

**strategy+business**

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**SMART  
SPENDERS**  
THE GLOBAL INNOVATION

1000



February 7, 2007

Booz | Allen | Hamilton

# The second annual *Global Innovation 1,000* examines conventional wisdom about the link between R&D spending & performance

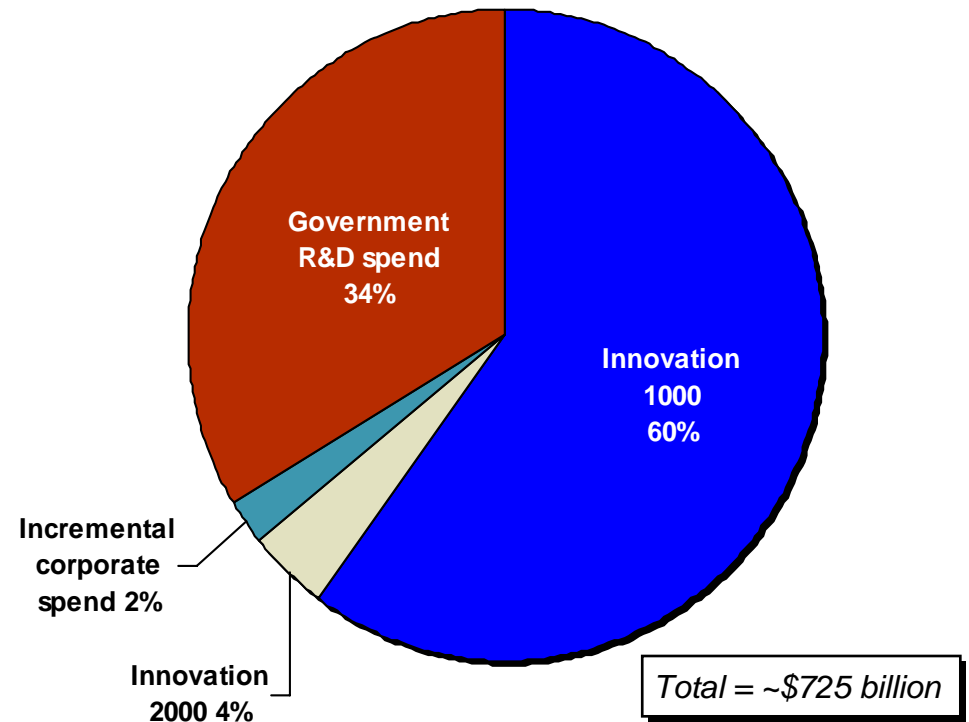
## Booz Allen Global Innovation 1000

- ▶ 1,000 largest R&D spenders in the world

### Study Goals

- ▶ Understand linkage between R&D spending and corporate performance
- ▶ Continue our research into how firms can maximize their innovation investment
- ▶ Highlight specific examples of effective innovators & identify key success factors
- ▶ Highlight regional and industry differences in the role & impact of R&D investment
- ▶ By revisiting annually, understand how factors change over time

Estimated Global R&D Spend

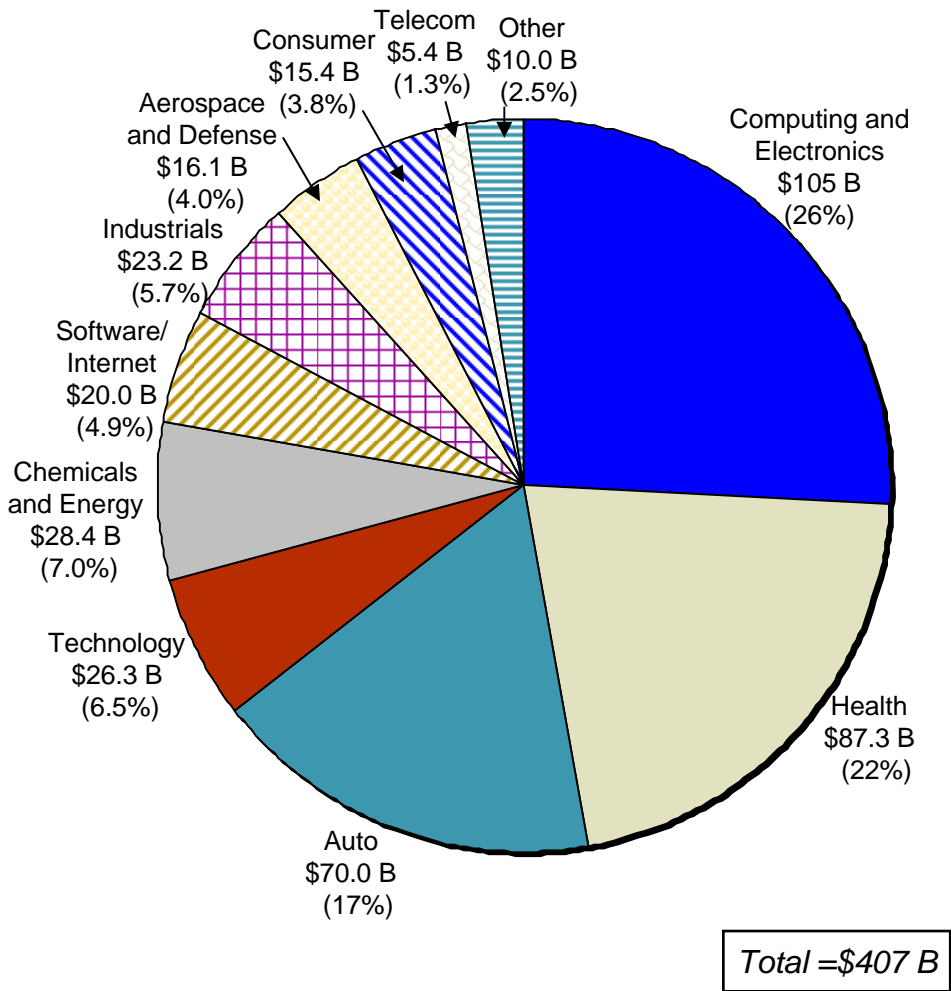


- ▶ ***Our study captures 80%-90% of corporate spending and ~60% of total Global R&D***

