

SPEAKER:

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**SMART
SPENDERS**
THE GLOBAL INNOVATION



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

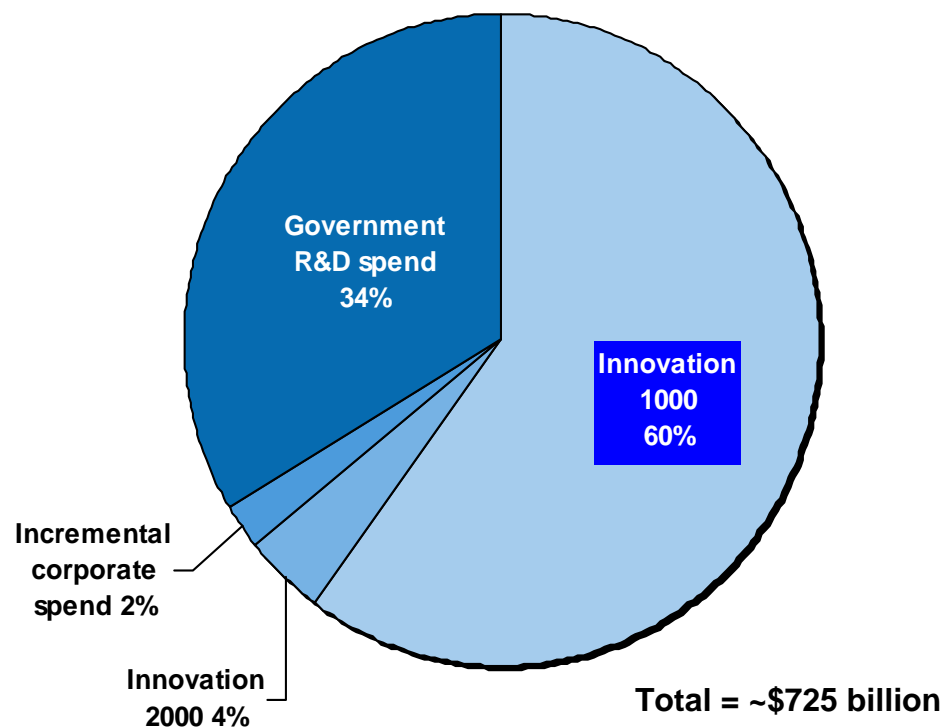
Booz & Company Global Innovation 1000

- 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



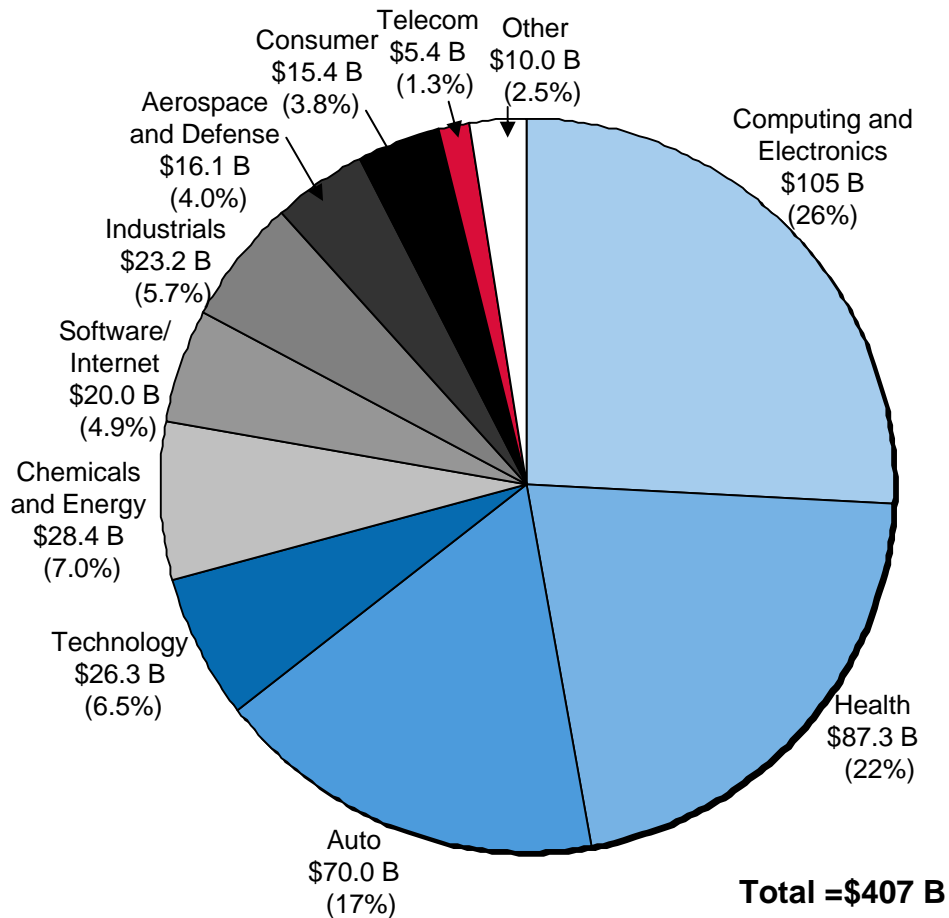
Our study captures 80%-90% of corporate spending and ~60% of total Global R&D

