



INVESTMENTS IN EDUCATION DEVELOPMENT

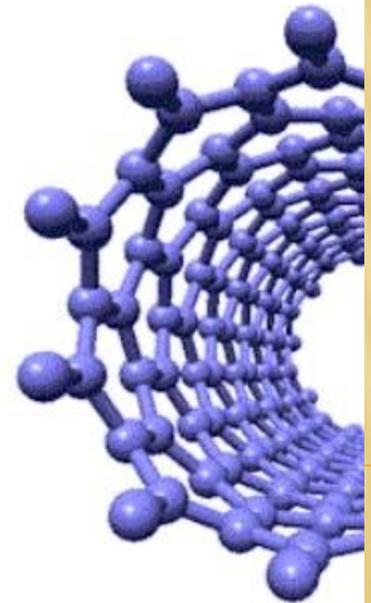
Innovation and Development of Study Field Nanomaterials at the Technical University of Liberec

nano.tul.cz

These materials have been developed within the ESF project: Innovation and development of study field Nanomaterials at the Technical University of Liberec



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INOVATION AND BUSINESS **IN NEW TECHNOLOGIES**

Lectures

- Introduction to Innovation Management
 - Innovation Management in Companies
 - Intellectual Property Management
 - Research and Development Management
 - Management of New Product Development
 - Market Research and New Product Development
 - Technology Transfer
-

Seminars

- Case studies analysis – successful and unsuccessful innovations. Presentations, discussion.
- Examples of organisational structures of companies, position of research and development. Innovative vs. Pragmatic companies. Presentations, discussion.
- Structure and formulation of patents. Presentations: model examples of patents.
- Examples of documents for management of RD projects (tasks, running and final reports).
- Product management vs. Product development. Examples, presentations.
- Presentations of case studies of technology transfer.
- Students presentations, discussion.

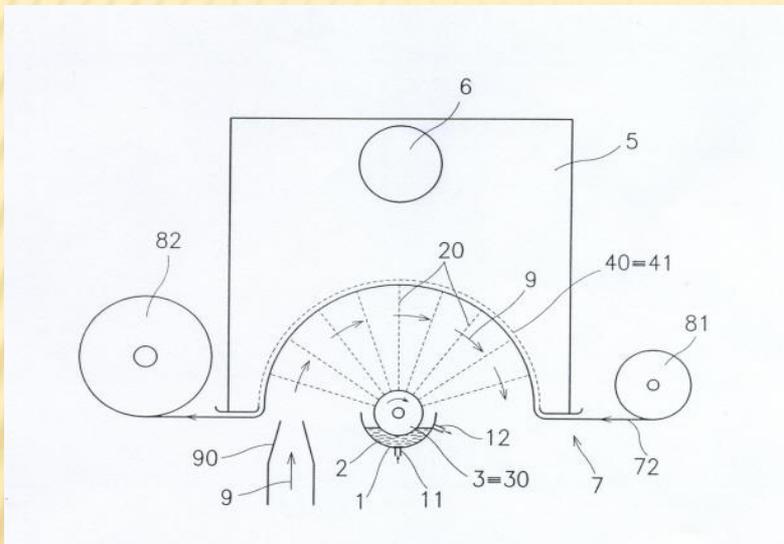
LITERATURE:

1. P. Trott: Innovation Management and New Product Development (4th Edition). Prentice Hall / Financial Times; London; 2008.
2. T. Jones: New Product Development: An Introduction to a Multifunctional Process. Butterworth-Heinemann; Oxford; 1997.
3. T.J. Allen: Managing the Flow of Technology. MIT Press; Cambridge; MA; 1977.
4. C.M. Christensen: The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail (3rd Edition). HBS Press; Cambridge; MA; 2003.
5. C. Freeman: The Economics of Industrial Innovation (2nd Edition). Frances Printer; London; 1982.
6. R. Leifer – G. Colarelli O'Connor – L.S. Peters: Radical Innovation. Harvard Business School Press; Boston; MA; 2000.

Introduction to Innovation Management

Example 1: ELMARCO Story

From an Idea to Industrial Line



Jirsak, O., Sanetnik, F., Lukas,
D., Kotek, V., Martinova, L.,
Chaloupek, J.,



WO 2005/024101, (2005)

From an Idea to Industrial Line

Based on Real Experience

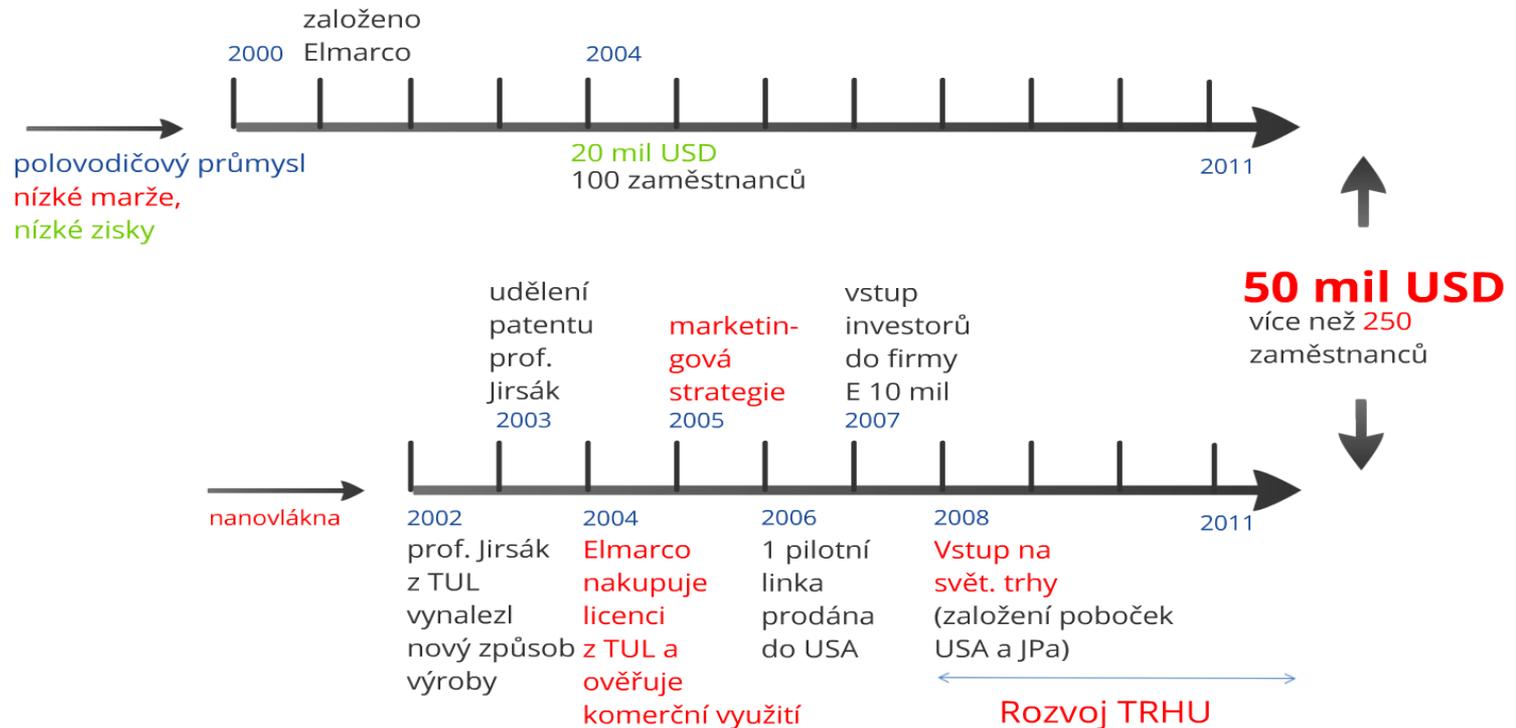


světový výrobce č. 1 zařízení na výrobu NV
(polymers, inorganics)

univerzitní myšlenka převedena
do multimilionového byznysu



Path to Success

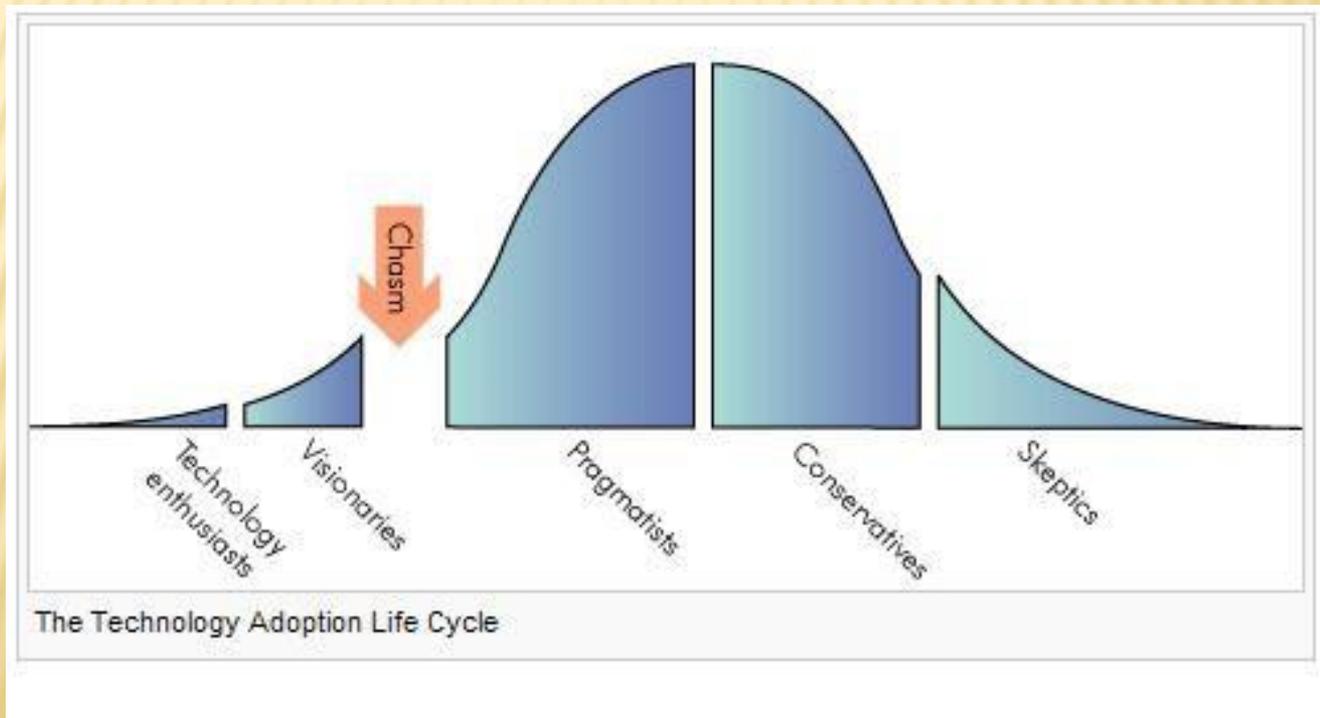


Path to Success

- Entirely new approach to creation of nanofiber market – total openness for collaboration and information on Nanospider technology
 - Partnership Strategy with research institutions – use of the prestige of top universities and their knowledge database
 - Global operation – presentation of the technology in the U.S., Japan, Europe
 - Development of Elmarco brand – key prerequisite of success (company values, mission, vision, marketing strategy, PR)
 - Very careful and pragmatic choice of strategic investor (to hose top advisors regardless their cost)
-

“Crossing the Chasm” – Geoffrey Moore

In the technology adoption life cycle, there are psychographic differences that make the transition from Visionaries to Pragmatists very difficult. These differences create a chasm that many organizations have been unable to cross to gain mainstream acceptance of their technology products.



A Summary of “Crossing the Chasm”

By Jonathan S. Linowes, Parker Hill Technology

Geoffrey A. Moore, *Crossing the Chasm, Marketing and Selling High-Tech Products to Mainstream Customer* (revised edition), HarperCollins Publishers, New York, 1999

The high-tech marketing guru (and principle of The Chasm Group marketing consultants), Geoffrey Moore offers time tested insights into the problems and dangers facing growing software companies, and a blueprint for survival. This classic text (first published in 1991) is widely accepted as “the bible for bringing cutting-edge products to progressively larger markets.”

A Summary of “Crossing the Chasm”

A market is defined as

- a set of actual or potential customers
- for a given set of products or services
- who have a common set of needs or wants, and
- who reference each other when making a buying decision

"the notion that part of what defines a high-tech market is the tendency of its members to reference each other when making buying decisions-- is absolutely key to successful high-tech marketing."

A Summary of “Crossing the Chasm”

Moore demonstrates that in fact, there are cracks in the curve, between each phase of the cycle, representing a disassociation between any two groups; that is, "the difficulty any group will have in accepting a new product if it is presented the same way as it was to the group to its immediate left."

The largest crack, so large it can be considered a chasm, is between the Early Adopters and the Early Majority. