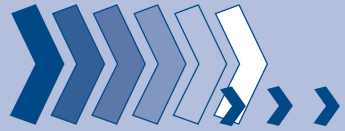


# Entrepreneurship for High-Tech Startups

Mirosław Malek and Peter Ibach  
Institut für Informatik  
Humboldt-Universität zu Berlin



## *Entrepreneurship and Entrepreneur*

- **Entrepreneurship**

Creating a new company

(also called: Business Formation, New Business Development, and New Business Creation)

- The Entrepreneurial Process

- involves all the functions, activities and actions associated with perceiving opportunities and creating organizations to pursue them

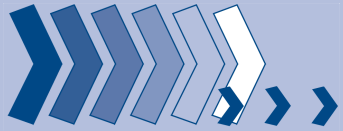
- **Entrepreneur**

A creator/founder of a new company



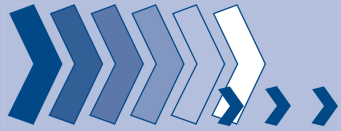
## *The Goals*

- To learn about Entrepreneurship in High Tech
- To develop eagerness or just an itch to become an entrepreneur or intrapreneurer, or simply become aware of entrepreneurial process
- To develop a viable Business Plan (10-20 pages)
  - Team Formation
  - Idea Development
  - 20 sec "Elevator Pitch" + Initial Presentation
  - Development of a Business Model
  - Mid-Term Presentation
  - Final Presentation



## *The Format*

- Lectures
- Guest Lectures (Law, Tax, Accounting, Finance, VC's, Entrepreneurs, Exit, Ethics)
- Brainstorming and Teamwork
- Happenings (Special Events)
- Ideas, Midterm and Business Plans Presentations



## Our Textbook

- Malek, M., Ibach, P., *Entrepreneurship: Prinzipien, Ideen und Geschäftsmodelle zur Unternehmensgründung im Informationszeitalter*, dpunkt Verlag, 2004 (Entrepreneurship: Principles, Ideas and Business Models in Information Age)  
[www.entrepreneurship-par-excellence.de](http://www.entrepreneurship-par-excellence.de)
- Contents:
  - The Road to Information Age
  - Principles of Entrepreneurship
  - Case Studies of Entrepreneurship
  - Ideas, Business Models and Future Markets
  - From an Idea to a Company
  - "IT has only just begun..."

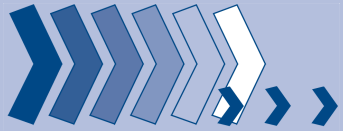




## *Other Sources*

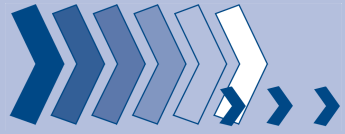
- William D. Bygrave and Andrew Zacharakis (eds.), *The Portable MBA in Entrepreneurship*, 2nd Edition, John Wiley and Sons Inc., 2004
- William D. Bygrave and Andrew Zacharakis, *Entrepreneurship*, John Wiley and Sons Inc., 2008
- Further references under:

<http://www.rok.informatik.hu-berlin.de/LV/eship/literatur>



## *Useful Sites Collection*

- Websites
  - [smallbusiness.yahoo.com](http://smallbusiness.yahoo.com) - Entrepreneurial site of Yahoo with many hints and links
  - [www.gate2growth.com](http://www.gate2growth.com)
  - [www.gruenderstadt.de](http://www.gruenderstadt.de) - Search engine for entrepreneurer
  - [www.entrepreneurship.com](http://www.entrepreneurship.com) (also .de)
- Conferences and Workshops
- Government Information
- Organizations and Societies
- Venture Capital Companies
- Business Plan Competitions



# *Entrepreneurship for High-Tech Startups*

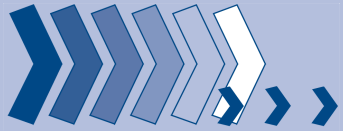
- Introduction
- Entrepreneurial Processes and Models
- High-tech Opportunities
- Creating a Successful Business Plan and Business Strategy
- Creativity: the Product or the Service
- Case studies
  - Silicon Valley etc.
  - Technology Parks
  - Startups (Tivoli, Amazon, Microsoft, Apple, SAP, Cisco, E-bay, Intershop, Pixelpark, Teekampagne and ebuero)





## *Entrepreneurship (continued)*

- Internet Marketing (B2B or B2C)
- Financial Projections and Sources of Financing
- Branding and Marketing
- Legal and Tax Issues
- Intellectual Property
- Ethics
- Special Problems and Who Can Help
- Advanced Topics



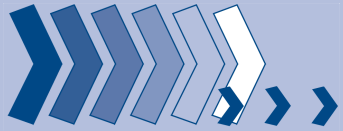
# *Entrepreneur*

- A creator/founder of a new company
- A person who destroys the existing economic order by introducing **new** products and services, by creating **new** forms of organizations and by exploiting **new** raw materials  
(Joseph Schumpeter, 1883-1950)
- Someone who perceives an opportunity and creates an organization to pursue it
- A person who organizes and manages a business undertaking
- A person who undertakes and operates a new enterprise or venture and assumes some accountability for the inherent risks.

