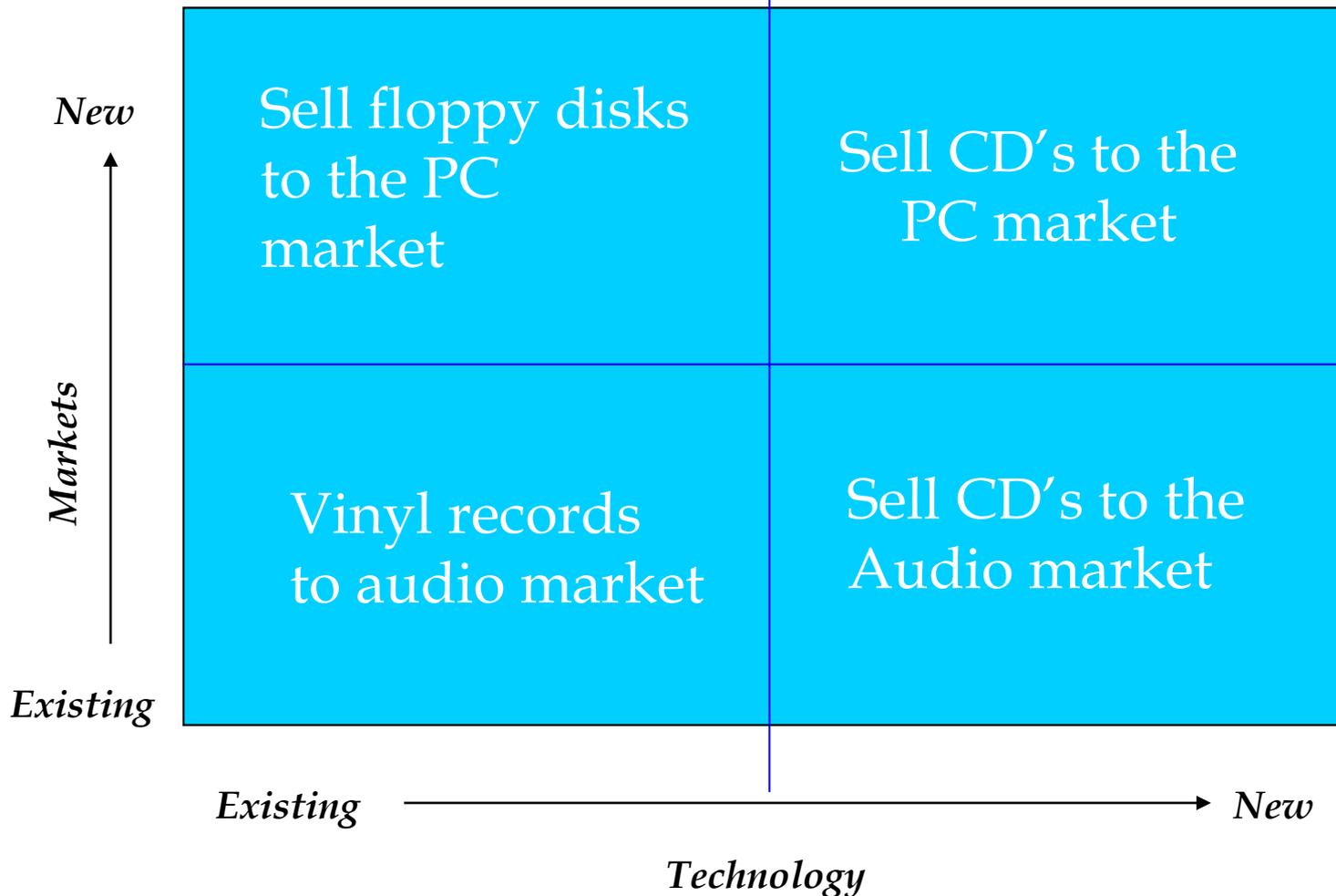


# Risk Matrices



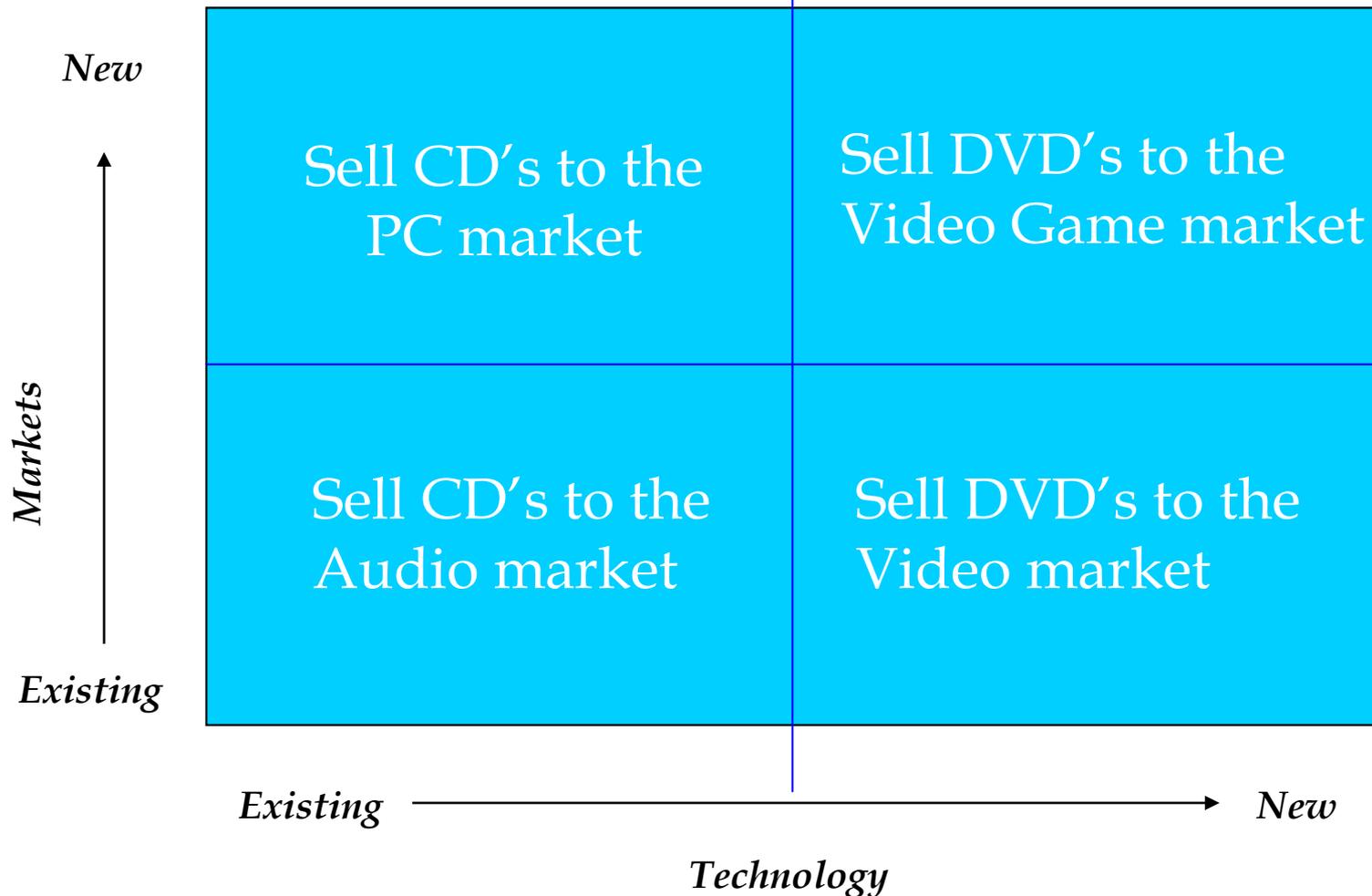
# CD Risk Matrix 1981

Sony, Philips, Matsushita



# CD Risk Matrix 1985-1996

Sony, Philips, Matsushita



# Technology Management

- Strategic focus
- Business process

# Strategic Focus

- Choose attractive strategic markets or market segments to participate in.
- Find “Beacons” in selected markets and market segments.
- Identify core competencies needed to address products, markets and applications.
- Plan a product, market, application / competency succession strategy.