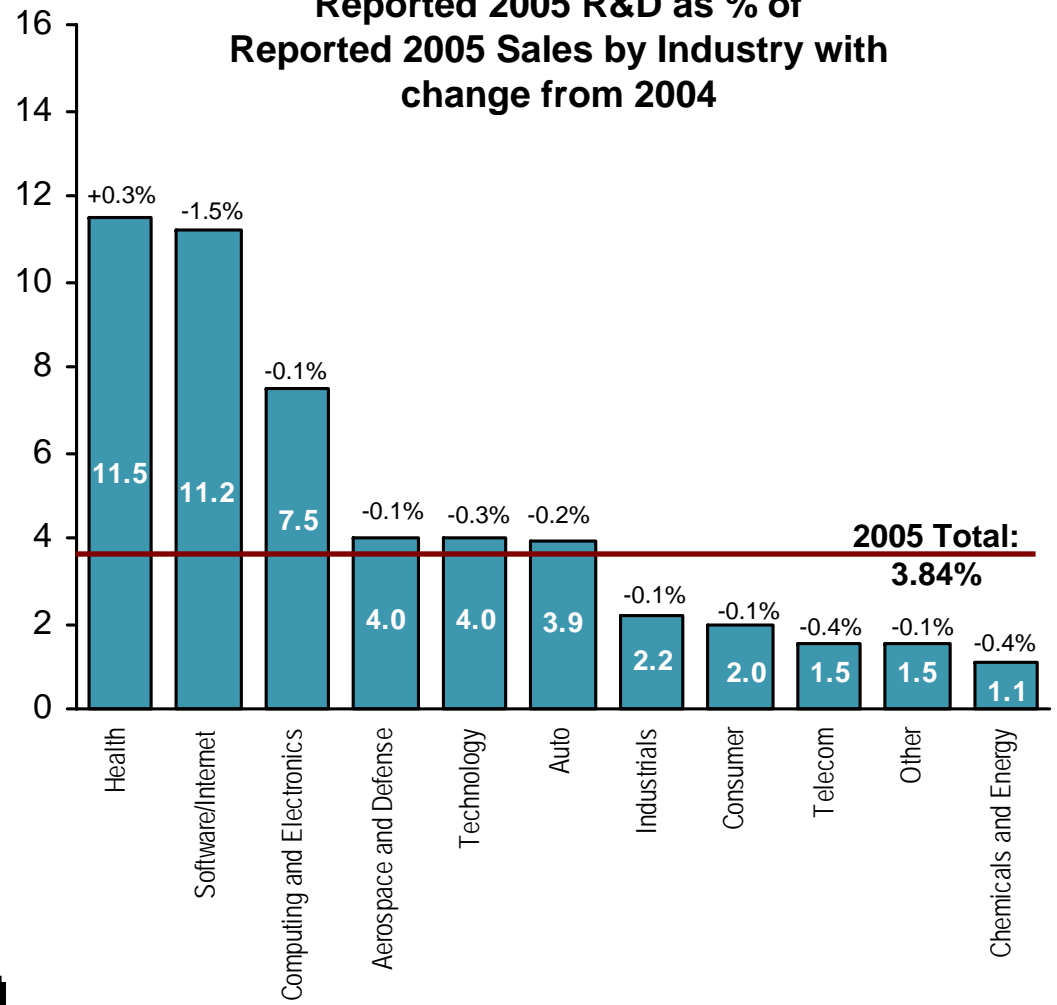
Note: Incremental corporate spend estimated using geometric progression  
Source: Booz Allen Hamilton analysis