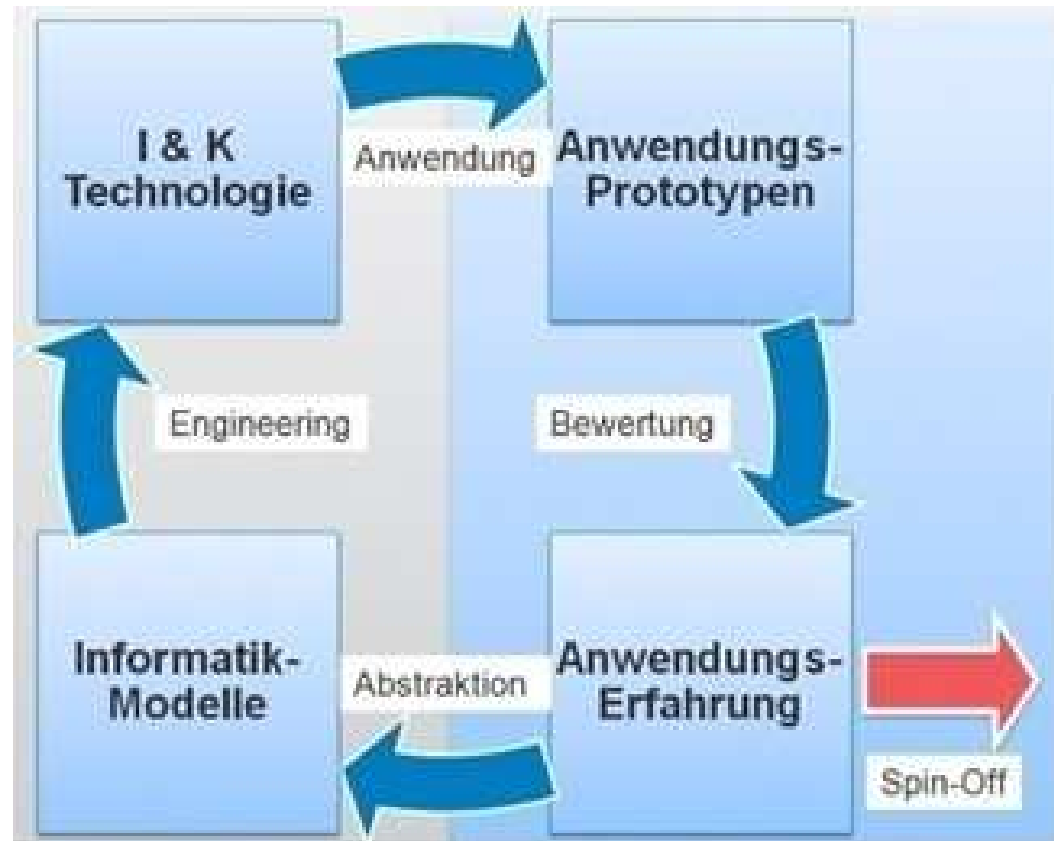


## *Invention and Innovation*

- to invent – to think up, to devise, to discover, to fabricate, in the mind, to originate (as by experiment), to pioneer, **to think out or produce** (a new device, process, service, composition,...)
- to innovate – to change or alter by introducing something new (e.g., design or method), to remodel, to introduce novelty, **to bring in something new** (product, process, service, modification)



# Innovation Cycle at TUM



This diagram illustrates Sebis Group's (TU-Munich) scientific contributions to the IT innovation cycle: By abstraction from observations gained in practice they develop novel information and communication technologies, apply them to practical problems by building prototypes which they then assess in the application context.

If they discover that their models and technologies have significant commercial relevance, they consider to transfer this knowledge into commercial spin-offs, often with alumni of the group.

Source: <http://wwwmatthes.in.tum.de/wikis/sebis/spinoffs>



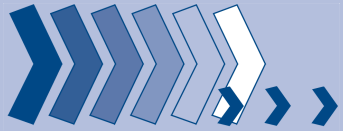
## *The New-Age University*

- Not just education and research but also active participation in turning innovation and sometimes invention into a product or a service
- The graduate of the University of the Future should hold University Diploma Certificate in one hand and a viable Business Model or Business Plan in another hand (e.g., G. Faltn, FU-Berlin)
- We started this experiment over ten years ago and the result is: many entrepreneurs and intrapreneurers (over 10 real companies) and many happy employers who get the students with technical, entrepreneurial and communication skills



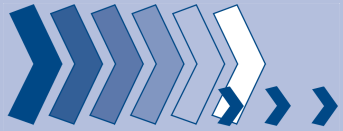
## *Extending the Humboldtian Model*

- The Humboldtian model of university (called after Wilhelm von Humboldt) is a concept of research university committed to advancing the frontiers of knowledge
- Humboldt attached special importance to the freedom of faculty to pursue enquiry without government interference
- Famous luminaries: Kirchhoff, Helmholtz, Einstein, Planck, Heisenberg, Koch, Mommsen, Hegel, Schrödinger, von Neumann,...
- All in all 29 Nobel Prize winners
- Combining research with entrepreneurship may lead to both scientific and commercial success (e.g. Stanford, MIT, UC-Berkeley)



# Engaging the Students

- Motto of our Education:  
***Tell me and I will forget.***  
***Show me and I will remember.***  
***Engage me and I will understand.***  
Confucius (551-479 BC)
- Examples of student companies/projects:
  - StudiVZ (faculty evaluation website)
  - ContentPro (financial analysis website)
  - ThinkCell (PowerPoint for consultants)
  - Web Transactions Analyzer
  - pic2loc (Picture-to-Location)
  - PrimeTix (tickets/phone)



## *Reiterating the Goals*

- To learn about Entrepreneurship in High Tech
- To develop eagerness or just an itch to become an entrepreneur or intrapreneurer, or simply become aware of entrepreneurial process
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## *What is so great about Entrepreneurship?*

- Entrepreneurship is the way to prosperity in the 21st century
- Entrepreneurship stimulates innovation
- Entrepreneurship promises more freedom, equality and brotherhood
- People have an opportunity to do what they can do best



## Top Ten Most Entrepreneurial Countries in Europe and the US

- **Italy** 22%
- Greece 15%
- Portugal 13%
- Spain 12%
- Poland 10%
- USA 9%
- Great Britain 8%
- Hungary 7%
- Czech Republic 6%
- Estonia 4%

