Neat Technology, But Who Will Buy It?

Written, produced, and directed by Ralph E. Grabowski
Starring Grabowski, Andrews, Arrington, Langevin, Resor, and Spencer
World Premier – Merrimack Valley Venture Forum (MVVF), September 8, 2004
Current and historical extraordinary technology in three acts

Act 1 Death and Despair
Act 2 New Models and Hope
Act 3 the Prediction

the Plot

Technology is the most important thing, right? The answer is, "No."

"Technology is not important, although you must have technology! The only important requirement is, 'Are there customers for what it is that you are going to make?' **Who is going to buy the darn thing?"**
Robert J. Shillman, Ph.D., Founder, President, CEO, and Chairman of Cognex

In the real world, we find the importance of Market Research cannot be overestimated in technology businesses. The goal of a successful business is to satisfy buyers. Without customers prepared and willing to buy your technical product or solution, no technology – however brilliant – can succeed; no business enterprise will be successful. Market Research can provide data and understanding to help you steer the enterprise to achieve your business goals.

Such luminaries as the father of the semiconductor wafer stepper, Runner–Up in the 2004 MIT $50K Entrepreneurship Competition, the inventor of the microwave oven, Michael Dell, Dr. An Wang, and an entrepreneur who recently shut his company doors after burning through $50 million – all have experienced this need. Their business results have produced documented data, recently accumulated – and made available in this play.

"**Your evidence of the relationship between market research and success is right on!**"
Michael S. Dell, Founder, Chairman, and CEO of Dell Computer Corporation.

These facts led to the creation of a new method, the Marketing/Engineering Investment Ratio (M/E Ratio), to guide technology–based enterprises to invest in decisive, front–end Marketing. At the World Premier performance in Lowell, formerly home to bankrupt Wang Laboratories with 32,000 employees, Mr. Ralph Grabowski first published Wang's M/E Ratio and other new data. The surprising, counterintuitive evidence shows that successes invest more in Market Research than in engineering.

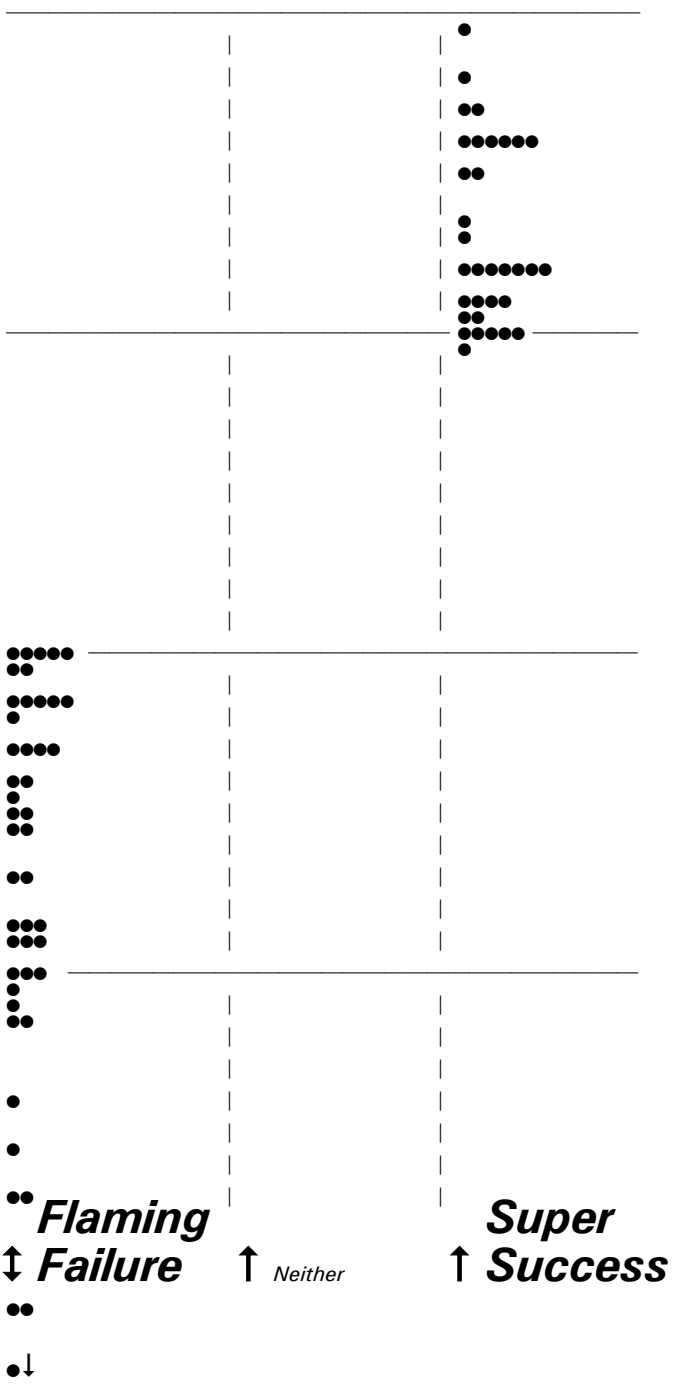
"Neat Technology" brings to life entrepreneurs, investors, CEOs, and technologists. Starring Marketing professional Ralph Grabowski, an entrepreneur in his own right, a cast of luminaries:

- Relate their personal triumphs and failures regarding the impact of Market Research – or lack thereof – in their businesses
- Cite "lessons learned" as they portrayed current – and past – companies with extraordinary technology from the Merrimack Valley and around New England
- Raise practical questions such as, "Who Needs Marketing? The product is not ready yet!" and "How can I afford Marketing on a limited budget?"

License

Marketing/Engineering Investment Ratio™*

(*) excludes promoting and selling



Infinity	Balico, balance aid medical device, Grand Prize Winner '05	
Infinity	Helicos BioSciences, single-molecule DNA sequencing '03	
Infinity	Angstrom Medica, synthetic bone, Grand Prize Winner '01	
	MIT $50K Entrepreneurship Competition	
9	Litton Medical (ex-BD, ex-DataMedix), mid '80s	
6.25	MolecularWare, bioinformatics MIT $50K Grand Prize '99	
5	ZippyCool, beverage cooler MIT $50K Semi-finalist '99	
5	Invent Resources, product development '93	
4	Becton Dickinson, medical - arrhythmia recall '78-'80	
4	Varian Associates, Component Leak Detector '93	
4	DIVA (AVID), video editing software '90-'93	
4	LiquidPiston, combustion engine MIT $50K Runner-Up '04	
4	ZippyCool, beverage cooler MIT $50K Semi-finalist '99	
4	Adaptive Optics, Div of United Technologies	
3.2	two machine vision systems, 3.2 '94, 4 '95	
3	AFC Cable, armored wiring systems '97	
2.33	Exact Labs, colon cancer diagnostics '95-'96	
> 2	MarketSoft, enterprise software '98-'02	
> 1.5	Dell Computer, PCs '90s	
1.53	thingworld.com, Internet media '98	
1 - 2	Juno, free e-mail '96	
1.5	Cytyc, PAP smear preparation '88-'89	
1.5	Intuit, financial software '90-'93	
1.5	Z2, injection molding flow device MIT $50K Finalist '99	
1.5	PSI Environmental, boiler temperature gauge '93-'95	
1.25	Phoenix Controls (Honeywell), VAV controls '83	
1.25	Molten Metal (MMT), elemental recycling '91	
1.2	Monster, employment via the Internet '98	
1.2	Aurora Systems, CTI software '90-'94 and precursor	
1.1	Brooks Automation, semi robots & cluster tools '89-'90	
1.1	Evidian USA, enterprise software '97-'99	
1.05	Reflective Technologies, reflective sportswear '94-'95	
1	Amana (Raytheon), RadaRange microwave oven '66-'75	
1	Acugen Software, semi test software '86-'00s	
1	Lycos, global Internet hub and media '97	
1	EMC, enterprise storage '90s	
.9	Open Market, Internet commerce software '98	

Financial and human impact:

> 1 Trillion dollars
> 400,000 jobs created or lost
> 150,000 engineering slots developed or gone

marketingVP.com – results through June 17, 2010
●● multiple data at one M/E Ratio™