# ~75% of the Innovation 1000 R&D spending is in High Tech, Health, & Automotive industries

**R&D Distribution by Industry: 2005**

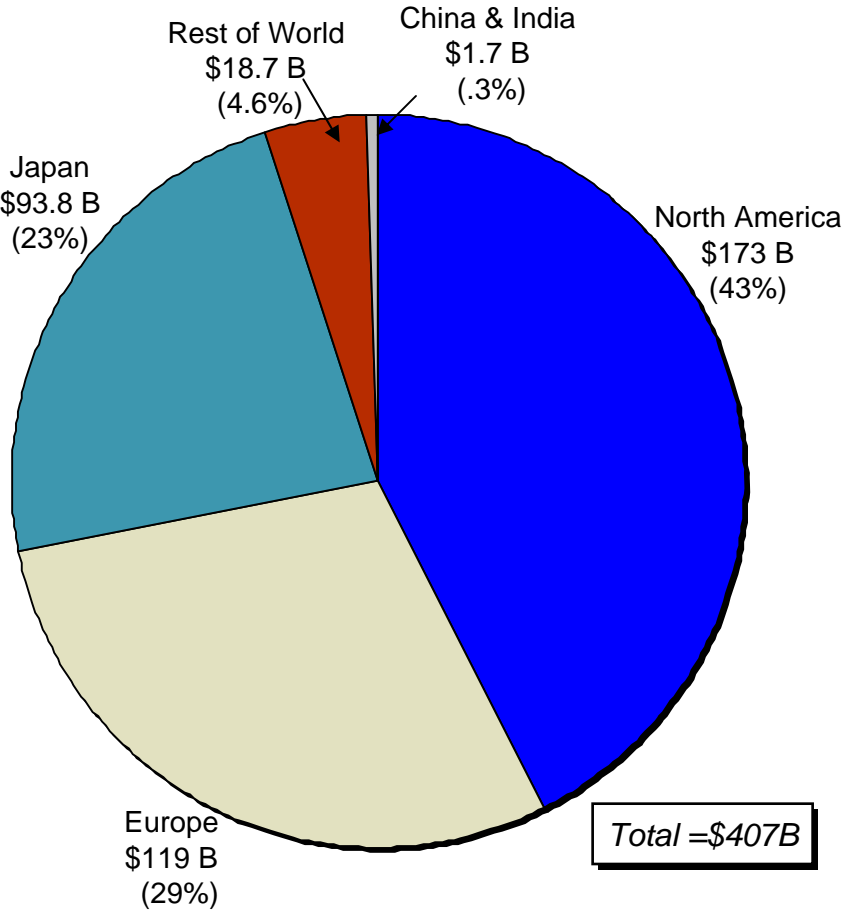


**Reported 2005 R&D as % of Reported 2005 Sales by Industry with change from 2004**

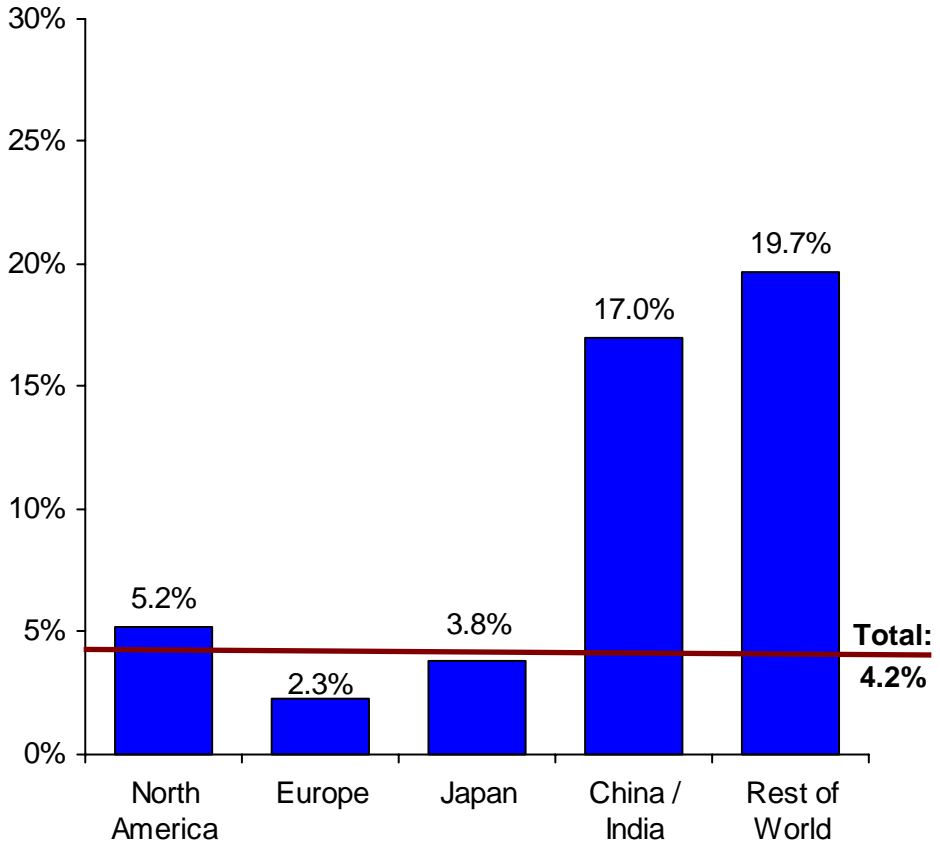


# Companies headquartered in North America, Europe, and Japan account for nearly 95% of the global R&D spend

R&D Distribution by Region: 2005



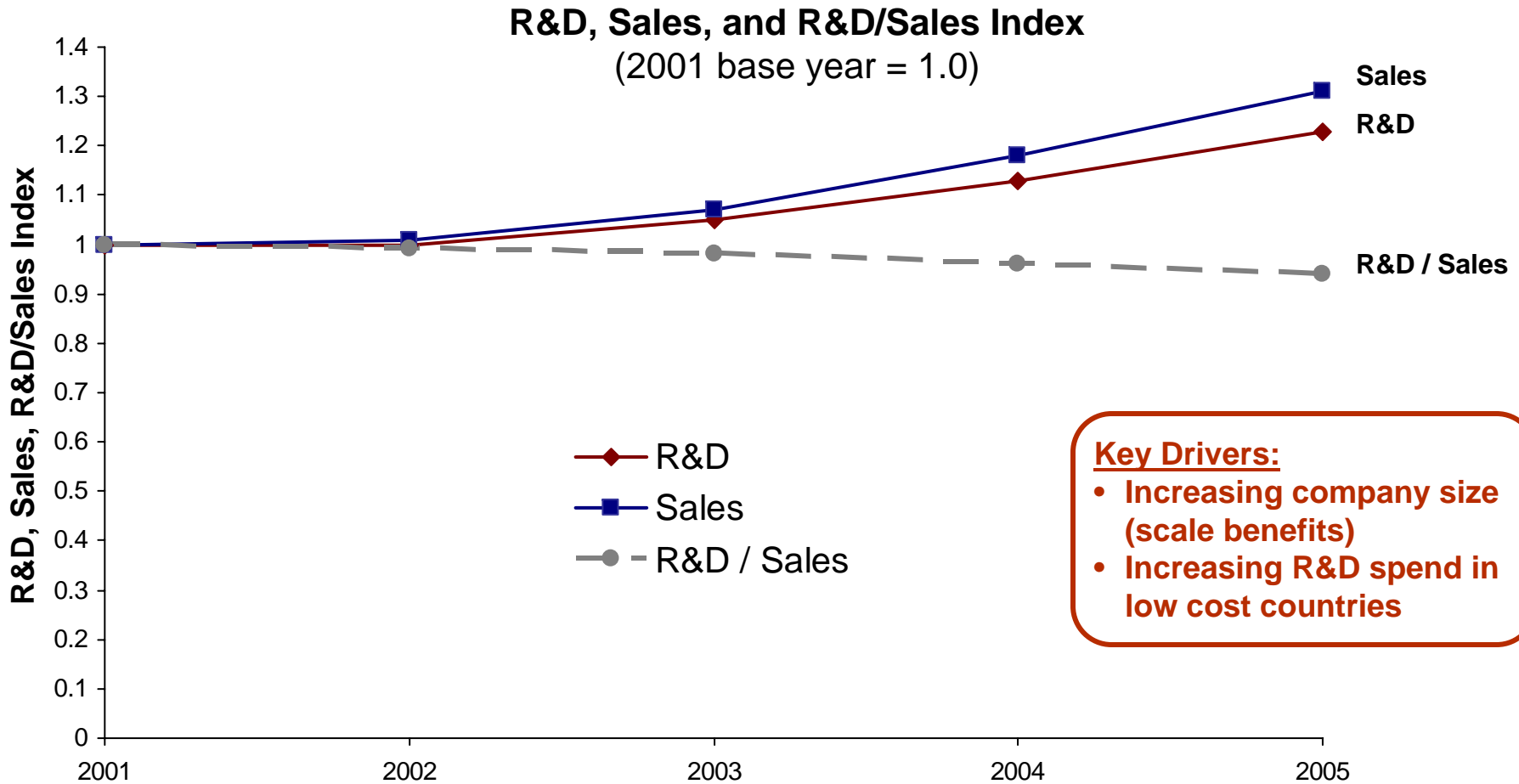
R&D Spend Growth: 2000-2005



## The Top 20 alone spend over \$115 billion annually on R&D

Rank	Company	R&D Spend (\$M)	Geography	Industry	R&D / Sales	% Change over 2004	2004 Rank
1	Ford	\$ 8,000	North America	Auto	5%	8.1%	3
2	Pfizer	\$ 7,442	North America	Health	15%	-3.1%	2
3	Toyota	\$ 7,178	Japan	Auto	4%	7.6%	5
4	DaimlerChrysler	\$ 7,019	Europe	Auto	4%	-0.2%	4
5	General Motors	\$ 6,700	North America	Auto	3%	3.1%	6
6	Siemens	\$ 6,546	Europe	Industrials	7%	10.9%	7
7	Johnson & Johnson	\$ 6,312	North America	Health	12%	21.3%	10
8	Microsoft	\$ 6,184	North America	Software & Internet	16%	-20.5%	1
9	IBM	\$ 5,842	North America	Computing & Electronics	6%	-0.5%	9
10	GlaxoSmithKline	\$ 5,700	Europe	Health	14%	8.0%	11
11	Samsung	\$ 5,428	Rest of Asia	Computing & Electronics	7%	12.4%	17
12	Intel	\$ 5,145	North America	Computing & Electronics	13%	7.7%	12
13	Volkswagen	\$ 5,071	Europe	Auto	4%	7.5%	13
14	Sanofi-Aventis	\$ 5,025	Europe	Health	15%	NA	31
15	Matsushita	\$ 4,989	Japan	Technology	6%	-8.2%	8
16	Novartis	\$ 4,846	Europe	Health	15%	16.2%	18
17	Nokia	\$ 4,753	Europe	Computing & Electronics	11%	1.3%	15
18	Sony	\$ 4,698	Japan	Computing & Electronics	7%	5.9%	14
19	Roche Holdings	\$ 4,578	Europe	Health	16%	10.7%	19
20	Honda Motor	\$4,508	Japan	Auto	5%	9.1%	16
<b>Total</b>		<b>\$ 115,965</b>			<b>7%</b>	<b>5.8%</b>	