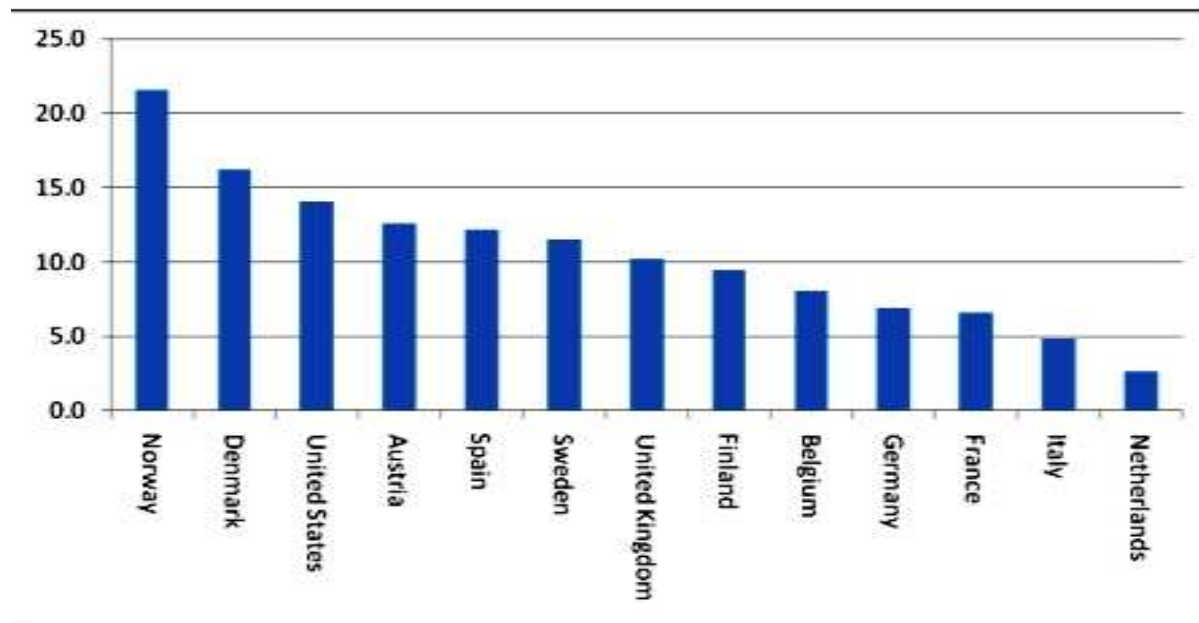
(Percentage of population with business ownership)

EU Study, Polityka, 2005



# Entrepreneurial Countries

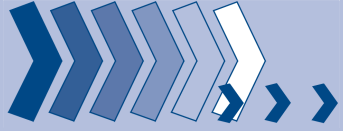
Percent of Patents Filed by Firms Under Five Years Old



Source: data from the OECD's "Measuring Innovation: A New Perspective"  
(c) Scott Shane

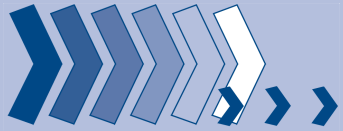
## **America is losing its Hightech Entrepreneurial Edge:**

- in 2006, the Economist magazine gushed, "No country has mastered innovation and entrepreneurship as effectively as America."
- data from the U.S. Patent and Trademark Office shows that in 2001, 25.9 percent of U.S. patents went to small entities
- By 2009, that number had dropped to 19.9 percent



## *Start Dreaming*

- Enzo Ferrari started with a dream of building world's fastest and most beautiful cars
- "Our dreams can only come true if we decide to awake them"
  - ✦ Josephine Baker (1906-75)
- "All our dreams come true - if we have the courage to pursue them"
  - ✦ Walt Disney (1901-66)



## *Small is Great*

- 50% of all innovations originate from small companies (firms with 20 or fewer employees)
- 95% of breakthrough ideas
- Almost 70% of all new jobs
- Better suited for new technologies (especially software)

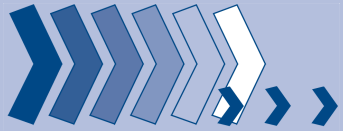


# Internet Revolution – Prediction and Reality



Today: in China alone \$100B in 1Q2010  
but the world less than a trillion

Source:  
Der Spiegel 38/99



# Weltweites Wachstum im e-commerce Bereich

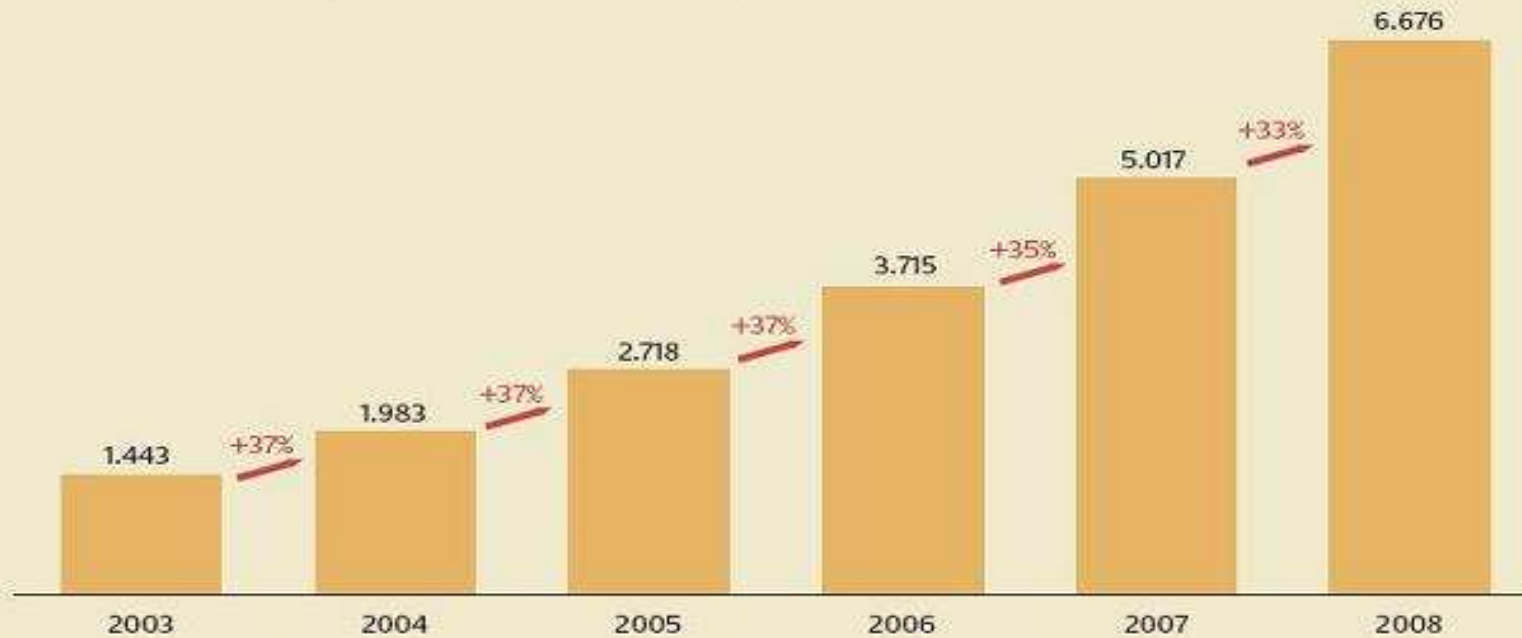


- Eindeutig und mit großem Abstand dominiert das **B2B-Geschäft** die immer weiter stark wachsenden E-Commerce-Umsätze gegenüber dem **Business-to-Consumer-Bereiches (B2C)**