# Business

<b>PRODUCT</b>	<b>MARKET</b>	<b>APPLICATION</b>
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**Product:** What we supply to add value.

**Market:** Who we supply the value to.

**Application:** How customers use the product to realize value.

# Business

<b>PRODUCT</b>	<b>MARKET</b>	<b>APPLICATION</b>
	<b>Automotive</b>	

# Business

<b>PRODUCT</b>	<b>MARKET</b>	<b>APPLICATION</b>
<b>Hose &amp; Tubing Assemblies</b>	<b>VW Group GM/ Opel BMW/ Rover Ford</b>	

# Business

<b>PRODUCT</b>	<b>MARKET</b>	<b>APPLICATION</b>
<b>Hose &amp; Tubing Assemblies</b>	<b>VW GM BMW Ford</b>	<b>AC Systems</b>

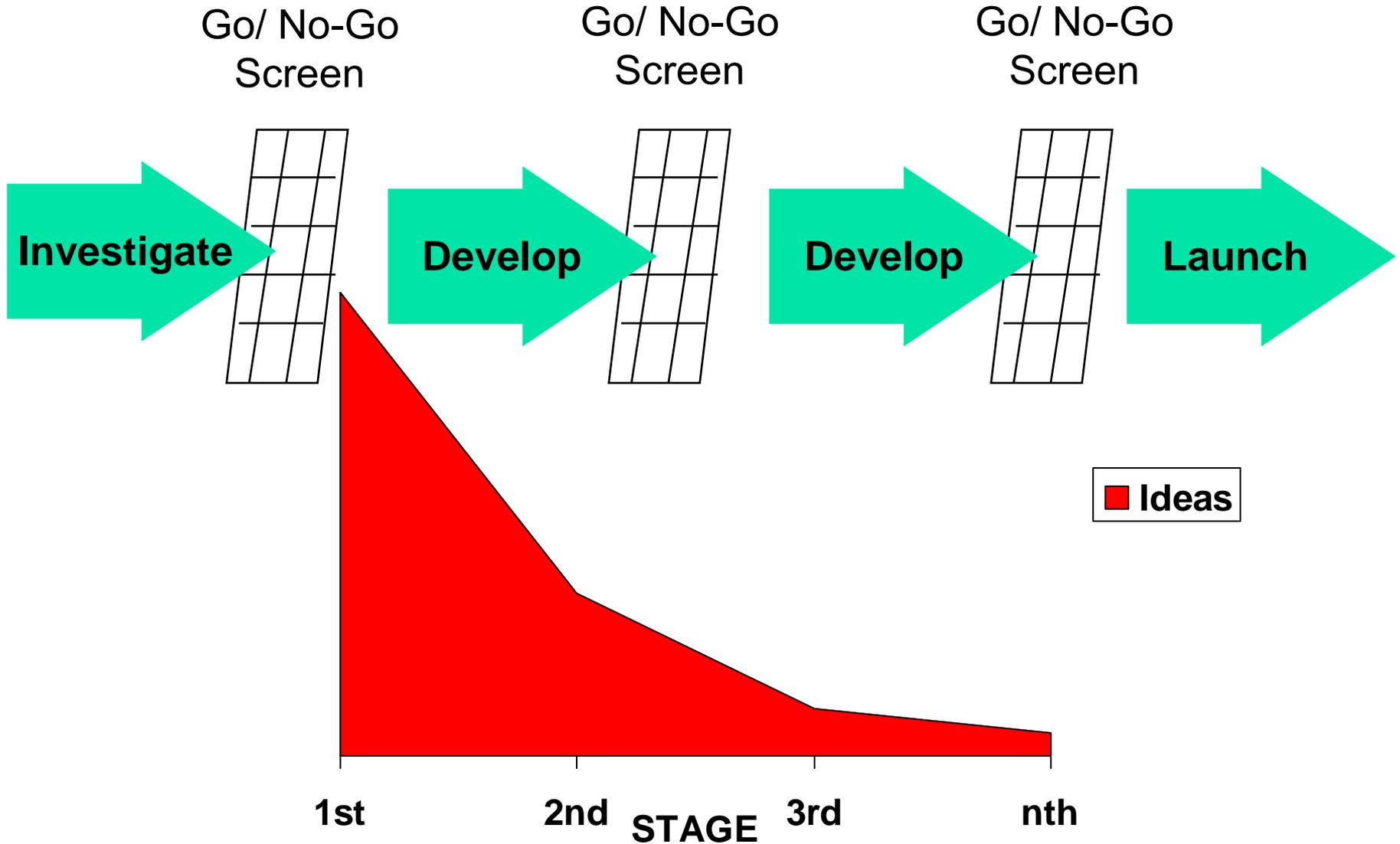
# Technology Strategy vs. Corporate Strategy