# Finding: R&D/Sales is declining – R&D spending is growing but slower than sales

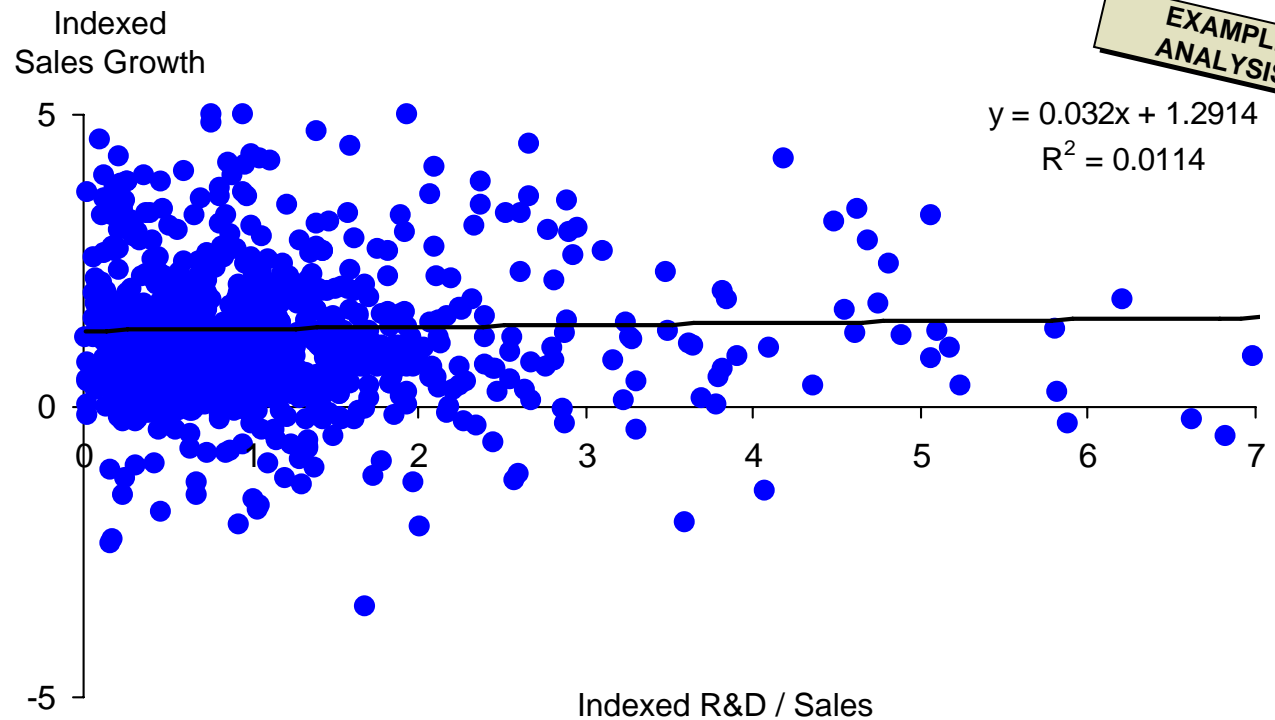


# Finding: Higher R&D spending DOESN'T ensure better performance in terms of growth, profitability or shareholder returns

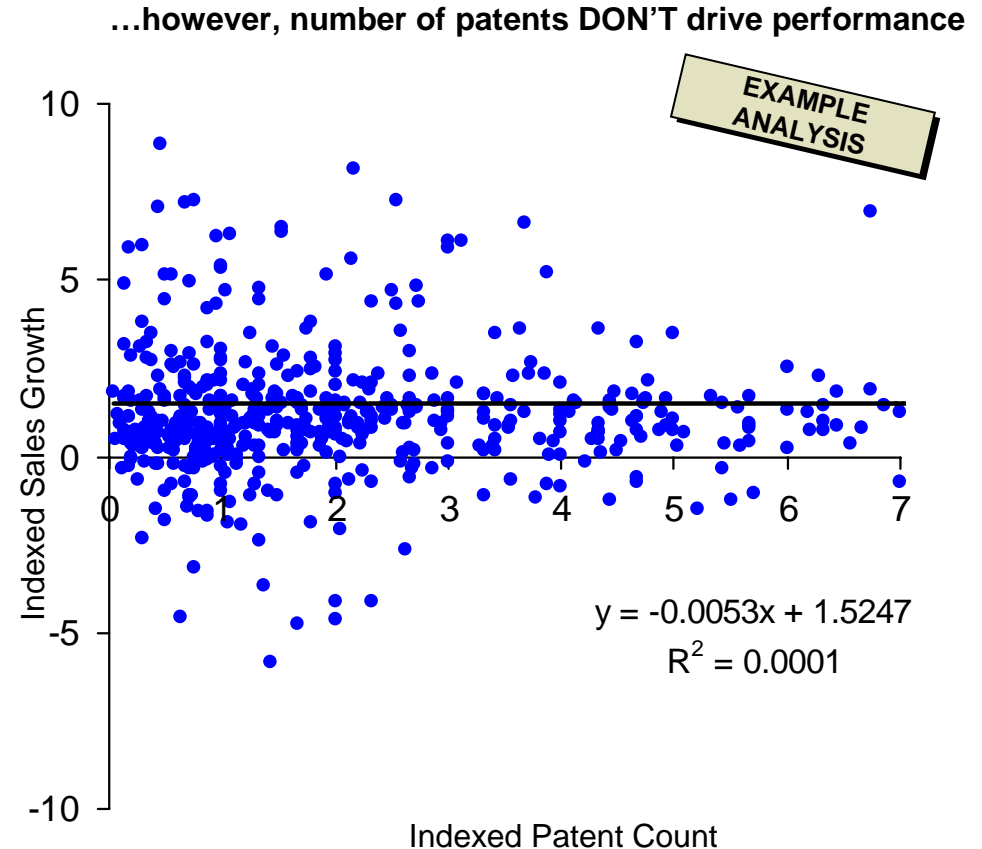
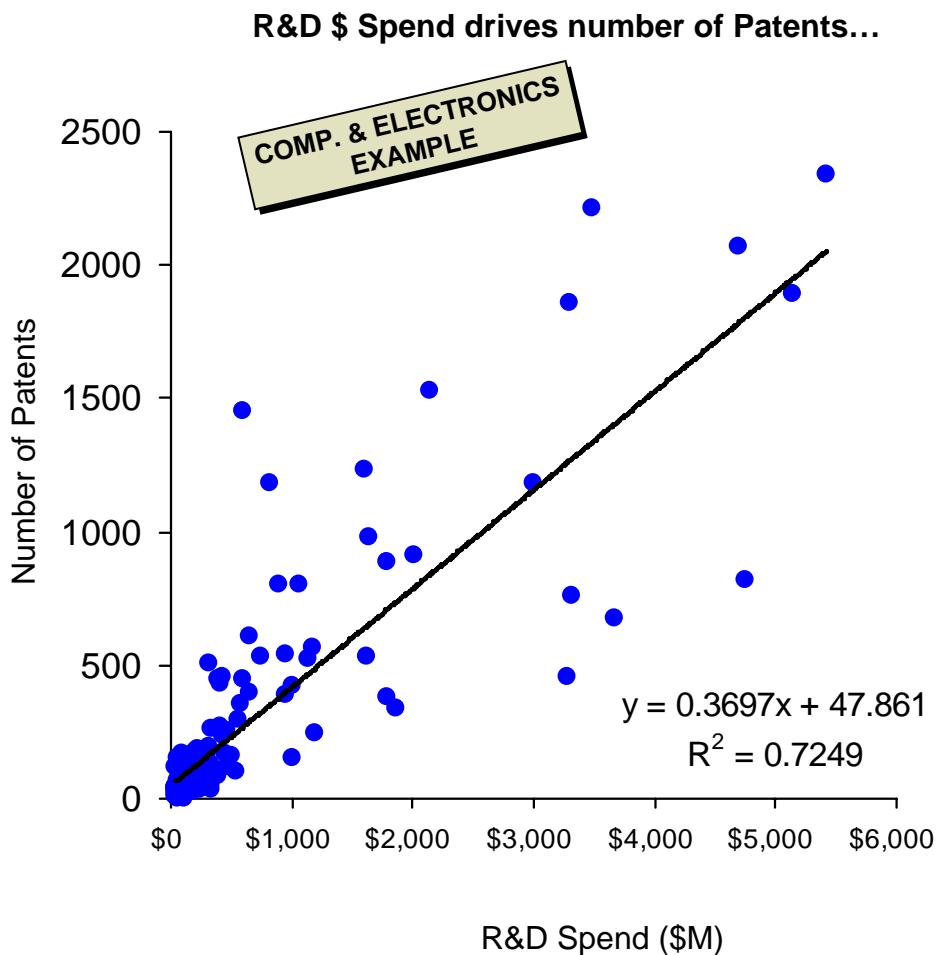
The Performance Disconnect  
Example analysis showing relation between R&D and financial performance

~10,000 analyses found NO statistical relationship between R&D spend and:

- Sales growth
- Gross profit growth
- Operating profit growth
- Operating Margin
- Net profit growth
- Net Margin
- Market cap growth
- Total shareholder return

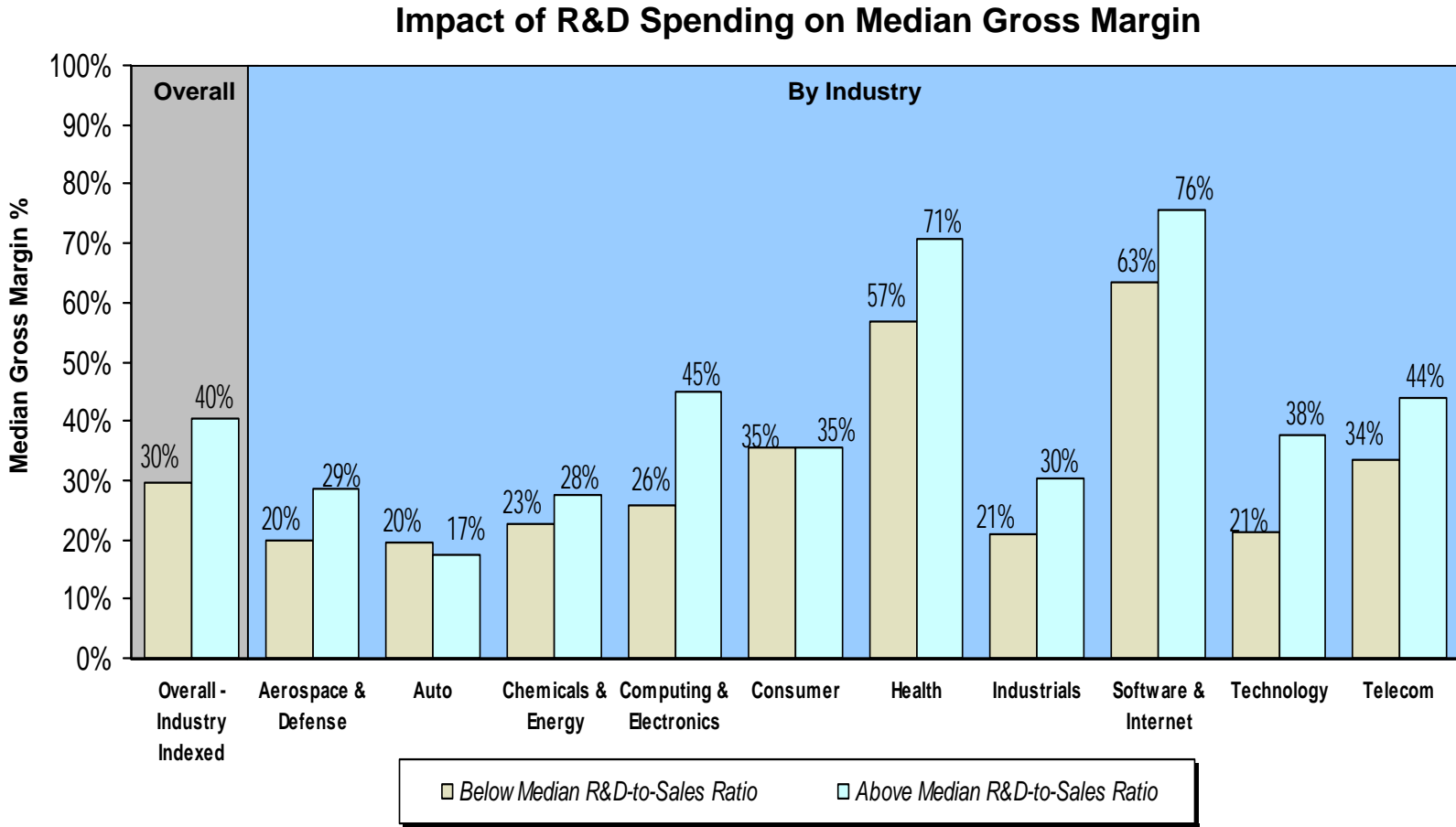


# Finding: R&D \$ spend can increase number of patents, but number or quality of patents DON'T drive performance



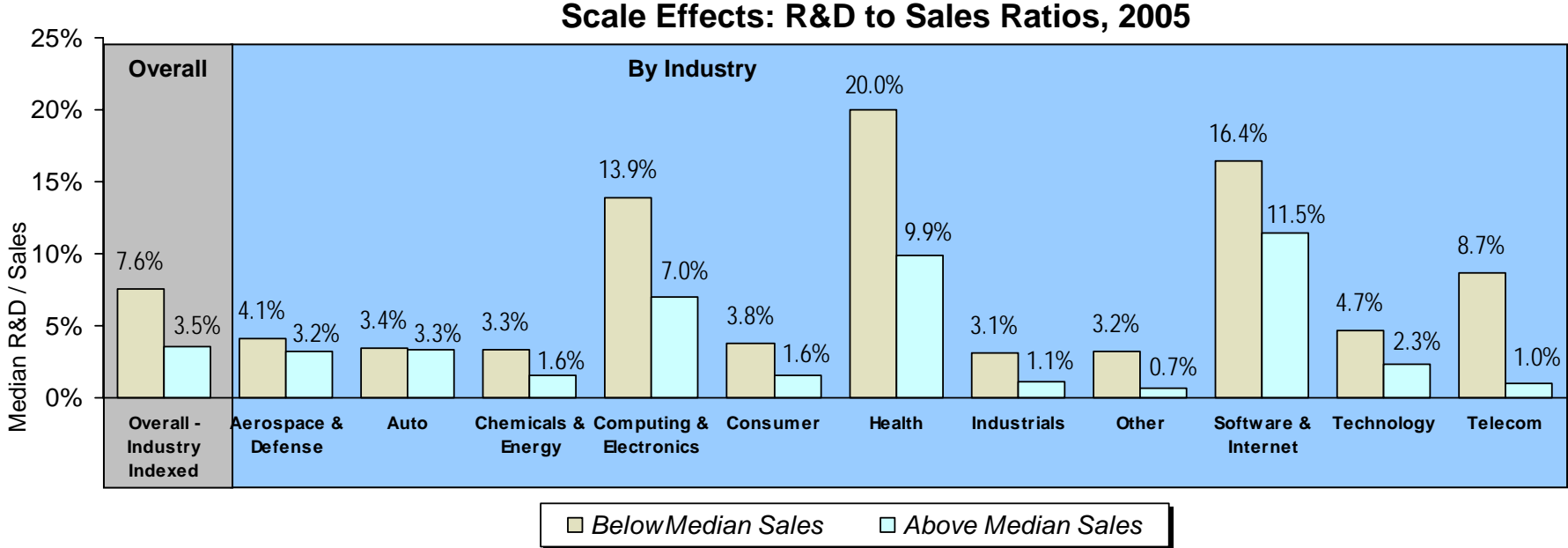
Source: ipIQ - owns the most comprehensive patent database worldwide

# Finding: The only financial measure correlated with R&D spending was gross margin



- ▶ Successful innovators not only create improved products, but are also better able to capitalize on them in the market

**Finding: Scale benefits exist in R&D – in general, larger companies spend a smaller % of sales on R&D without a performance hit**



***Smaller companies can overcome the scale effect by spending R&D dollars more efficiently***

- ***Open innovation***
- ***Low cost R&D networks***
- ***Broader use of partnerships***

# Finding: 94 “High Leverage Innovators (HLIs)” consistently outperform their peers with lower than industry R&D spending



## 94 High Leverage Innovators

► **Consistently outperform peers against 7 financial performance indicators**

- Sales growth
- Gross profit growth
- Gross profit
- Operating profit growth
- Operating profit
- Market cap growth
- Total shareholder return

► **Spend lower than their industry median (R&D / Sales)**

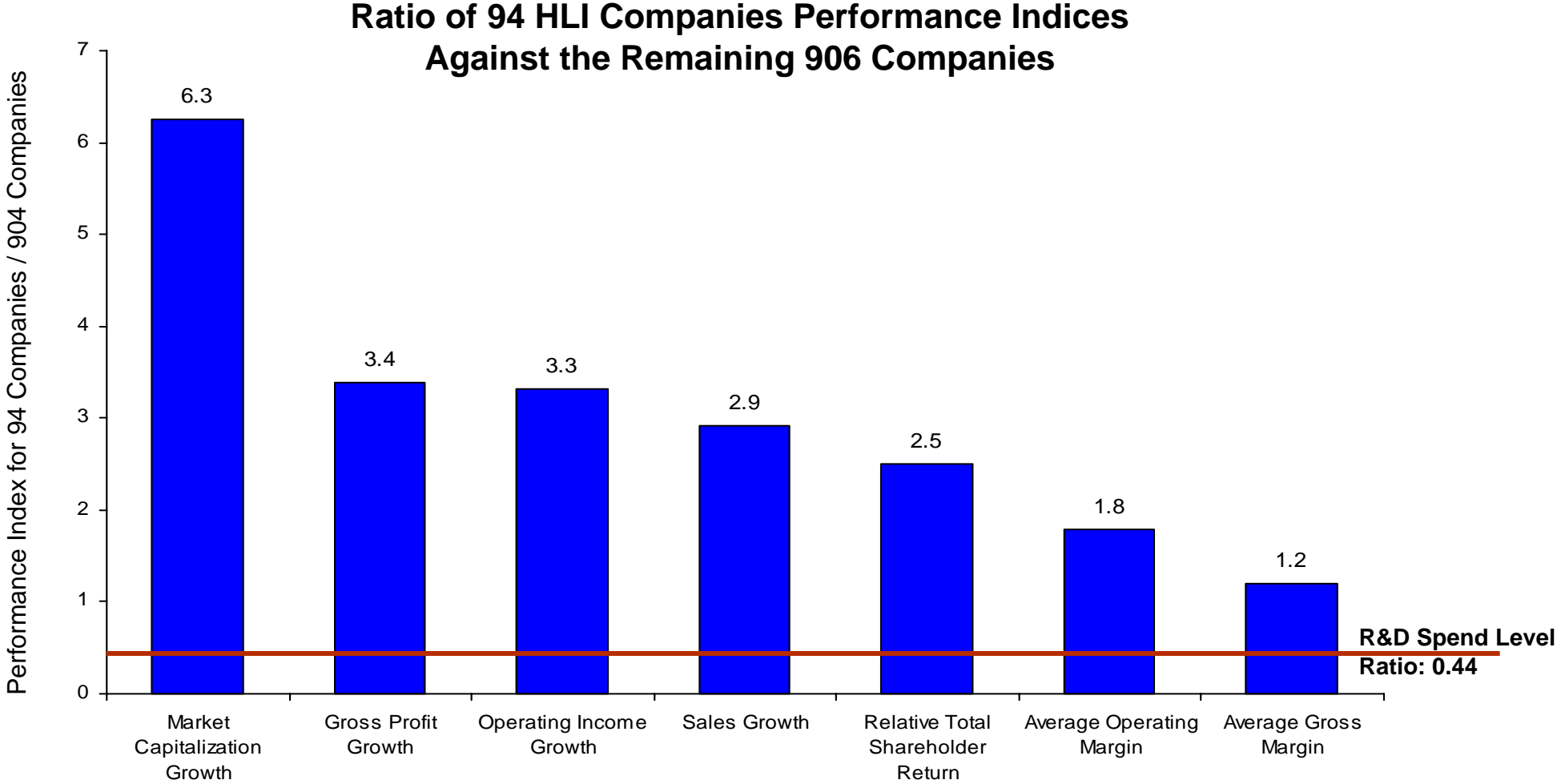
Adidas
Alliant Techsystems
Apple Computer
Asustek Computer
AU Optronics
Barr Pharmaceuticals
Biomet
Black & Decker
Boston Scientific
C.R. Bard
Cadbury Schweppes
Casio Computer
Caterpillar
Chi Mei Optoelectronics
Christian Dior
Cia Vale Do Rio Doce
Conocophillips
Coretronic Corporation
Daiwa House
Dell
Dentsply International
Eaton Corp
eBay
Ecolab
Endo Pharmaceuticals
Energizer
Exxon Mobil
Falconbridge
Fisher Scientific
Forest Laboratories
Fujikura
Google