# weltweite Entwicklung des B2B-E-Commerce

Nach wie vor weltweit rapides Wachstum des B2B-E-Commerce-Umsatzes



1 € = 1,4708 US\$

Quelle: Global Industry Analysts, 2008

Quelle: [TNS Infratest, 2009]





# Weltweite Entwicklung des B2C-E-Commerce



Quelle: [TNS Infratest, 2009]



## *E-Commerce Sales*

- Online retail sales in the U.S. are expected to grow about \$20 billion to \$30 billion each year, reaching somewhere between \$215 billion and \$335 billion by 2012, according to two recently released reports on e-commerce. E-commerce growth 14% per year in comparison to physical stores (2.6%).

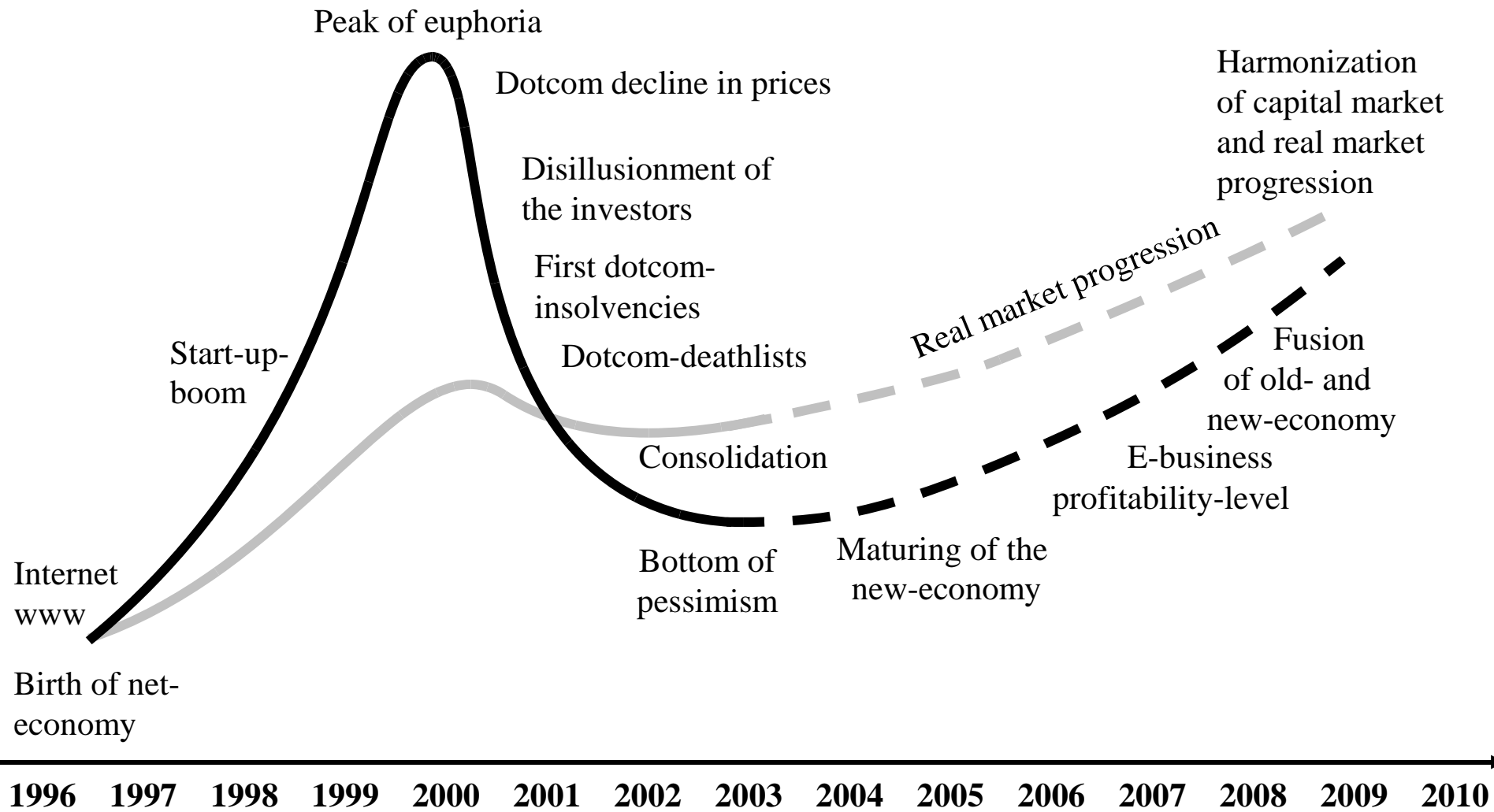
Source: Forrester Research Inc. and Jupiter Research LLC

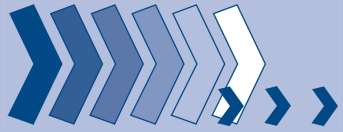
- Completely missed predictions from 2004 (\$ 6.5 T)
  - United States \$3.2 trillion
  - Asia-Pacific \$1.6 trillion
  - Western Europe \$1.5 trillion
  - Eastern Europe, Africa, Middle East \$68.6 billion
  - Latin America \$82 billion

Source: Forrester Research Inc.

