

Steven L. Lerner
Senior Vice President & Chief Technology Officer
Praxair, Inc.

Biography

Steve Lerner has been senior vice president and chief technology officer of Praxair since 2001. Lerner joined Praxair in 1989 as manager of process chemistry in Applications Research & Development. He was appointed associate director, Process & Systems in 1992, and director, in 1993. In 2000, he became vice president, Process & Systems. He earned a bachelor's degree in mechanical engineering from The Cooper Union, New York, and received a doctorate in mechanical and aerospace engineering from Princeton University. While at Princeton, he was the recipient of a Guggenheim fellowship. He is also a graduate of the Stanford Executive Program.

Lerner is a member of the board of the Industrial Research Institute and is on the industrial advisory board of the AIChE. He also is a member and past chairman of the dean's advisory council of the State University of New York at Buffalo, School of Engineering and Science, and serves on the advisory board of the Institute of Materials Science of the University of Connecticut.

Managing Innovation to Drive Growth and Profitability at Praxair

**ACS/AIChE Management Conference
November 2005**

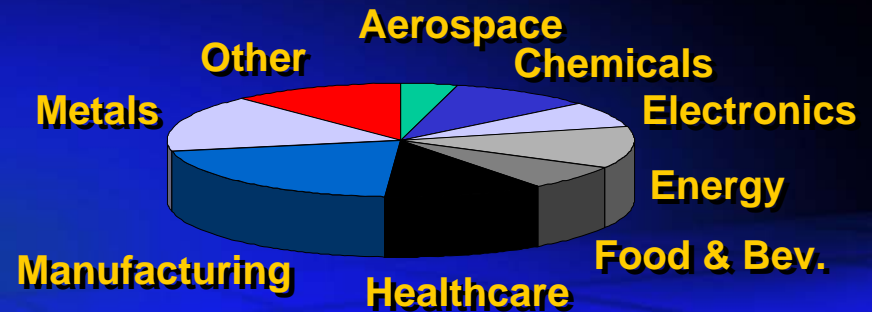
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Sr. Vice President & CTO**



Praxair

- \$6.6 B '04
- 85% industrial gases
- Diverse customer base
- Robust business model
- Competitive industry
- Applications driven

2004 Sales by Markets Served



On-site



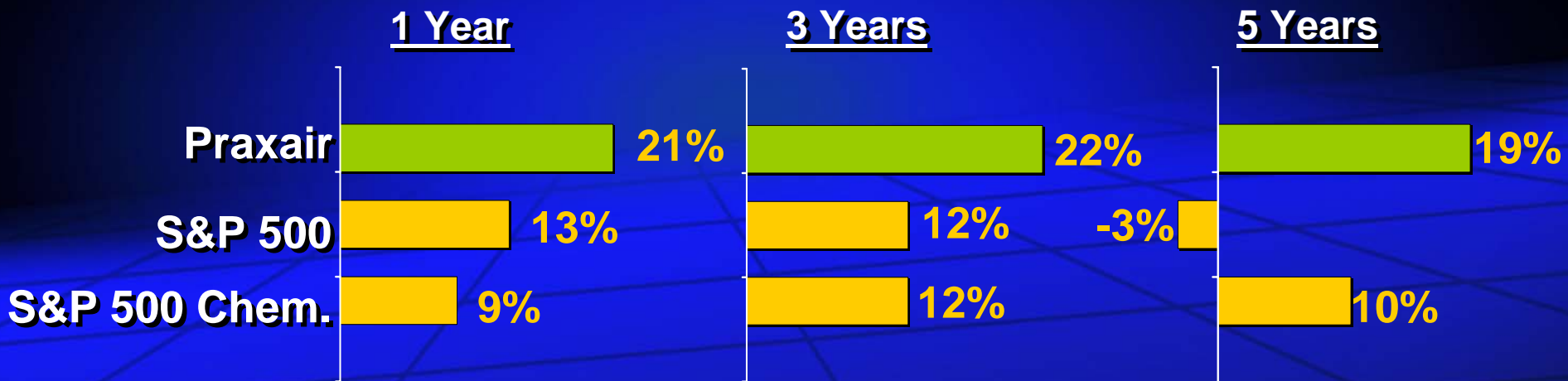
Liquid



Package

How is Praxair Doing?