- Identify the firm's "Core Competency"
- Specify the types of products, markets, applications and technologies for focus
- Specify the role technology innovation plays in achieving the firm's overall objectives

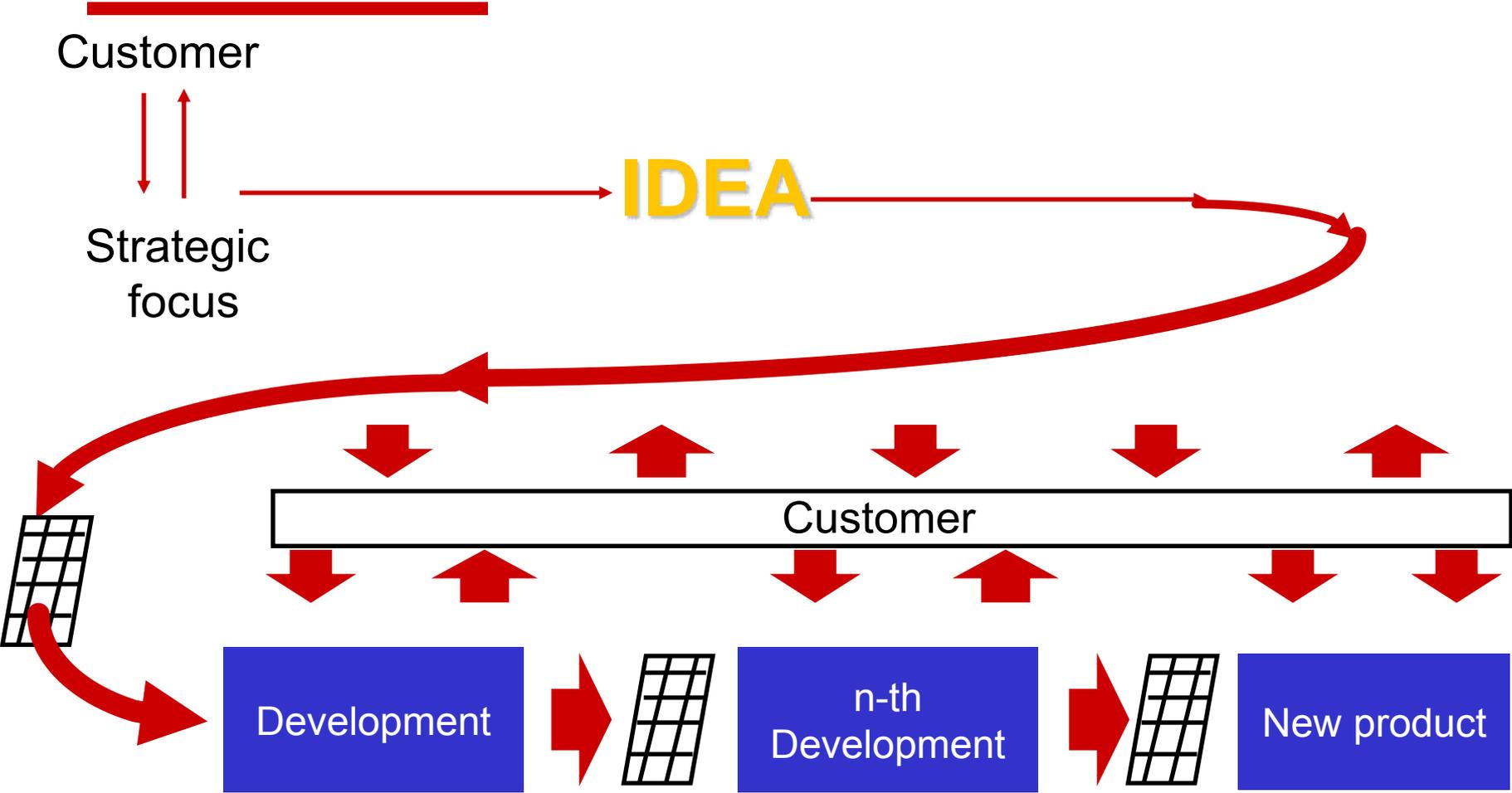
# Strategic Resources: Focus and Risk

- Assign resources to reflect strategic focus.
- Assign resources according to the acceptable level of risk.
- Reconcile differences between the stated strategy and specified resources.