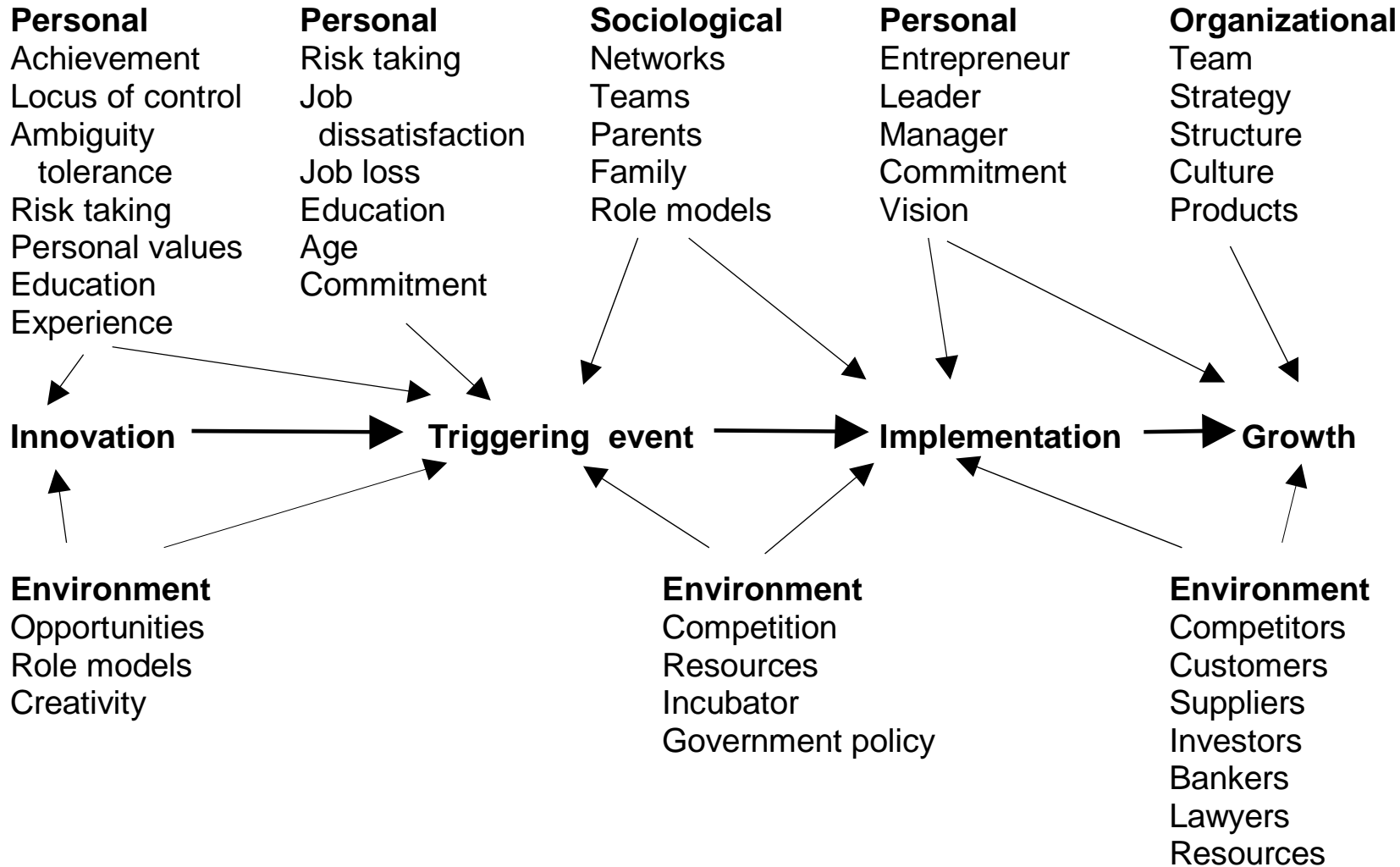


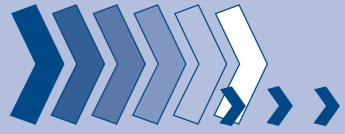
# Market Value versus Real- Market Progression