.1	Molten Metal '97	
.1	Optra, electro-optic sensors - 88 SBIR '84-'95	
.1	Keithley Metrabyte, data acquisition Taunton MA '93	
.1	MRS Technology, FPD lithography '86-'97	
.1	Hampshire Instruments, X-ray stepper '91-'92	
< .1	Essential Research, vacuum system CAD '90-'93	
.09	RVA Technology, software '82-'85	
.07	StarGen, fabless semiconductors '99-'06	
.07	Orchid BioSciences, genotyping '98	
.07	Veeco, wafer particulate detector '85	
.07	Keithley Instruments, Cleveland OH '93	
.07	GCA '81, semiconductor stepper	
.06	GCA '92	
.05	Brooks Automation, semi robots '77-'85	
.05	Hampshire Instruments, '84-'90	
.05	ITRAN, machine vision '79-'93	
< .05	Varian Associates, IMPATT microwave oscillators '69	
.04	Object Databases, software '92	
< .04	Polaroid, instant photography '90s	
.037	Machine Technology (MTI), semi track '93	
.033	Raytheon, RadaRange microwave oven '44-'65	
.033	Micronix, X-ray stepper '81-'87	
.03	Evidian USA, enterprise software (2) '92-'96 & '00-'02	
< .03	KSR, supercomputers '86-'95	
.02	Cisco, Internet routers '00	
.02	Quarterdeck, operating system (OS) software '90s	
< .02	Luminus Devices, LED lighting '10	
.015	Cetacean Networks, real-time Internet & VoIP '00-'04	
.014	Fusion Lighting, lighting '91-'02	
.013	Genuity, Internet '98-'00	
.013	electronics & instrumentation, AMA, '53	
.012	HyperDesk (FTP), Internet groupware '92-'95	
.01	Becton Dickinson (BD), Telocate patient location '73-'77	
.01	DataMedix (bought BD division), early '80s	
.01	Physical Sciences (PSI), > 200 SBIR '84-'95	
< .01	Xerox, copiers '94-'02	
.008	Thinking Machines, supercomputers '90-'94	
.007	Lotus, office software '90s	
.007	Nortel, telecom '84-'02	
.004	Digital Equipment (DEC), PCs & minicomputers '90s	
.003	Applicon, Computer-Aided-Design (CAD) '72-'82	
.002	Lucent, telecom '67-'03	
.002	SAL, X-ray stepper '81-'00s	
< .001	WANG Laboratories, PCs & minicomputers '84-'91	
< .001	VNCI, network video '93-'99	
Zero	Thinking Machines '83-'89	

Cast in order of appearance

Ralph E. Grabowski	himself, 1969, Solid State Microwave Circuit Engineer, IMPATT Oscillator Development Varian Associates, Solid State Microwave Division, Beverly, MA himself, 2001, Chief Marketing Officer (CMO), Cetacean Networks, Portsmouth, NH Stanley N. Lapidus, Founder, Chairman, and CEO, of ITRAN, Cytyc, Exact Labs, and Helicos BioSciences
Frank J. Arrington	himself, 1969, Power Systems Engineer, IMPATT Oscillator Development Varian Associates, Solid State Microwave Division, Beverly, MA Steven Rogers, Founder, Chairman, and CEO, Cetacean Networks, Portsmouth, NH Michael S. Dell, Founder, Chairman, and CEO, Dell Computer, Round Rock, TX
Jennifer Andrews	herself, Director of Marketing, LiquidPiston, 2004 Runner-Up, MIT $50K Entrepreneurship Competition Sandra B. Lawrence, Senior Vice President, Worldwide Marketing, Polaroid, Cambridge, MA Nancy K.M. Rees, Director of Corporate Engineering, Xerox, Rochester NY Catherine F. Burdt, Senior Product Manager, Wang Laboratories, Lowell MA Gretchen Stroemer, VP of Marketing, Cetacean Networks, Portsmouth NH
Griffith (Griff) L. Resor III	himself, 1966 – 1986, Chief Technology Officer (CTO) and VP R&D, GCA, Andover, MA himself, 1986 – 1997, Founder, Chairman, and CEO, MRS Technology, Chelmsford, MA Ted Sares, Worldwide Director of Labor Relations, Digital Equipment Corporation (DEC), Maynard, MA
Richard A. Langevin	himself, 1997 – 1999, CEO, Evidian USA Ken Olsen, Founder, Chairman, and CEO, Digital Equipment Corporation (DEC), Maynard, MA Dr. Robert J. Shillman, Founder, Chairman, and CEO, Cognex, Natick, MA
George R. (Rod) Spencer	Group HR Manager, Digital Equipment Corporation (DEC), Maynard, MA Dr. An Wang, Founder, Chairman, and CEO, Wang Laboratories, Lowell MA Dr. Percy Spencer (Rod Spencer's grandfather), Chief Technology Officer (CTO), Raytheon, Waltham, MA

Ralph E. Grabowski, marketingVP

- Helped launch new products, new companies, and more than seven new fields; which have grown to become worth over ten Billion dollars
- 36 years as VP of Marketing for startups, Marketing Consultant, and serial temporary executive
- Pioneering research into the relationship between front–end Marketing investment and success
- Co–founded MIT's entrepreneurship program
- Teacher and author of more than one hundred papers, courses, and plays
- MIT Electrical Engineering degree

Frank J. Arrington, ISS Management Group

- Management Consultant, keynote speaker, and seminar leader
- Wrote the book, "Value, The Key Building Block Of Business"
- Electrical Engineering degree from Northeastern University and MBA from UMass/Boston

Jennifer Andrews, MIT Sloan Class of 2005

- Director of Marketing for LiquidPiston, 2004 MIT $50K Entrepreneurship Competition Runner–Up
- MBA student at MIT's Sloan School of Management, Class of 2005, with a focus in Marketing
- Environmental Studies degree from Middlebury College

Griffith (Griff) L. Resor III, Resor Associates

- Father of the semiconductor wafer stepper
- Top award from Semiconductor Equipment and Materials International (SEMI) for leadership and technical accomplishments in lithography
- Management Consultant with focus on Marketing
- 20 years at GCA as CTO and VP of R&D with 300–person technical organization
- Founder and President of MRS Technology through IPO and beyond
- Yale University Physicist with Harvard MBA

Richard A. Langevin, Langevin Management Advisors

- Turnaround specialist, serial CEO, and angel investor
- 28 years experience increasing revenue results of $5–50 million companies
- Coach to entrepreneurial companies seeking investment funding
- Trained in Computer Science at the University of Alberta, Edmonton

George R. (Rod) Spencer, IBM

- Grandson of the inventor of the microwave oven
- Principal Consultant, IBM Rational Brand Services
- Masters In Computer Systems Engineering from UMass/Lowell
  BS in Civil Engineering from Northeastern University

About the Marketing/Engineering Investment Ratio (M/E Ratio)

Why does some neat technology take off, while other neat technology does not find anyone who will buy it?

Marketing (Market Research and leadership) is the fact-gathering, analytical process of discovering benefits which customers are willing spend money to receive, steering the enterprise, and guiding engineering to design the right technology. How much of our precious capital, of our limited budget, must we invest in Marketing and to staff the Marketing leadership to enable financial and strategic success, and when should we make that Marketing investment?

Mr. Ralph Grabowski created a new metric to answer these questions, the Marketing/Engineering Investment Ratio (M/E Ratio), at the request of the MIT Enterprise Forum. This model separates upstream Marketing, performed before and during product development, from the downstream functions of promotion and selling, done after the product is developed. Formulating a ratio of Marketing to engineering installs Marketing concurrently with engineering, and sizes the Marketing budget and staffing with the readily identified numbers of engineering investment and staffing.

Data were gathered from major (super) successes and serious (flaming) failures. The mediocre middle was ignored. Successes like Dell and certain failures are obvious and acknowledged by the industry, while others emerge from this author's business judgment. A few companies like WANG many have appeared to be successful, but ultimately failed because they did not institutionalize Marketing and thus had no sustainable business process.

This play portrays evidence to confirm the recommendation that technology-based enterprises invest more in Marketing than in engineering. The Marketing challenge simply requires it! Super successes are depicted with an average M/E Ratio of greater than 2, investing more than two dollars in Marketing (exclusive of promoting and selling) for every dollar invested in engineering. Every flaming failure suffers from a M/E Ratio of 0.1 or lower.

More than $1 Trillion is represented either in value creation by the successes, or in capital squandering by the failures. The human impact has been more than 400,000 jobs created by the winners, or lost by the basket cases; and more than 150,000 engineering slots fashioned or vanished. The data are consistent from the 1940s into the 2000s, from startups to Fortune 500 firms, in both new fields and old, and across a broad range of technology–based enterprises.

The consequence for technology-based enterprises is a fundamental shift in management attention and investment commitment toward decisive, front-end Marketing. The evidence reveals your choice: invest in Marketing or fail!

M/E Ratio		Evidence newly published at the World Premier  = Super Success  = Flaming Failure
4		LiquidPiston, internal combustion engine, MIT $50K Runner–Up '04
1		Amana (Raytheon), RadaRange microwave oven '66 –'75
0.033		Raytheon, RadaRange microwave oven '44–'65 – Raytheon's largest commercial failure
0.015		Cetacean Networks, real–time Internet & VoIP '00–'04. Squandered $50 million in VC funds developing neat technology but never found a customer who would buy it. Closed their doors April 15, 2004.
< 0.01		Xerox, copiers '94–'02. Nancy K. M. Rees, Director of Xerox Corporate Engineering, admitted that, **"Without Marketing guidance, more than 70% of Xerox' $8+ Billion technology investment was wasted!"**
< 0.001		WANG Laboratories, PCs & minicomputers '84–'91 Bankrupt in 1992 with 32,000 employees and 11,000 technologists