Note: Incremental corporate spend estimated using geometric progression

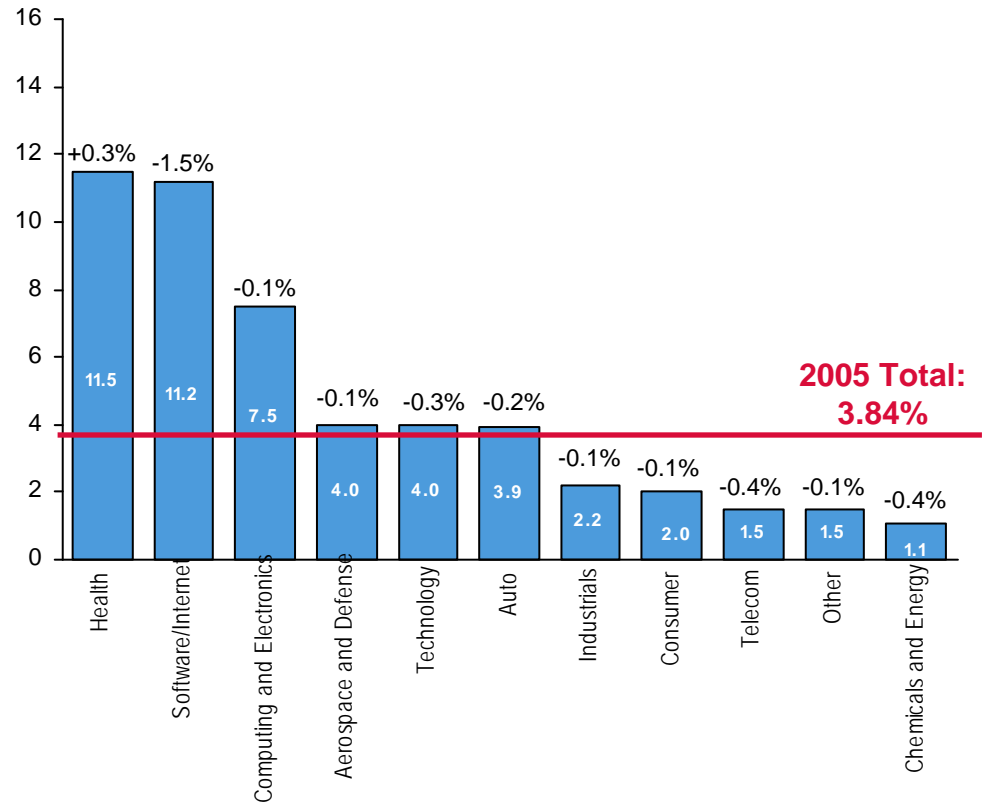
Source: Booz & Company analysis

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

R&D Distribution by Industry: 2005

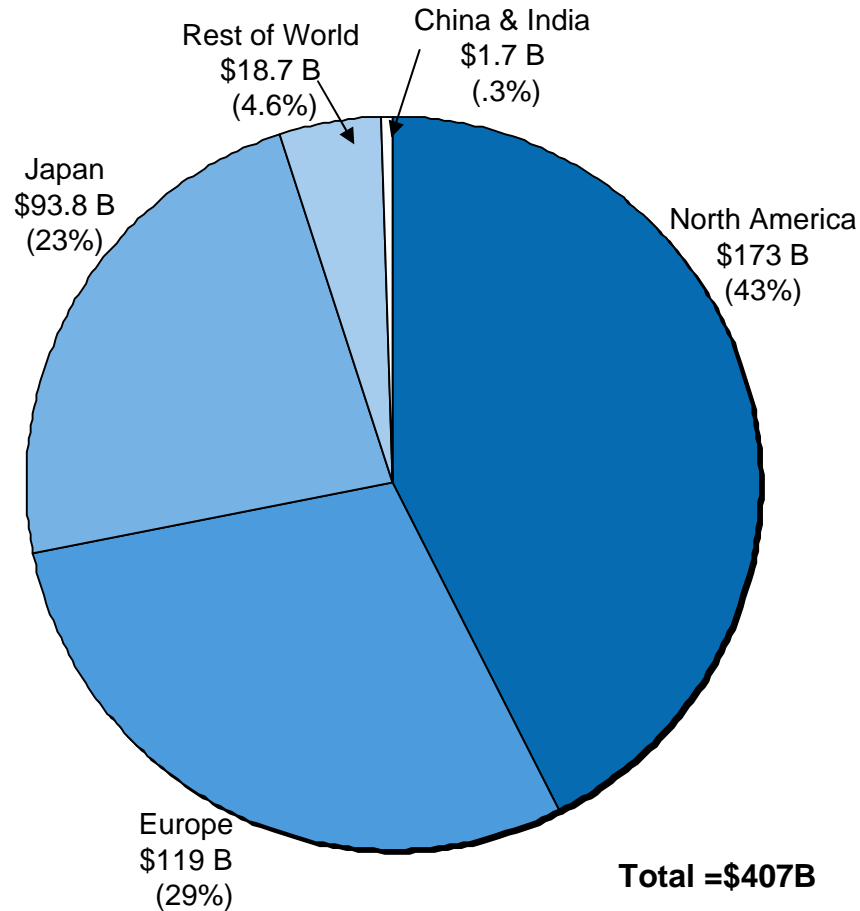


Reported 2005 R&D as % of Reported 2005 Sales by Industry with change from 2004

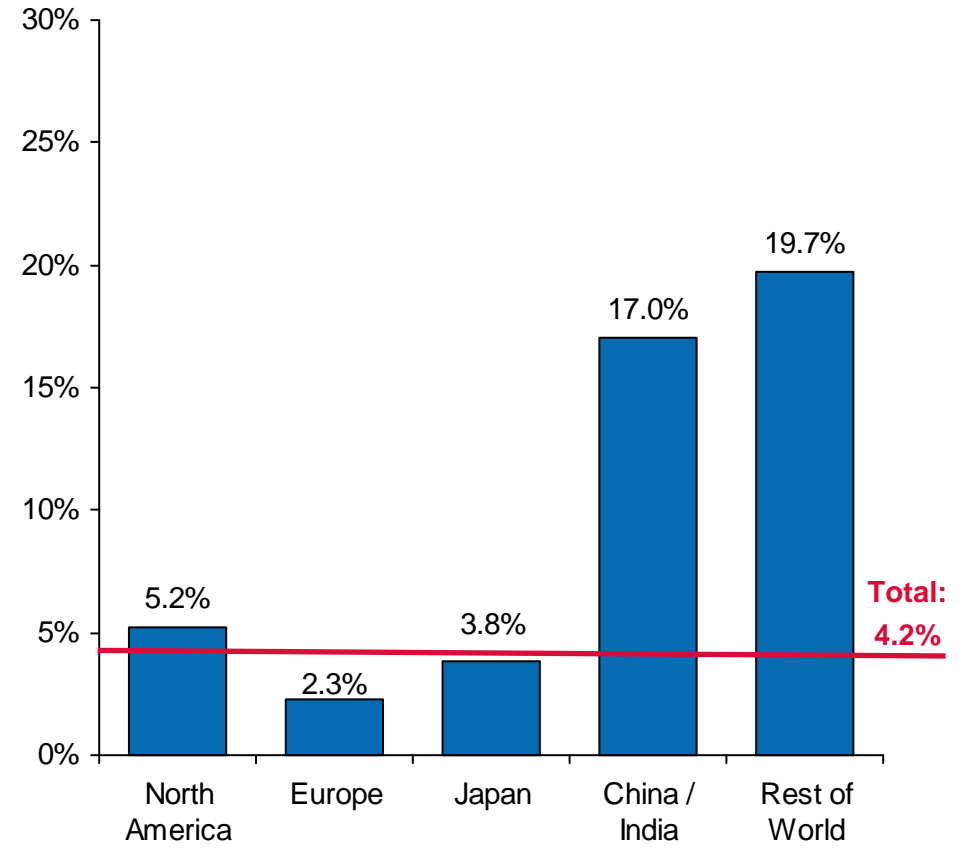


Companies headquartered in North America, Europe, and Japan account for nearly 95% of the global R&D spend