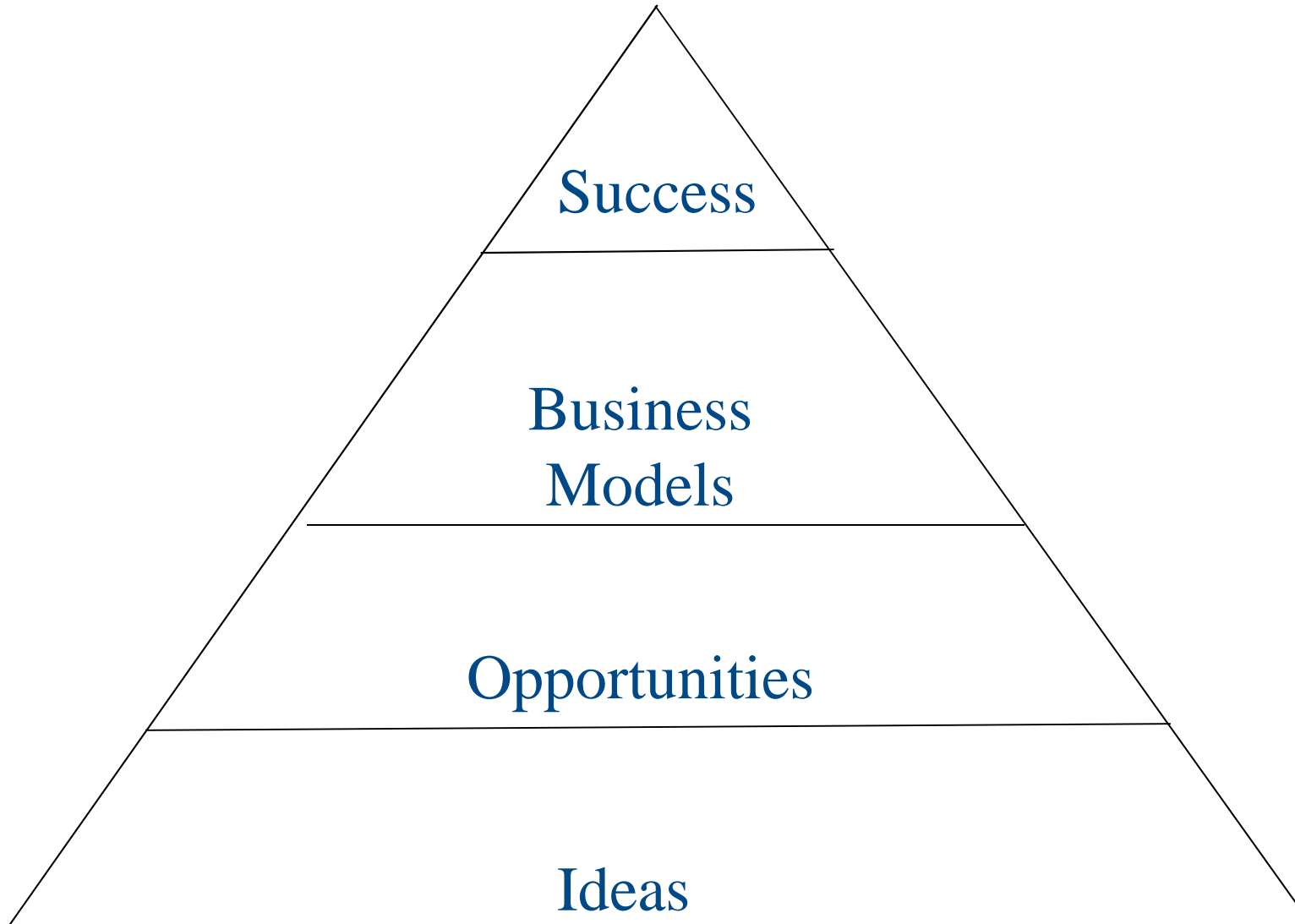


# A Model of the Entrepreneurial Process *(from W.D. Bygrave)*





# *Four Big Steps - from Ideas to Successful Business*

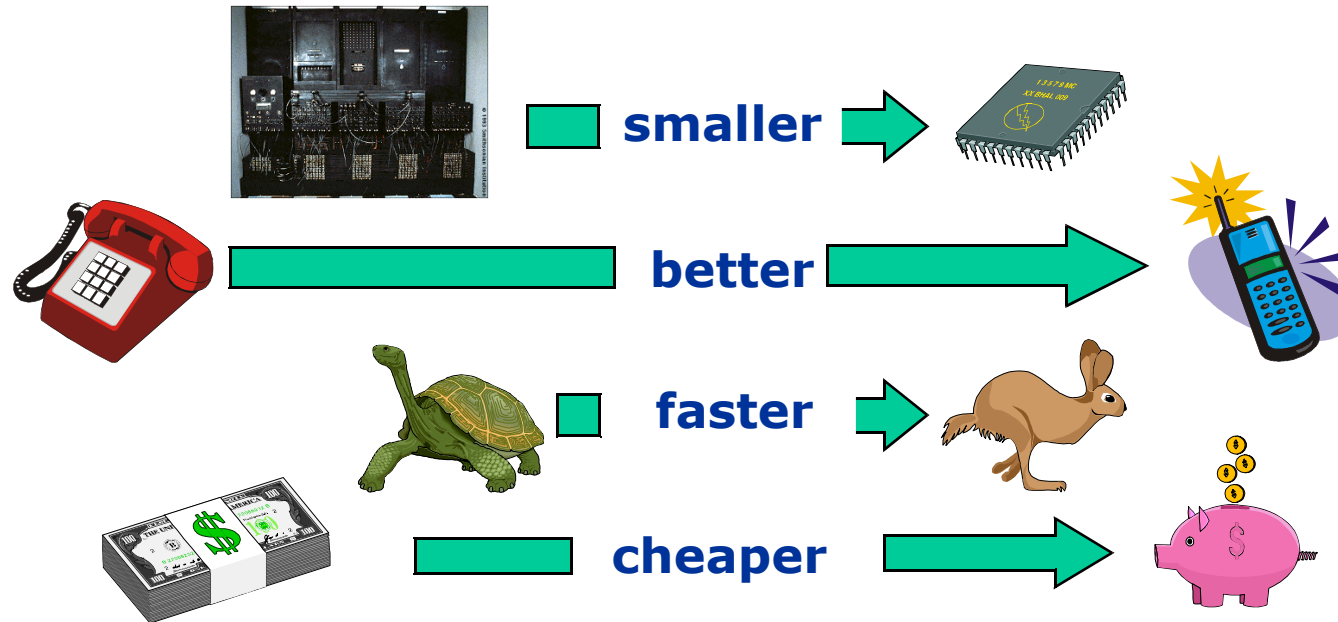




- The idea per se is not most important. Developing the idea, refining it, turning it into a business model, implementing it, and building a successful business are most important.
- Perhaps two biggest misconceptions about an idea for a new business is that:
  - it must be unique,
  - and that it might be stolen.
- Idea Refinement requires lots of creativity and talent.

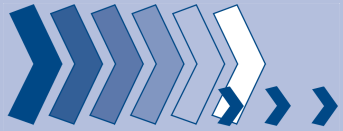


## How can one develop



**technologies? Lately: zero-time, zero-power, etc.**

- These questions absorb thousands of minds world wide



## *Hot Topics (1)*

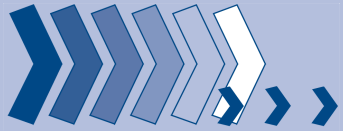
- Electronic commerce / virtual stores: buying online and picking up physically problem (3 c's: community content and commerce).
  - Auctions, flea market, e.g. used books ([www.ebay.com](http://www.ebay.com))
  - Auctions for B2B competitions
  - Email to media letter, book, photo, post, CD, DVD)  
gateway city net including delivery, e commerce infrastructure, logistics
- Security
  - Biometrics, Cyber Cash, Firewalls, Encryption, Operating System Extension & Tools





## *Hot Topics (2)*

- Telecommunication, mobile Computing
  - Wireless Internet access ([www.sandner.net](http://www.sandner.net))
- Healthcare (medical applications, bio informatics, remote patient care)
  - Online drugstores [www.drugstore.com](http://www.drugstore.com)
  - “Virtual experiments” by processing the Human Genome database



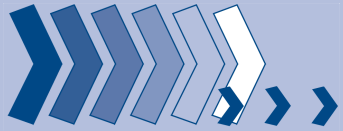
## *Hot Topics (3)*

- Remote control, observation, diagnostics
  - Intelligent building, Remote housekeeping/controlling
  - Video control Internet Video/ TV (broadcast)
  - Video distribution (music: [www.mp3.com](http://www.mp3.com)),
- Audio/ video streaming, protocols, visualization, 3D, entertainment, game, leisure, education
  - Online photo- and copy center, online training center  
games over wireless networks
- Online communities



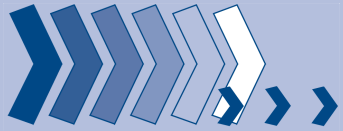
## *Hot Topics (4)*

- Transportation, aerospace, defense, airlines, aviation, automotive, travel, package delivery
  - Collision avoidance Logistics Packing chip, tracking systems
- Robotics, intelligent control, micro mechanics, embedded systems
  - Autonomous coordination, remote control
- Financial services, banking, insurance, trust center
  - Online stock markets, Venture Capital: Capital network for startups and business angels ([www.garage.com](http://www.garage.com))



## *Hot Topics (5)*

- Billing/charging systems
  - Micropayment systems, Internet payment systems
- Smart cards & wearable computers
  - Payment systems, e-purse Security, New applications ([www.microsoft.com/smartcard](http://www.microsoft.com/smartcard))
- Matchmaking: people matching
  - “Competition server” matchmaking between people engaging in any kind of on- or offline games/sports
  - “Reverse” auctions for services (painter, carpenter, IT experts, etc.), taking care of information asymmetries. Agency for self-employed IT experts: ([www.career-central.com](http://www.career-central.com))



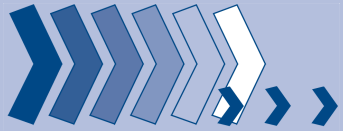
## *Hot Topics (6)*

- Matchmaking: Product Matchmaking
  - Price broker (books, CDs, DVDs) [www.powershopping.de](http://www.powershopping.de)
  - Specific search engines (music, photos: [www.ditto.com](http://www.ditto.com), videos)
- Work over net, market research, customer feedback
  - Remote secretary
  - Internet call center:
    - redirect incoming calls to home offices via Internet
    - [www.epinions.com](http://www.epinions.com)
- Green Computing
- Dependability

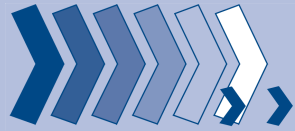


## *Hot Topics (7)*

- M –Business
  - Wireless Communication and Mobility
- Automation
  - Frictionless Economy
  - Ambiguity Trap
  - Belief in Automation
  - Embedded Systems
- Pay per Use/ costless Internet Service Web
  - dPay per Use and DRM
  - Copyright
  - Web Services, XML
  - Semantic Web



- **Distributed Components**
  - d Component based Architectures
  - P2P-Architectures
- **Assistants**
  - D Trust in the interface
  - Limits of Information
  - Processing
  - „Agentifying“ of Components
- **Information Economy**
  - I Innovations Economy
  - Change of structure in Germany
  - Fourastiétic Change



## *Hot Topics (9) The biggest Trend*

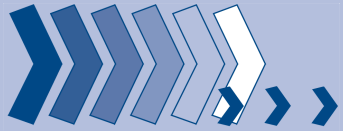
- Services (IBM, Accenture, HP, Siemens) - Solutions
- Fragmentation and dynamic sampling of value chain
  - xSP: Network-based Services
  - OutSourcing
- Performance and dependability evaluation, system and maintenance management





## *xSP Taxonomy*

- Network Service Provider (NSP)
- Internet Service Provider (ISP)
- Access (Service) Provider (AP)
- System Infrastructure Provider (SISP)
- Development Environment Service Provider (DESP)
- Application Service Provider (ASP)
- Content Service Provider (CSP)
- Business Process Service Provider (BPSP)
- Service Management



## *Good Advice*

- “To think is easy. To act is difficult. To act as one thinks is the most difficult”
- “Knowing is not enough; we must apply. Willing is not enough; we must do”
- A Word of Warning:  
“Difficulties increase the nearer we approach our goal”

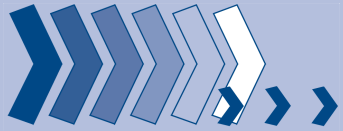
J. W. Goethe



## *Keys to Success*

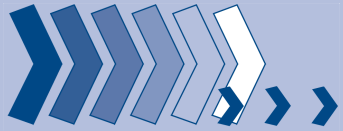
- TIMS - Team, Idea, Market potential, Strategy are four ingredients for a successful venture
  - e.g., six rules to success
    - ✦ 1. Superb people
    - ✦ 2. Superb people
    - ✦ 3. Superb people
    - ✦ 4. Excellent Market Potential
    - ✦ 5. Excellent Market Potential
    - ✦ 6. Idea
- "Always invest in a grade A man with a grade B idea. Never invest in a grade B man with a grade A idea "