Total Shareholder Return *(%CAGR)



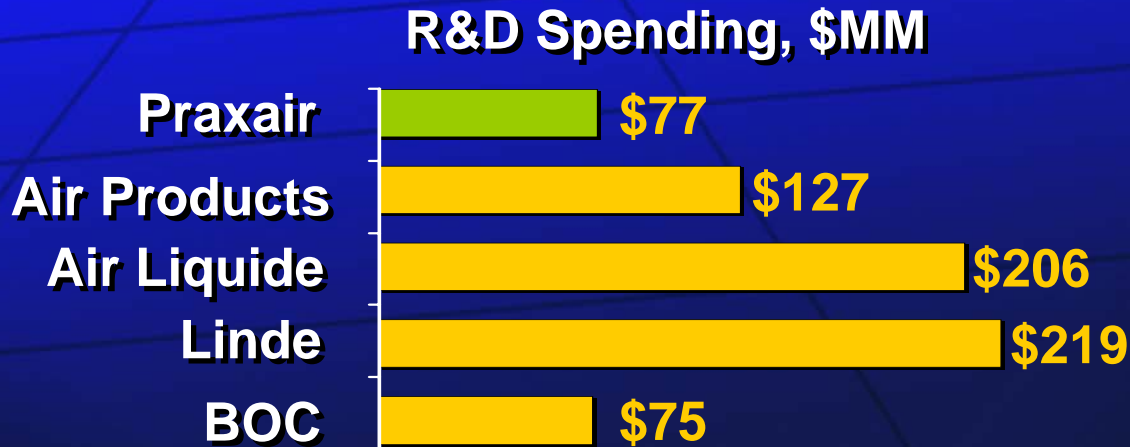
*Bloomberg 9/1/05

Outperforming our peers. . .

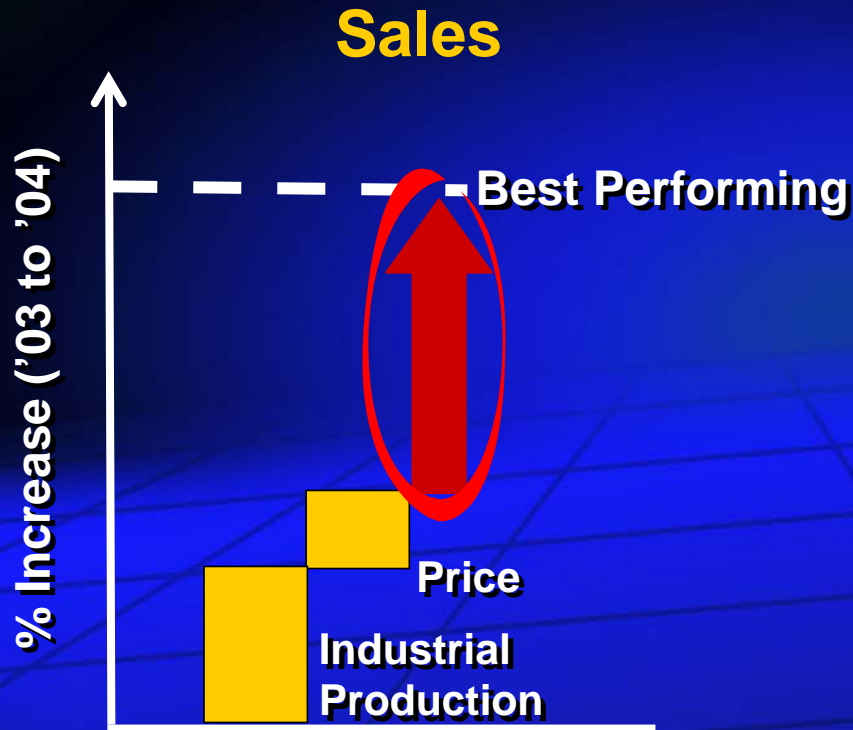
And Our Competitors . . .



While Spending Less ...



Innovation Premium



The difference between average and best performing companies

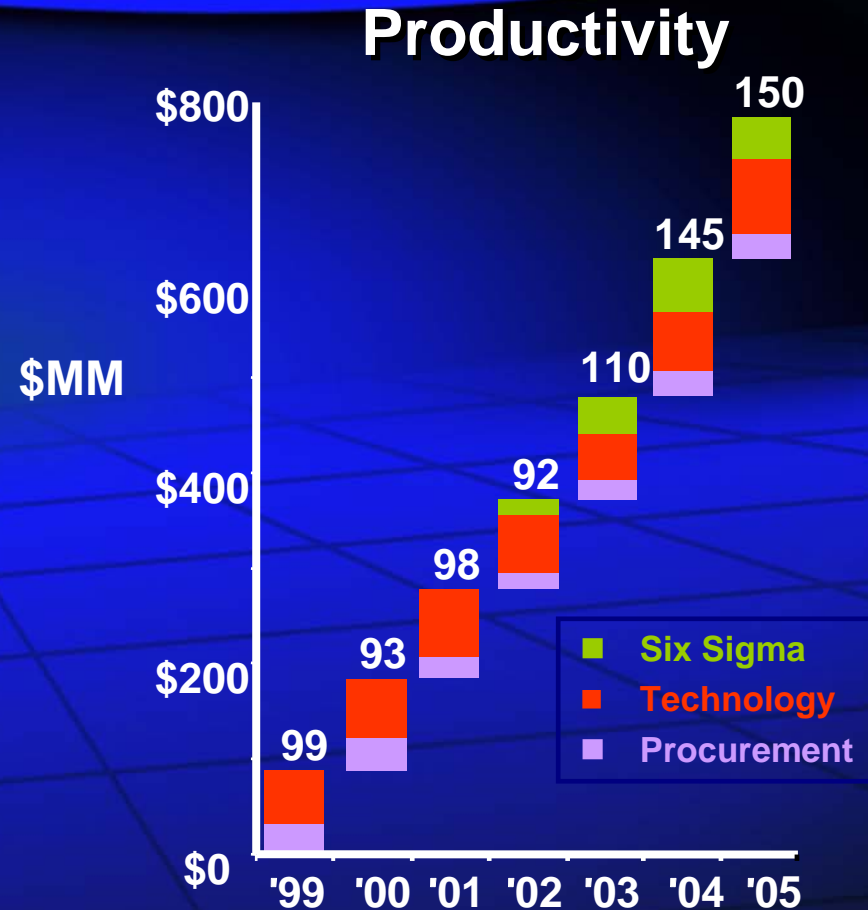
Creating More Value With Less Resources

- **Focus**
- **Work processes**
- **World class tools**
- **Measurement**
- **Leadership commitment**
- **People development**

**Innovation is difficult work. . .
outside most people's comfort zone**

Imperatives

- Lowest operating costs
- Drive top line growth
 - Leading supply systems
 - New applications, products and services



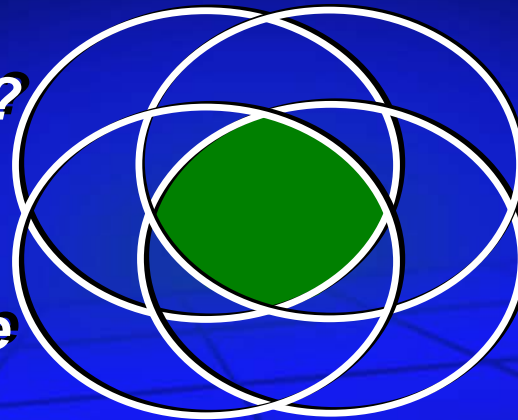
No end in sight for cost reduction

Where Do We Look For Top Line Growth?

***Aligned with
Praxair's strengths?***

***Compelling to
the customer?***

***Create adequate
value?***



***Aligned with Praxair's
strategies?***

Challenge is to:

- Identify new opportunities**
- Drive value creation**
- Increase speed and success rate**

while being organized regionally

Global Networks

10-15 people, representing all regions

Deep technical and market knowledge

Senior leadership

Resourced for success

NETWORKS:

Electronics

Refining

Healthcare

Chemicals

Metals

Food

Energy

Met Fab

Spec. Gas

Bio Pharma

Services

Gen'l. Industries

Cost Reduction

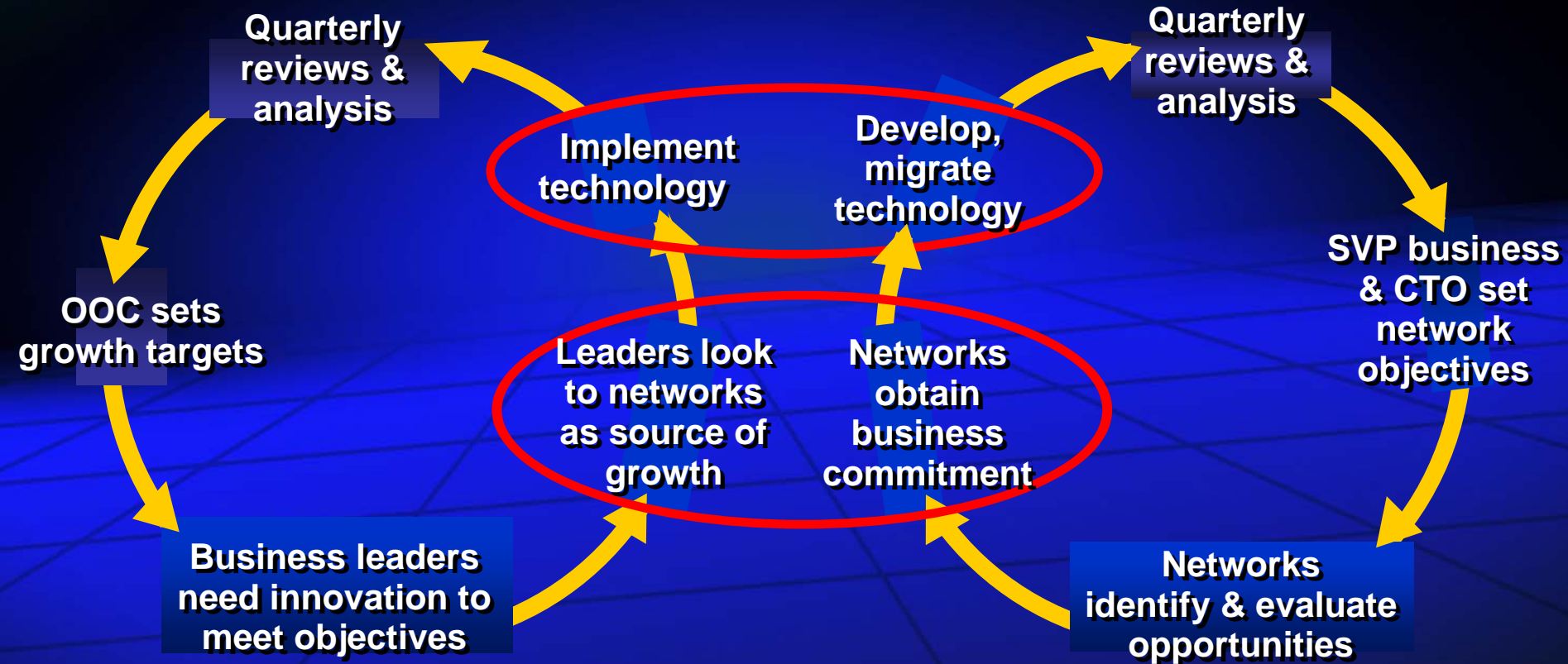
Supply Systems

Package Gas

Broad Responsibilities

- **Source/evaluate opportunities**
- **Identify business owners**
- **Initiate *rapid commercialization* teams**
- **Identify beta sites**
- **Responsible for value creation**

It Does Not Happen Naturally



- Leadership commitment
- Measurement
- Execution

Rapid Commercialization



Disciplined process



Punchlist

Concurrent market & technology
development



Requires direct customer feedback

Alignment & timely decisions



Business VP and CTO participation

Resourced for success



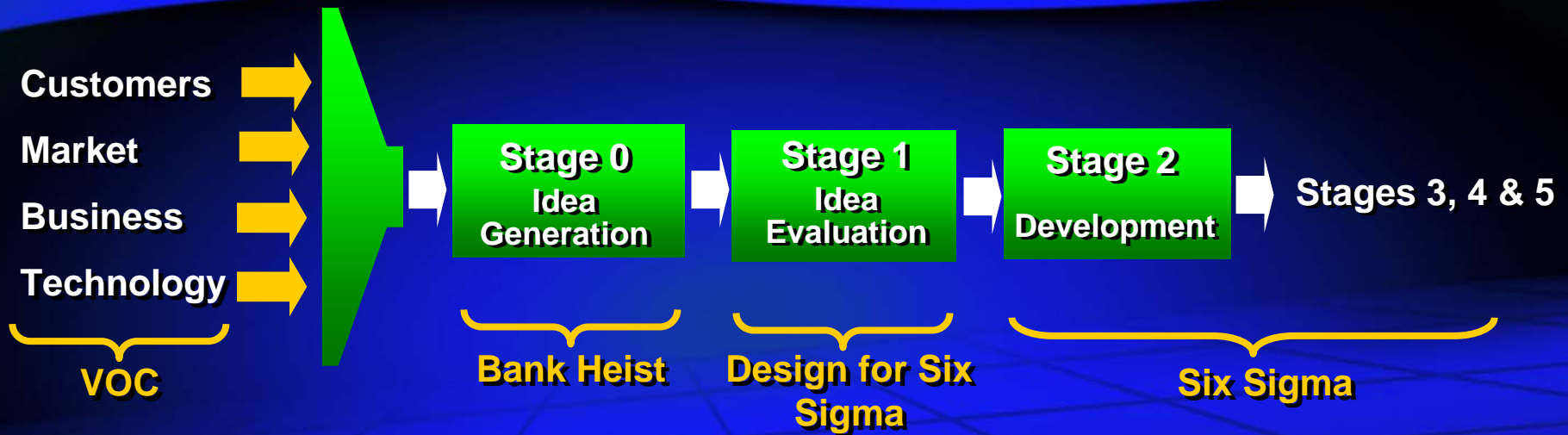
Resources committed at gate reviews

Cross-functional



Everyone has skin in the game

World Class Tools



Filling the idea bank: ***Voice of the customer***

Face-to-face interviews + Market analysis + Technology assessment → Defined opportunities

Selecting which projects to pursue: ***Bank Heist***

Confirming proposed solutions meet needs: ***DFSS***

Expediting development, understanding risks, etc.: ***Six Sigma***

- Cross-functional
- Direct customer feedback
- Data driven
- Six Sigma tools
- Web-based portfolio tracking

People Development

- Recruiting process attracts talent
- Extensive training curriculums
 - Staff
 - Program development managers
 - RC team leaders
 - Managers
- “Proven” management talent
- Mentoring
- Clear expectations

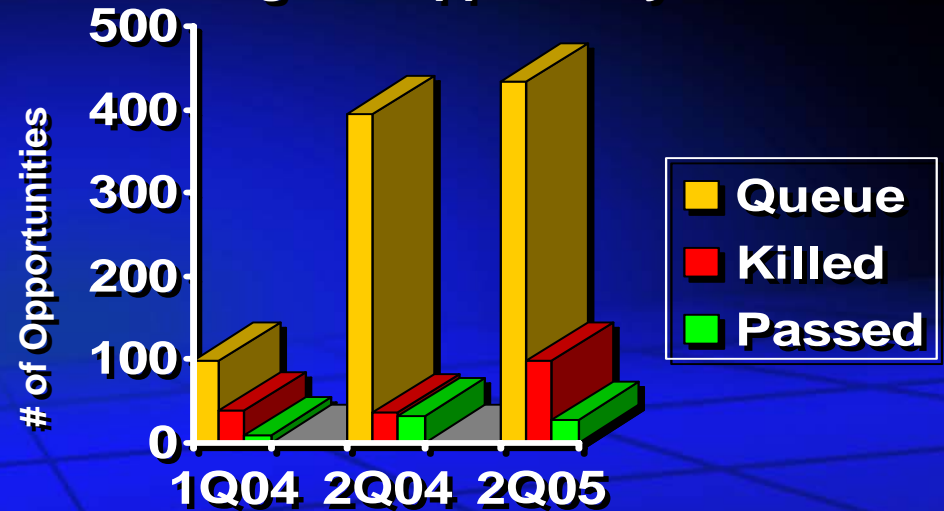


So, How Has It Worked?