High Tech Computer Corp
Hon Hai Precision Industry
Hyundai Motor
Ibiden
Illinois Tool Works
International Rectifier
Kellogg Co
Kobe Steel
Komatsu
Konica Minolta
Korea Circuit Co
Kronos
Lite-on Technology
Lyondell Chemical Company
Makita Corp
Meda
Mediatek
MEMC Electronic Materials
NCsoft Corporation
Newmont Mining
Nidec
NOK
PACCAR
Par Pharmaceutical
Parker Hannifin Corp
Petrobras
Petro-Canada
Phonak
Plantronics
POSCO
Powerchip Semiconductor

Praxair
Recordati
Research In Motion
Respironics
Reynolds American
Samsung Electronics
Sandisk
Sanken Electric
Shimadzu
Smith & Nephew
Smith International
St Jude Medical
Stryker
Sumitomo Electronics
Suncor Energy
Symantec
Synthes
Systemex
Taiwan Semiconductor
Tata Motors
Techtronic Industries
Teva Pharmaceutical
The Cooper Companies
Tokyo Ohka Kogyo Co
Toyota Motor
Trelleborg
Varian Medical Systems
Volvo Group
Weatherford International
Woodward Governor
Yahoo!

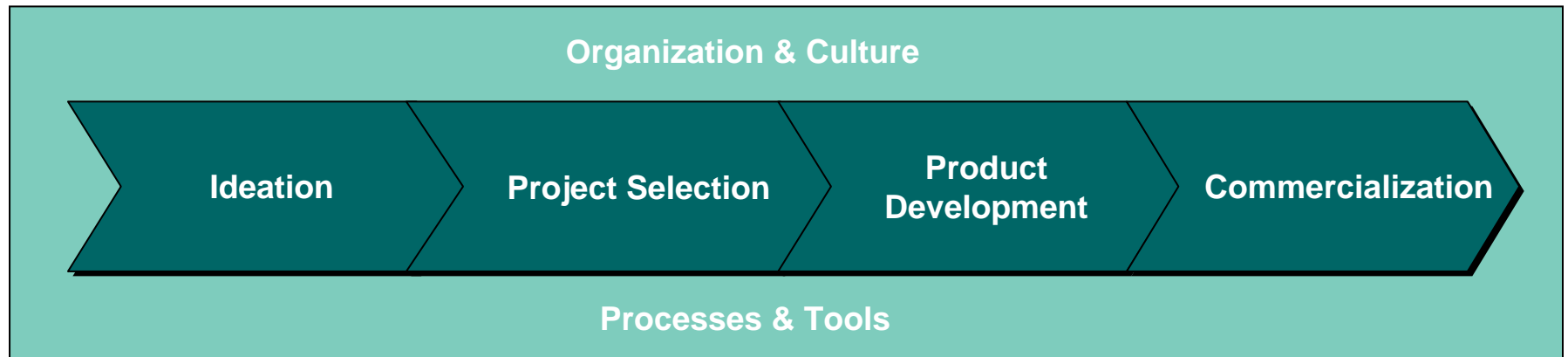
Source: Booz Allen Global Innovation 1000, 2006

**Finding: “High Leverage Innovators” consistently outperform their peers with lower than industry R&D spending**



# Finding: Overall, these HLI companies effectively integrate the innovation value chain and demonstrate best practices across the value chain

## Innovation Value Chain



### Example Best Practices

- |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>▶ Clear innovation strategy and company focus</li> <li>▶ Strong customer understanding and feedback mechanism</li> <li>▶ Clear leader / follower strategy</li> <li>▶ Consumer insights and trend analysis capabilities</li> <li>▶ Ability to incorporate and extend external ideas</li> <li>▶ Incentives to promote ideation</li> </ul> | <ul style="list-style-type: none"> <li>▶ Few large big bets</li> <li>▶ Incremental customer driven improvements</li> <li>▶ Incorporates breakthrough / core research / technologies</li> <li>▶ Link project selection to overall strategy</li> <li>▶ Clear governance and decision making</li> <li>▶ Effective tools to track and measure value</li> </ul> | <ul style="list-style-type: none"> <li>▶ Disciplined and effective stage/ gate process</li> <li>▶ Bottleneck and “congestion” elimination</li> <li>▶ Effective translation of customer requirements to product design</li> <li>▶ Clear metrics supported with “tough” decisions</li> <li>▶ Effective project and resource management</li> <li>▶ Efficient R&amp;D machine – high quality at low cost in short time</li> </ul> | <ul style="list-style-type: none"> <li>▶ Cross-functional collaboration</li> <li>▶ Sales and marketing capabilities</li> <li>▶ Strong market sensing capability – customer, competition</li> <li>▶ Robust investment planning</li> <li>▶ End-to-end product life cycle management</li> </ul> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# Findings : High Leverage Innovators succeed via superior capabilities