# Stage – Gate Process



# Modified Stage-Gate with Continuous Customer Interaction



# Concurrent Business Development

- Cross-disciplinary teams
- Knowledge must broaden
  - Engineers are “technical” experts; but must understand the business
  - Managers are “business” experts; but must understand the technology

# Case Study: Technology Choice

- Grumman Corporation

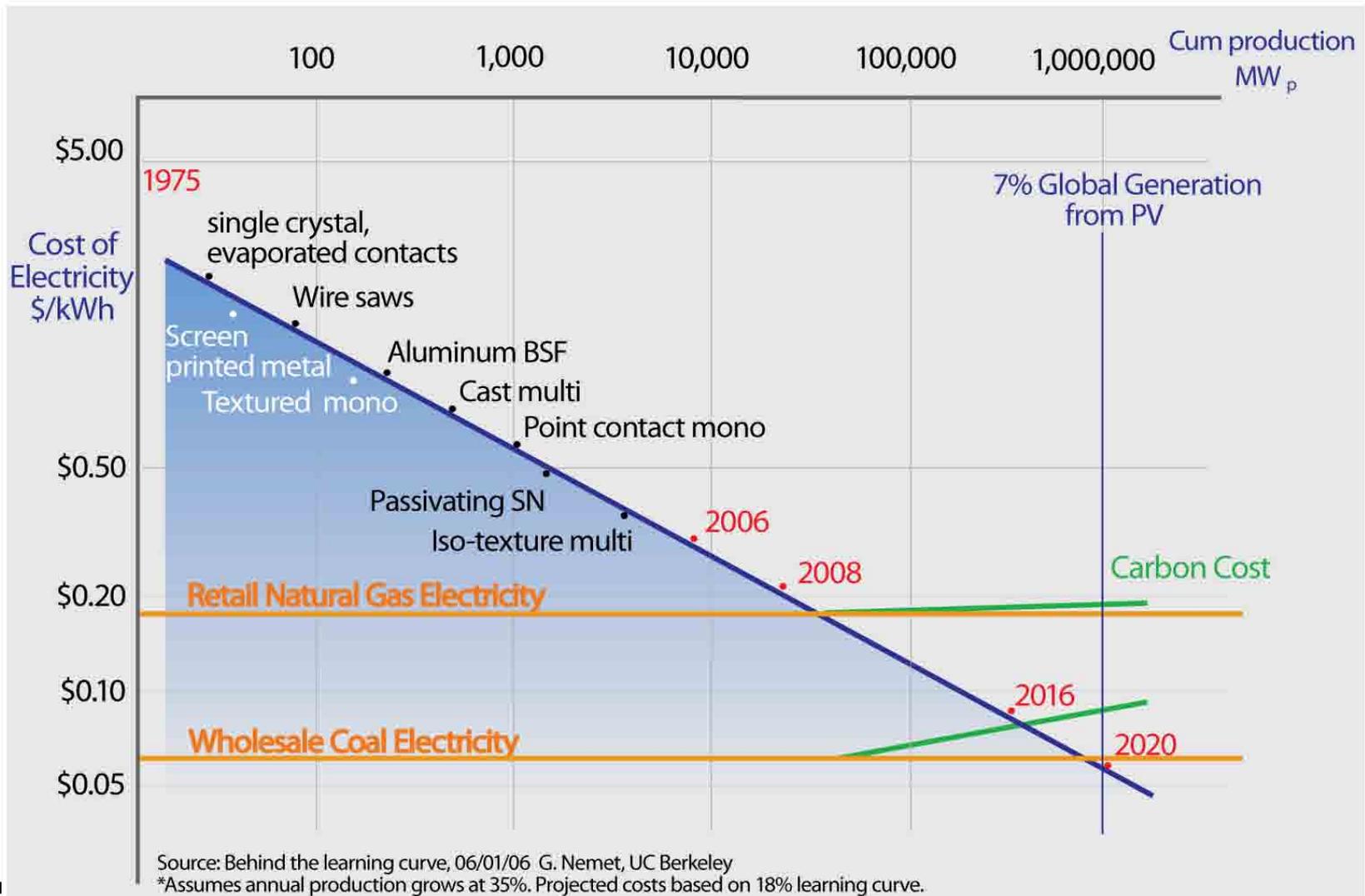
# Basic Factors in Evaluating a Technology