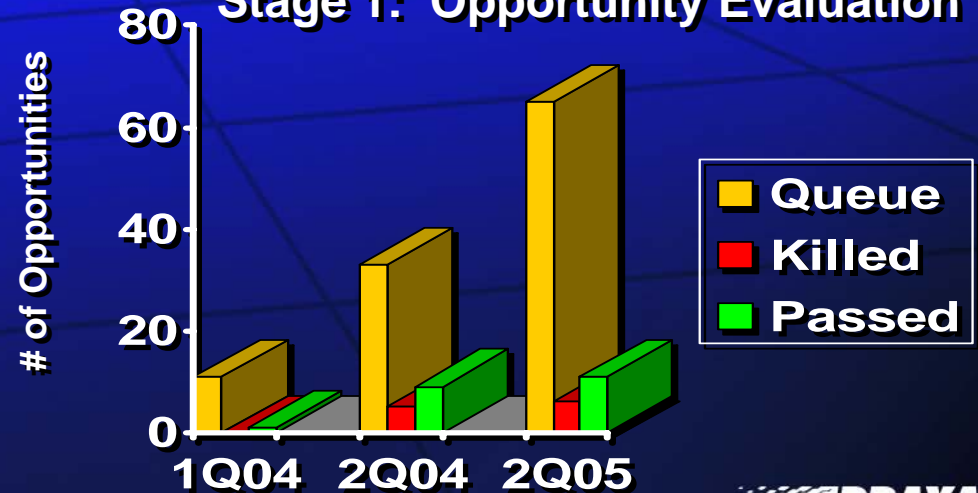
KEY MEASURES

- Program queue
- Continuous improvement
- Value creation

Stage 0: Opportunity Generation



Stage 1: Opportunity Evaluation

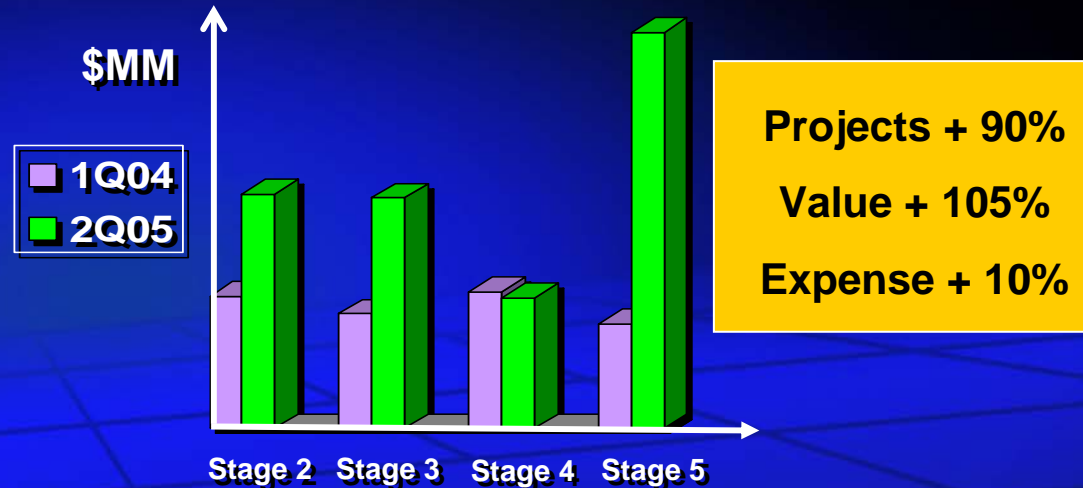


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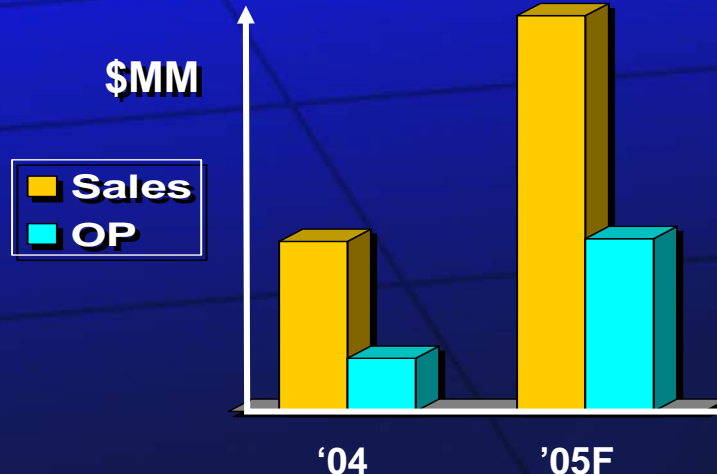
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5 Year Cumulative Revenue Forecast



Actual Value Creation



Networks Migrate Technology Rapidly

**Example: A perfect opportunity
for oxygen applications**

- **Higher efficiency**
- **Higher throughput**
- **Less emissions**



Converting Market Needs to Opportunities

- **Increasing role of natural gas in Brazil**
 - Greater availability
 - Competitive pricing
 - 5% car conversion and growing
- **Leveraging capabilities to actively participate**
 - Car conversion kits
 - Automotive cylinders
 - Natural gas liquefaction
 - JV with Petrobras for LNG distribution

A substantial business in an adjoining area

Final Thoughts

- **Innovation is critical to superior performance**
- **It doesn't happen naturally**
- **How best to manage innovation varies by firm, but these characteristics have proven useful**
 - Clear focus on targeted outcomes
 - Simple work processes
 - Cross-functional participation
 - Direct customer engagement
 - Measurement. . .and data based decisions
 - Robust tools and training
- **Active leadership participation is required for success**

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