R&D Distribution by Region: 2005



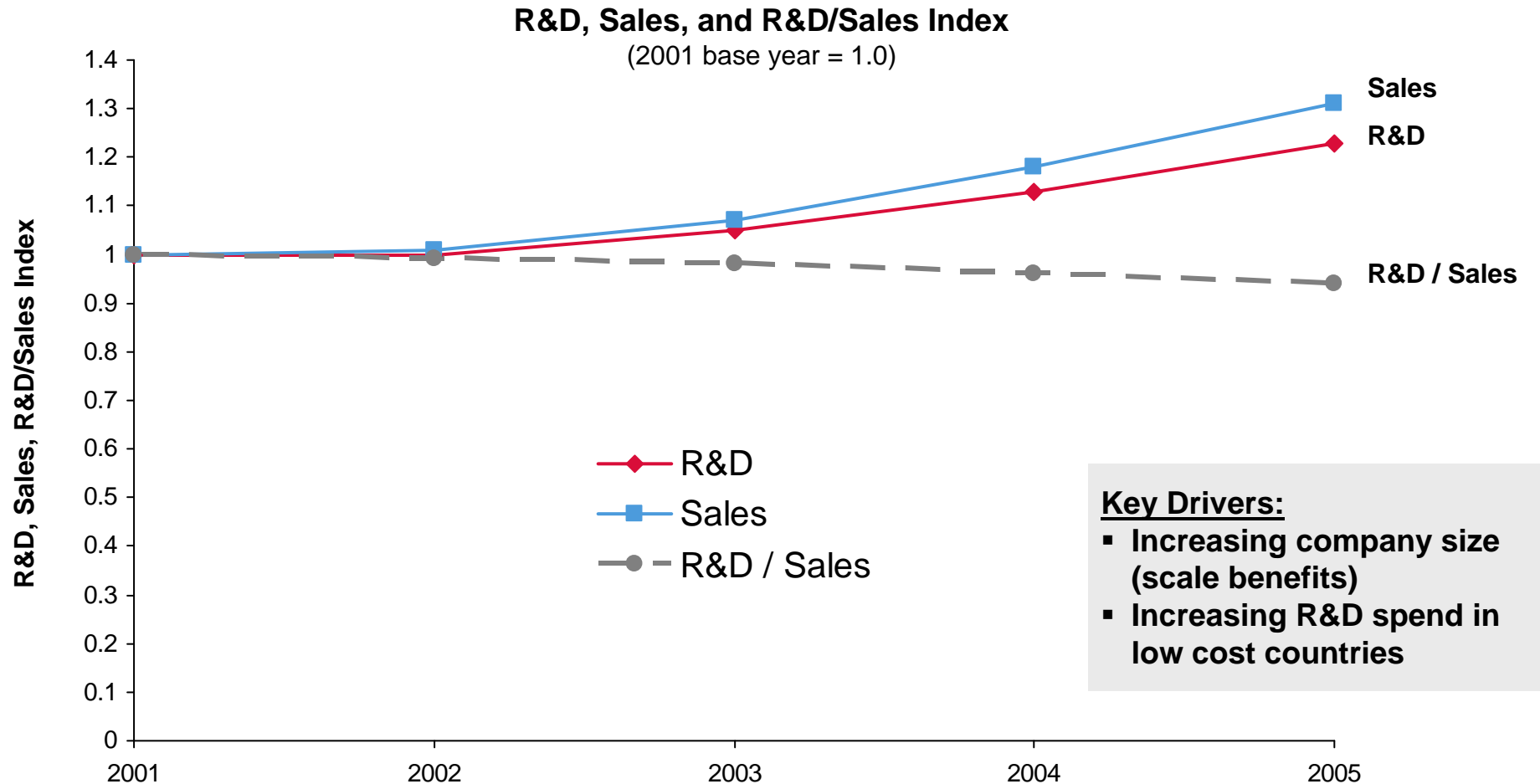
R&D Spend Growth: 2000-2005



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
Total		\$ 115,965			7%	5.8%	

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