- Will the technology satisfy a market sometime in the future (Market Need)?
  - Does it provide improved performance?
  - Does it reduce costs?
  - Is its market penetration rate acceptable?
- When will the product become significant (Timing)?

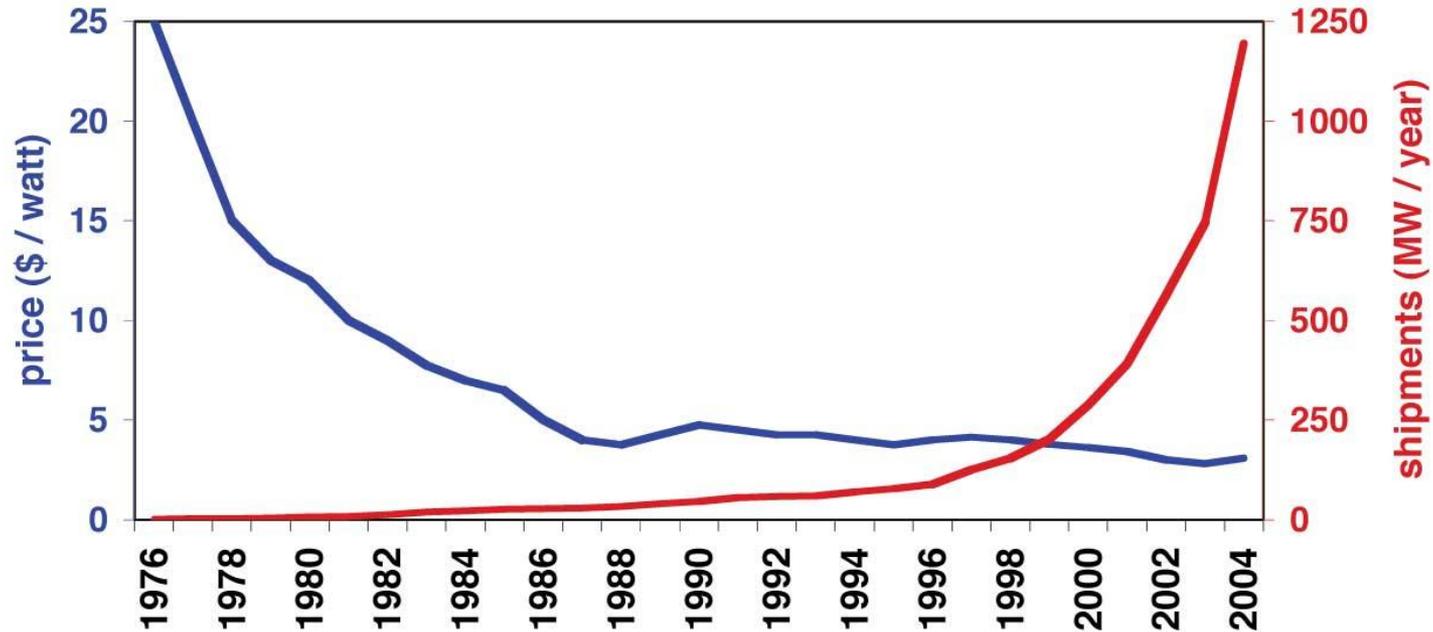
# Basic Factors in Evaluating a Technology (cont.)

- Will the technology be commercially viable (Economics)?
  - Does the market exist or will it be created?
  - Does the potential market size justify the investment?
  - Is the production process feasible and practical?
  - Is the product profitable to manufacture?

# Solar grid parity is close



# Declining Prices Build Markets

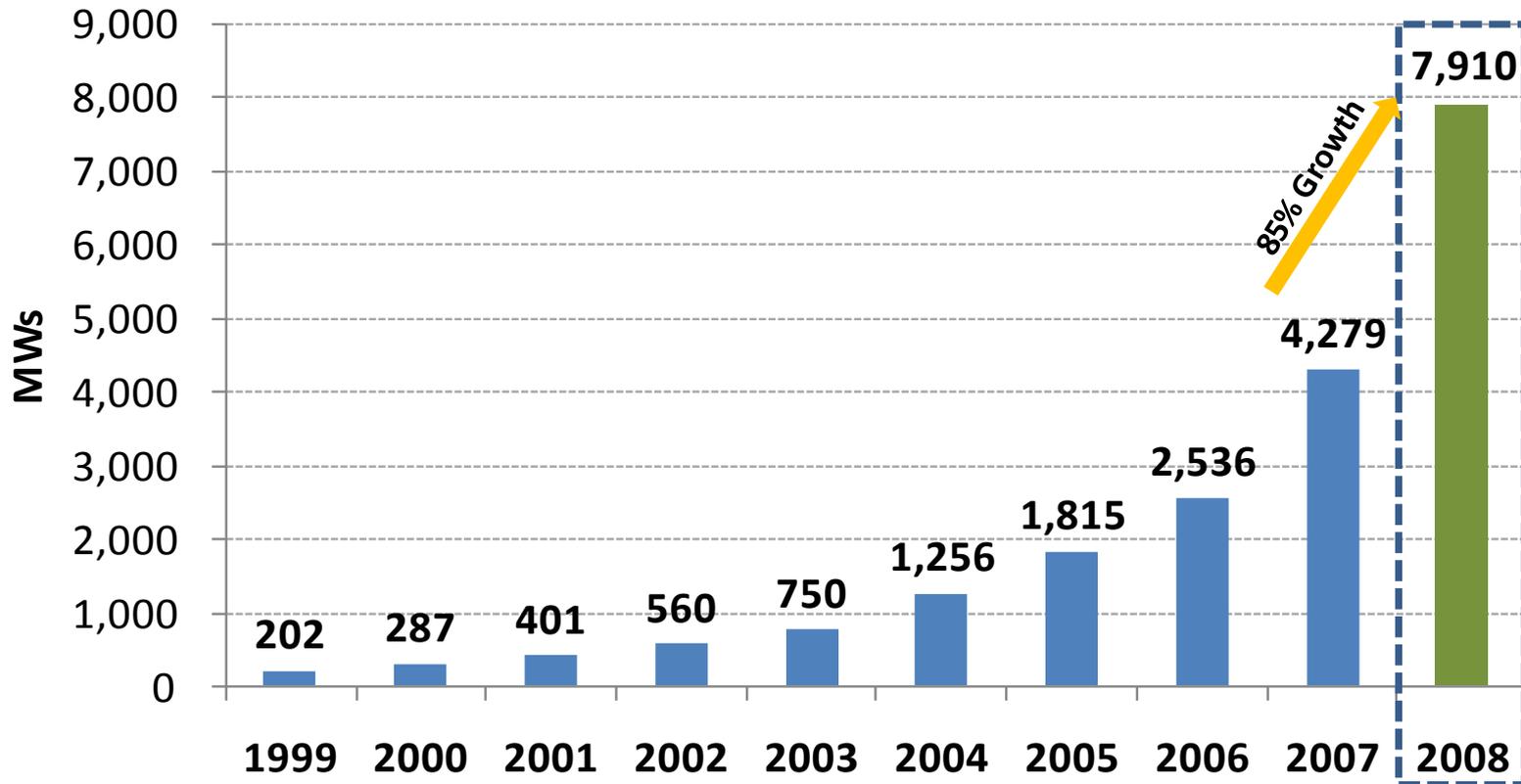