EXAMPLE HIGH  
LEVERAGE INNOVATORS



- ▶ Focus on few big hits & deep customer understanding



TOYOTA

- ▶ Strong culture around engineering effectiveness/efficiency



- ▶ Lean culture & strong central leadership and innovation governance



- ▶ Deep end-customer understanding & commercialization capabilities



- ▶ Explicit strategy around growth through new product development



- ▶ Exceptional ideation & product development capabilities

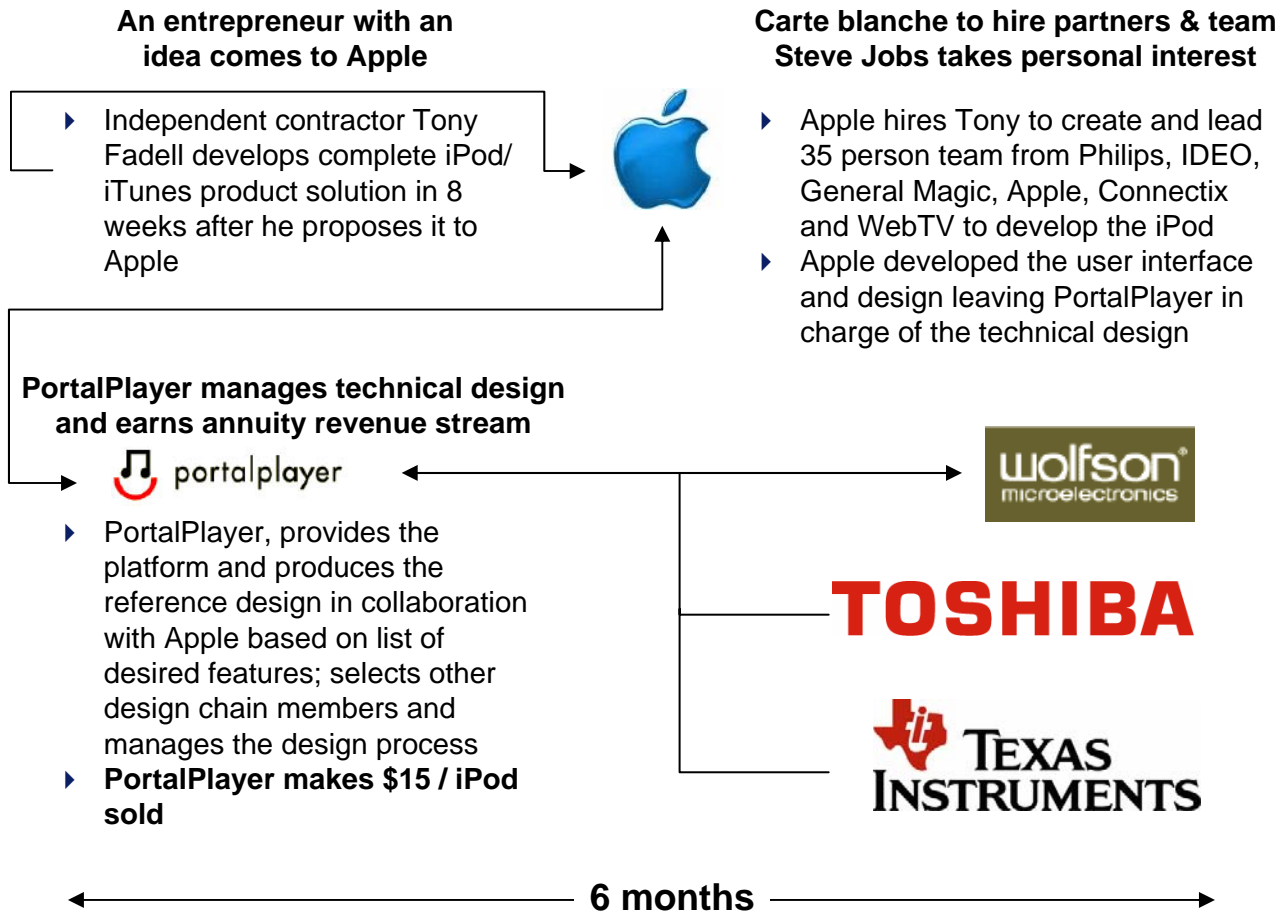


- ▶ Strong capabilities around translating customer needs into products



- ▶ Heavy focus on design reuse and making the right bets through acquisitions

# Example: Apple created the iPod in just 6 months leveraging an open innovation process & culture --- no "NIH" syndrome



**iPod**

**iPod critical success factors:**

- ▶ Business system innovation
- ▶ Openness of development process
- ▶ Fast decision making
- ▶ Iterative collaborative relationship with PortalPlayer and other partners

Source: Booz Allen Hamilton

# Guiding principles to get “more bang for an innovation buck”

- ▶ **Develop strong capabilities along the innovation value chain to improve overall effectiveness**
- ▶ **Effectively integrate all elements of the innovation value chain**
  - Steps from innovation strategy and ideation through commercialization
  - Connections with related functions – marketing, sales, strategy, operations, IT
- ▶ **Design organizational models that support an innovative culture and provide the necessary business processes and tools**
- ▶ **Develop tight linkage between customer requirements and market insights to inform project ideas and selection**
- ▶ **Once again, “understand your customer” -- ideas and innovation are only meaningful if customers are willing to pay for them**

# The 2<sup>nd</sup> annual Innovation 1000 study has received global attention



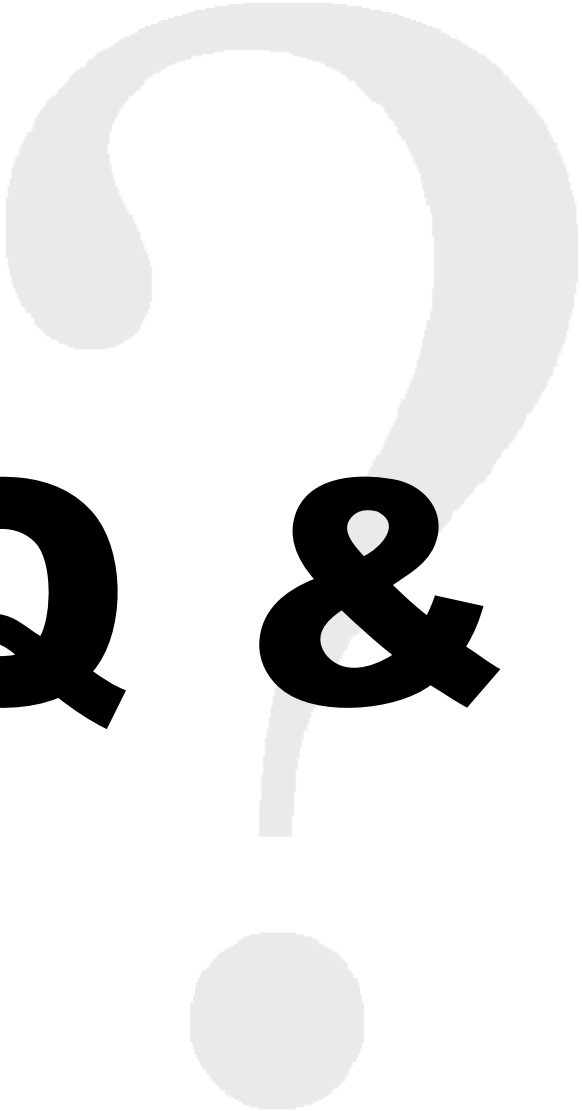
innovate  
FORUM

2006  
INNOVATION  
MANAGEMENT  
Awards

- ▶ Cited in +60 publications in 15 countries to date
- ▶ Featured on NPR radio across the US
- ▶ Invited to present findings at MIT Sloan in addition to a large number of companies
- ▶ Awarded “Special Achievement Award for Advancing Innovation” by Innovate Forum

## Select publications





**Q & A**

# Additional Resources

To read the article, “Smart Spenders: The Global Innovation 1000,” please use the following link:

[http://www.strategy-business.com/innovation\\_1000](http://www.strategy-business.com/innovation_1000)

To obtain copies of the book, *Mastering the Innovation Challenge: Unleashing Growth and Creating Competitive Advantage*, please use the following link:

<http://www.strategy-business.com/innreader>

Slides and recording: A recording of the event will be posted at:

<http://www.strategy-business.com/webinars/archive>



Interested in receiving more information from Booz Allen’s Innovation Team? Contact Kate Pinkerton, Innovation Director ([pinkerton\\_kate@bah.com](mailto:pinkerton_kate@bah.com)) or Barry Jaruzelski ([jaruzelski\\_barry@bah.com](mailto:jaruzelski_barry@bah.com))