Georges Doriat

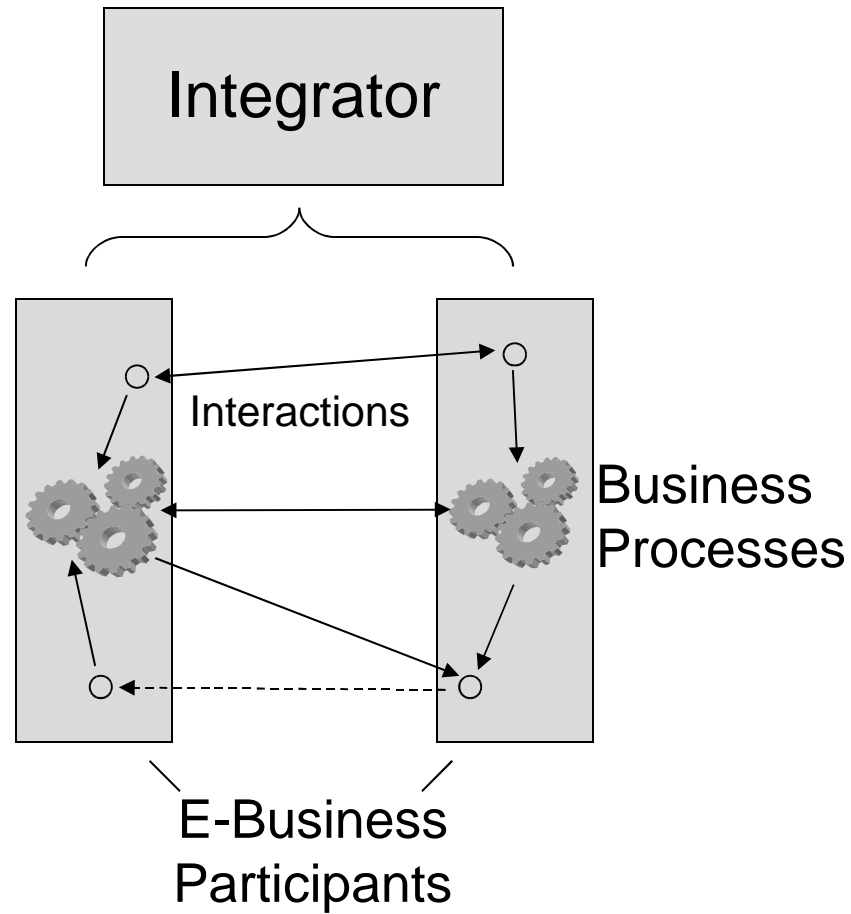


## *Keys to Success*

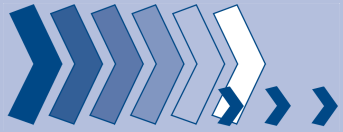
- The crucial ingredients for entrepreneurial success are:
  - a superb entrepreneur
  - a first-rate management team
  - an excellent market opportunity
  - realistic business model
  - implementation strategy
- Would-be entrepreneurs who are unable to name customers are not ready to start a business (at MIT business plans competitions the first step is to name three customers who would buy a potential product or service).



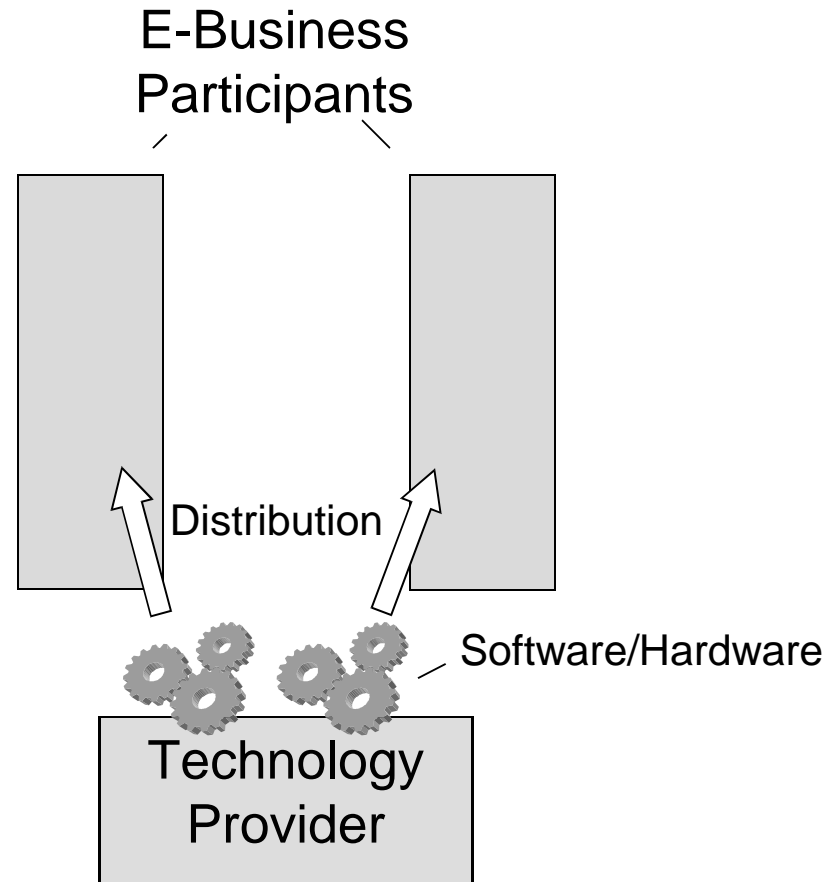
# Integrator

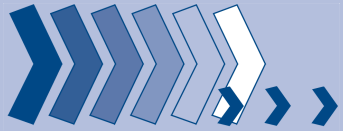


Examples: IBM, Accenture, HP, Siemens

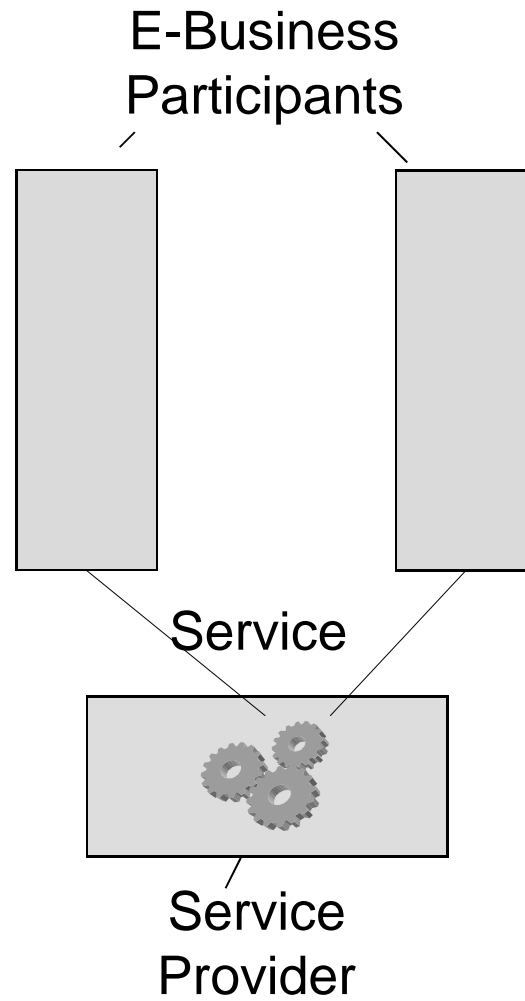


# Technology Provider





# Service Provider





## *Ask yourself 5W+2H Questions*

- What?
- Why?
- Who?
- Where?
- When?
- How?
- How much?





*If you have the right answers to the  
5W+2H questions*

**Start a new Company!!!**