Price NOT adjusted for inflation

Shipments CAGR 2000-2005 > 35%

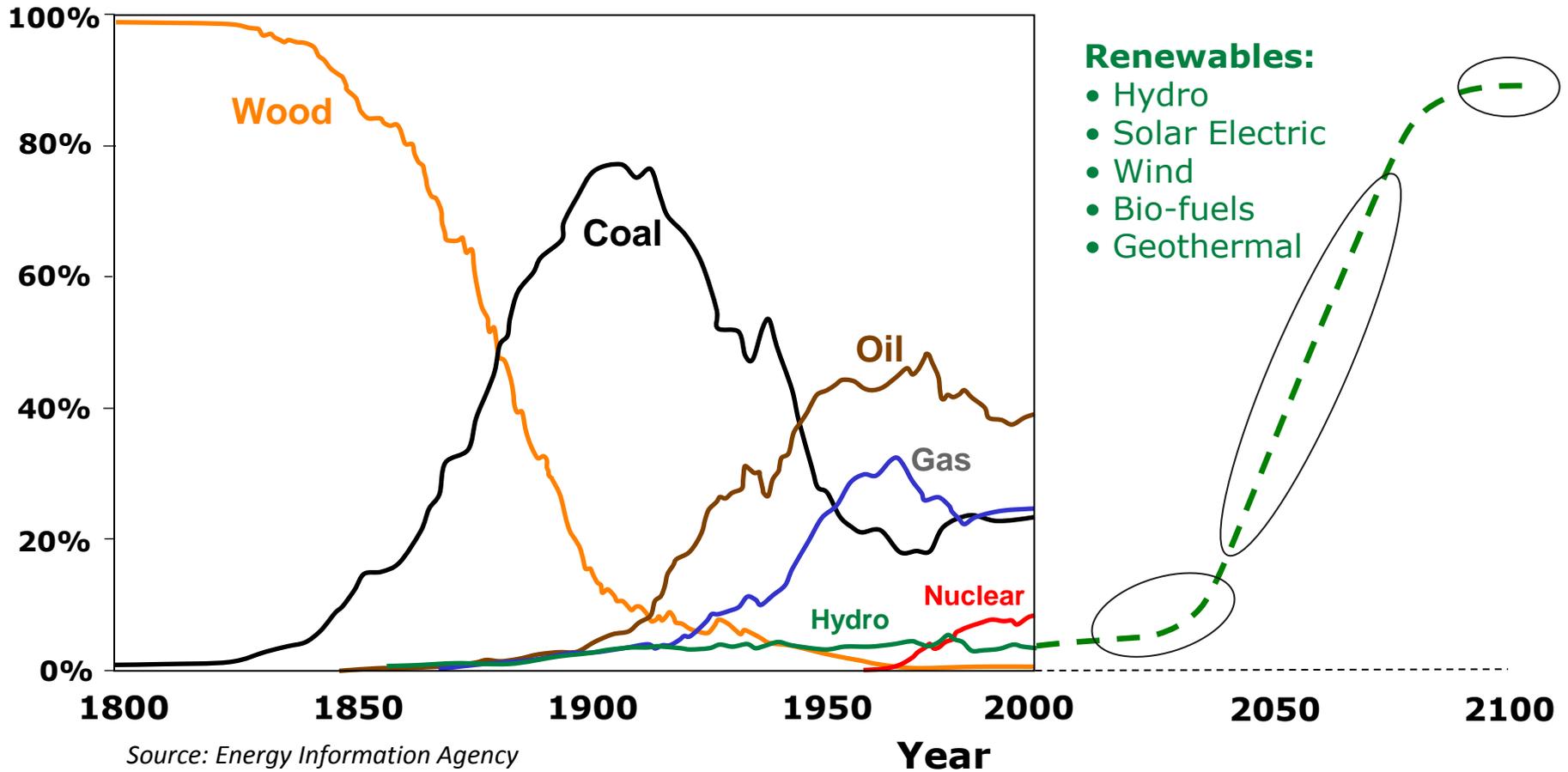
# Solar's Challenge: Scale

## Global Cell Production



- Despite record growth, generation from PV still is only 0.2% of total global electricity

# Our energy supply will change and PV will play a big role



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