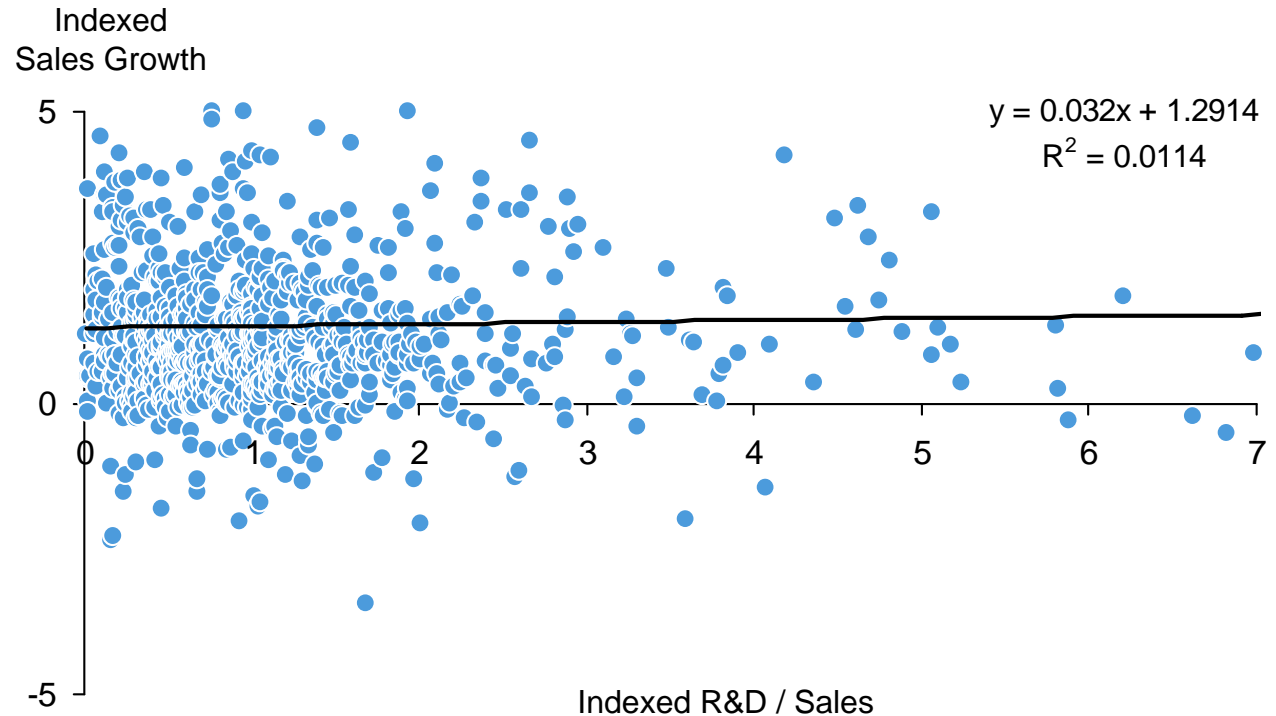
EXAMPLE
ANALYSIS

The Performance Disconnect

Example analysis showing relation between R&D and financial performance

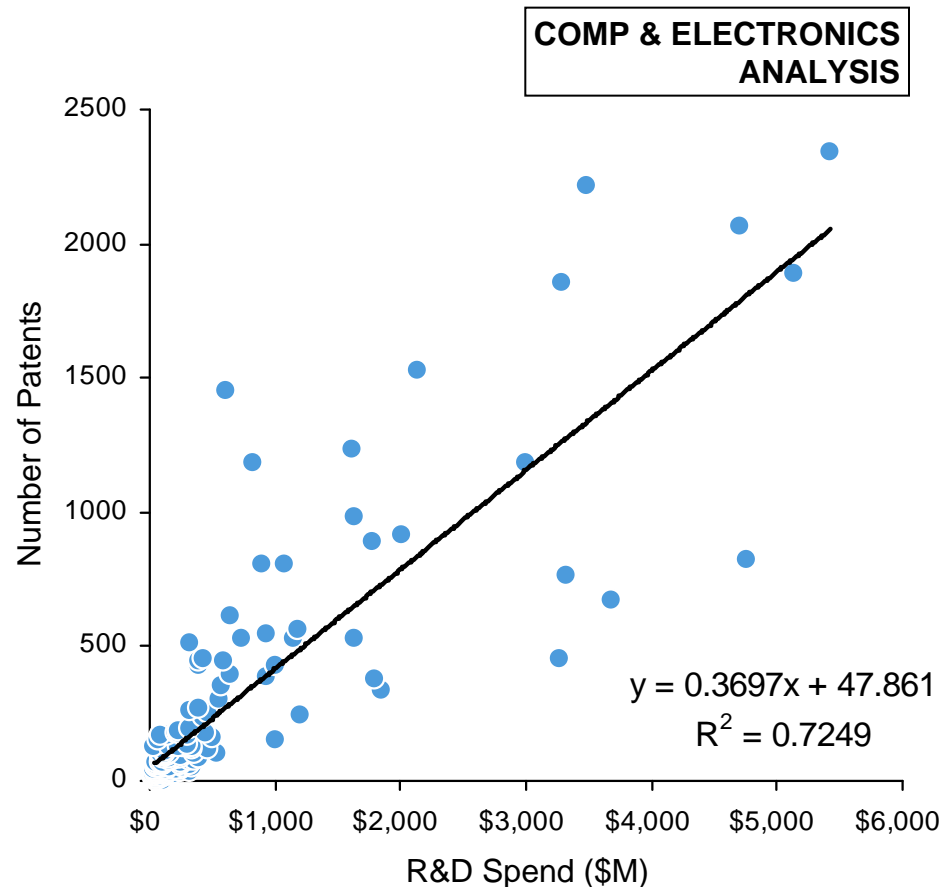
~10,000 analyses found NO statistical relationship between R&D spend and:

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

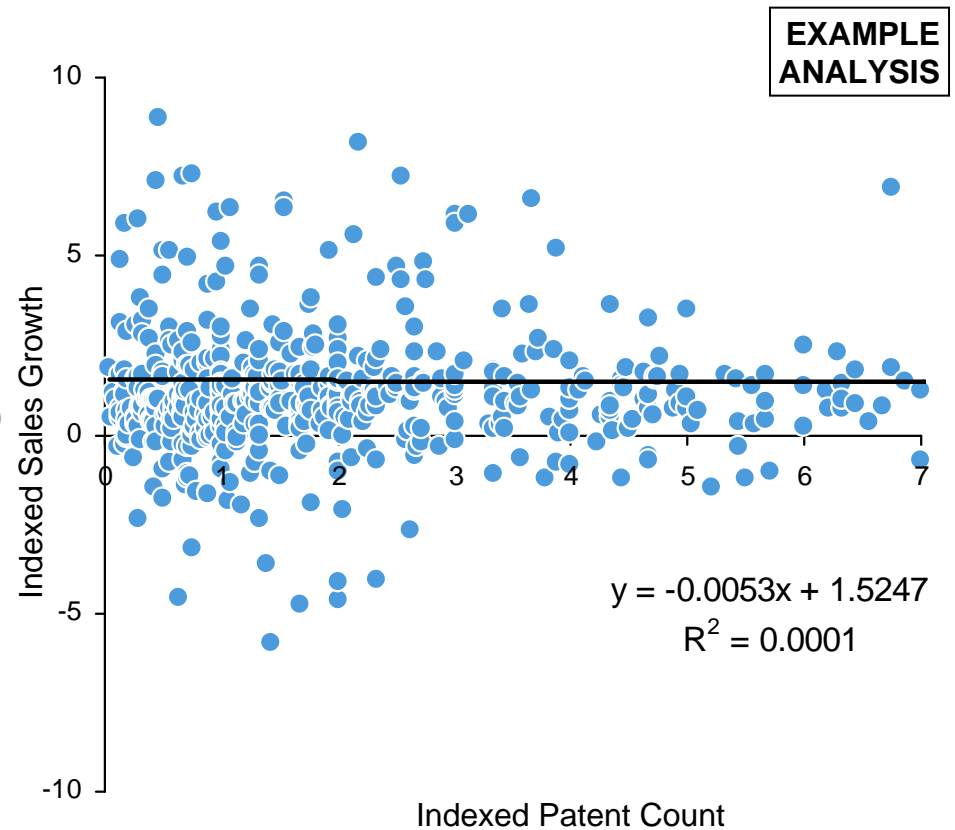


Finding: R&D \$ spend can increase number of patents, but number or quality of patents DON'T drive performance

R&D \$ Spend drives number of Patents...



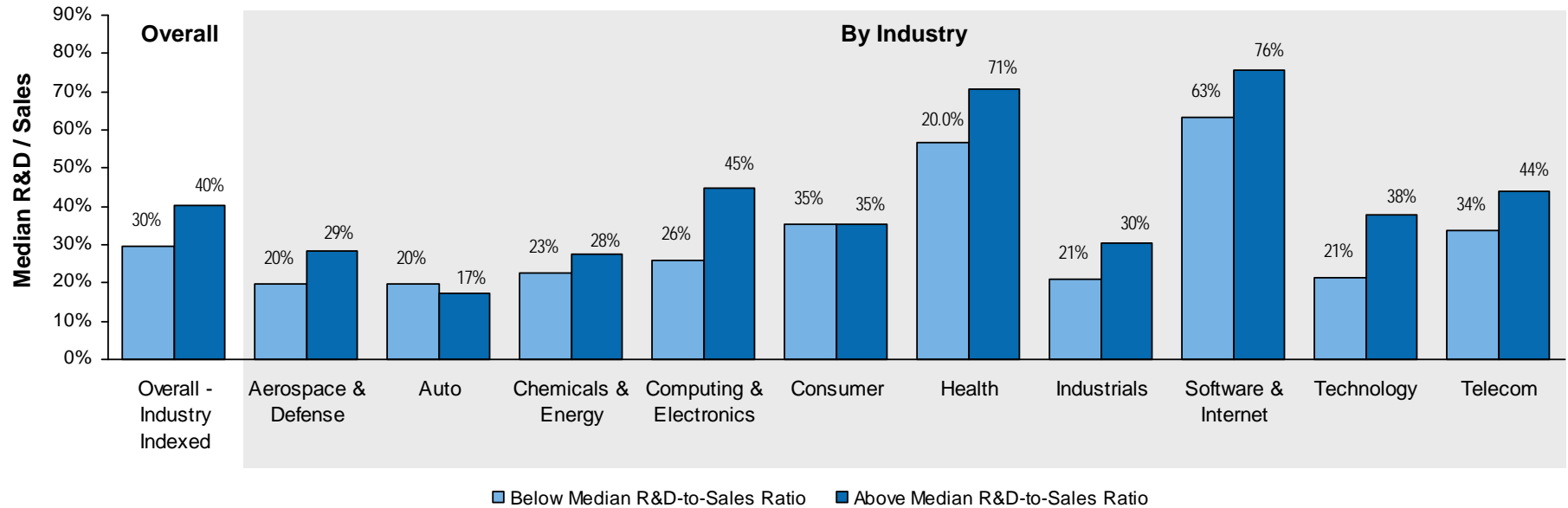
...however, number of patents DON'T drive performance



Source: ipIQ - owns the most comprehensive patent database worldwide

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

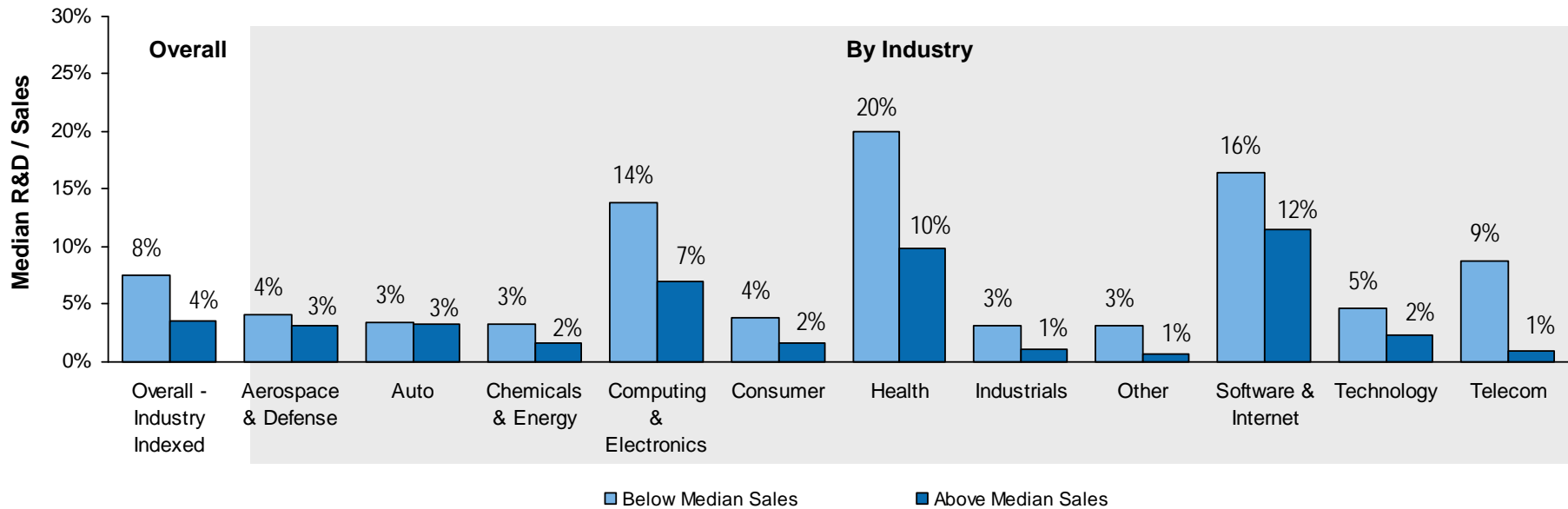
Impact of R&D Spending on Median Gross Margin



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

Scale Effects: R&D to Sales Ratios, 2005



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)**

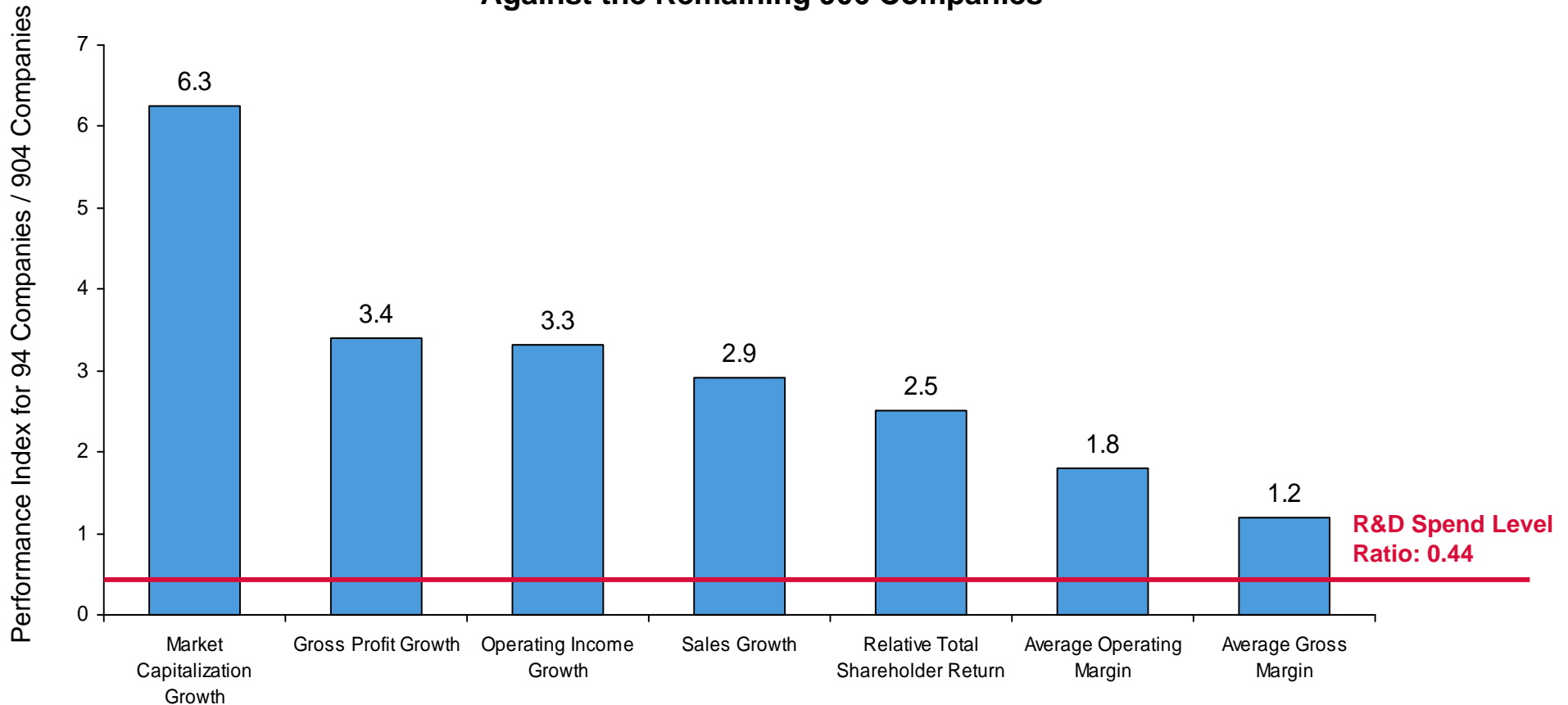
Adidas	High Tech Computer Corp	Praxair
Alliant Techsystems	Hon Hai Precision Industry	Recordati
Apple Computer	Hyundai Motor	Research In Motion
Asustek Computer	Ibiden	Respironics
AU Optronics	Illinois Tool Works	Reynolds American
Barr Pharmaceuticals	International Rectifier	Samsung Electronics
Biomet	Kellogg Co	Sandisk
Black & Decker	Kobe Steel	Sanken Electric
Boston Scientific	Komatsu	Shimadzu
C.R. Bard	Konica Minolta	Smith & Nephew
Cadbury Schweppes	Korea Circuit Co	Smith International
Casio Computer	Kronos	St Jude Medical
Caterpillar	Lite-on Technology	Stryker
Chi Mei Optoelectronics	Lyondell Chemical Company	Sumitomo Electronics
Christian Dior	Makita Corp	Suncor Energy
Cia Vale Do Rio Doce	Meda	Symantec
ConocoPhillips	Mediatek	Synthes
Coretronic Corporation	MEMC Electronic Materials	Systemex
Daiwa House	NCsoft Corporation	Taiwan Semiconductor
Dell	Newmont Mining	Tata Motors
Dentsply International	Nidec	Techtronic Industries
Eaton Corp	NOK	Teva Pharmaceutical
eBay	PACCAR	The Cooper Companies
Ecolab	Par Pharmaceutical	Tokyo Ohka Kogyo Co
Endo Pharmaceuticals	Parker Hannifin Corp	Toyota Motor
Energizer	Petrobras	Trelleborg
Exxon Mobil	Petro-Canada	Varian Medical Systems
Falconbridge	Phonak	Volvo Group
Fisher Scientific	Plantronics	Weatherford International
Forest Laboratories	POSCO	Woodward Governor
Fujikura	Powerchip Semiconductor	Yahoo!
Google		

North America
 Europe
 Japan
 Rest of World

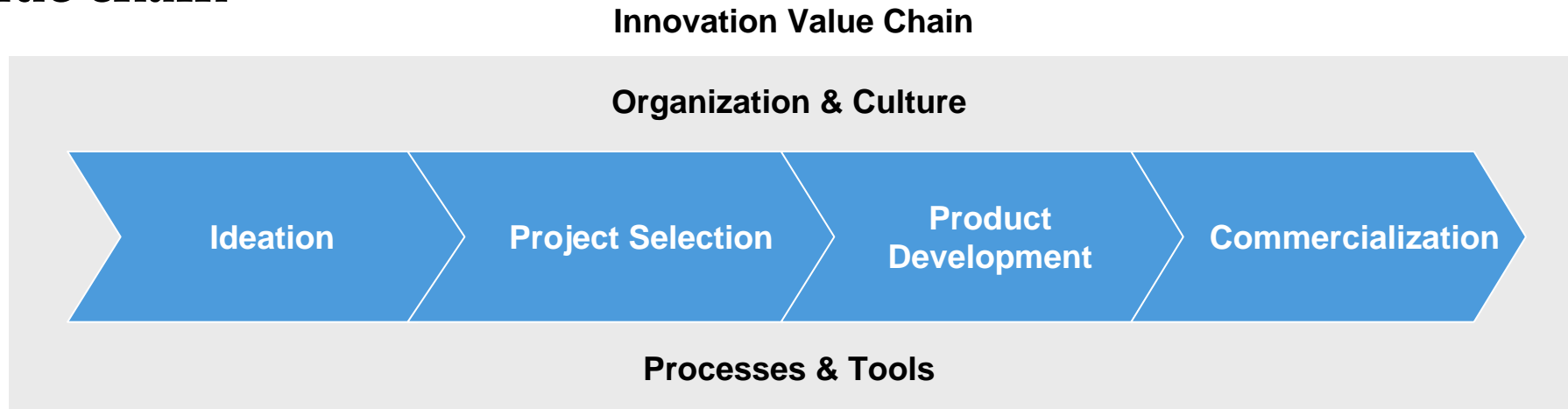
Source: Booz & Company Global Innovation 1000, 2006

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

Ratio of 94 HLI Companies Performance Indices Against the Remaining 906 Companies



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



Example Best Practices

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

Finding: High Leverage Innovators succeed via superior capabilities

EXAMPLE HIGH LEVERAGE INNOVATORS



- Focus on few big hits & deep customer understanding



- 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

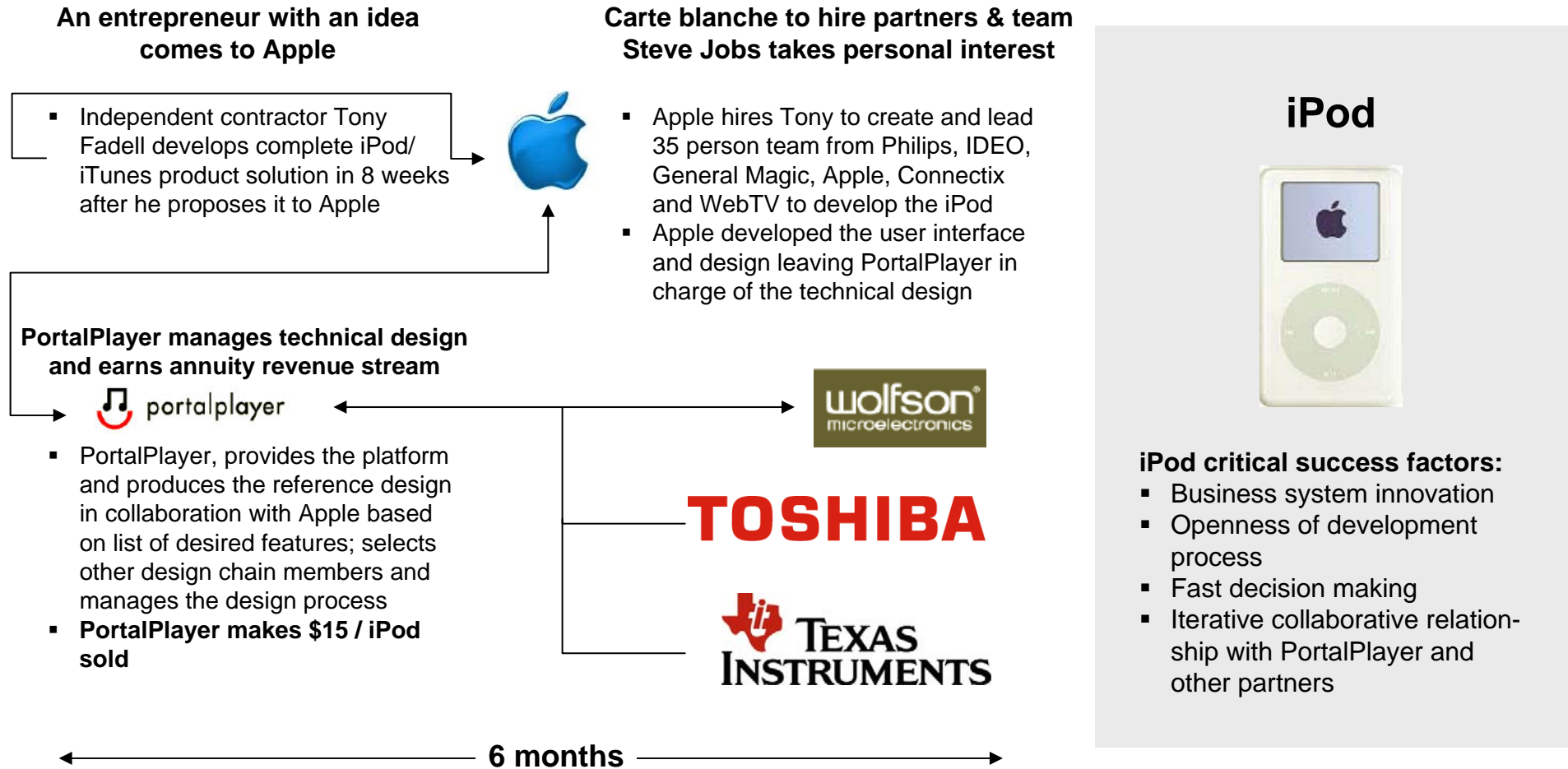


- Strong capabilities around translating customer needs into products



- 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



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 2nd annual Innovation 1000 study has received global attention

Smart Spenders:
The Global Innovation 1000



- 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



Mastering the Innovation
Challenge; Unleashing
Growth and Creating
Competitive Advantage

Select Publications



Q & A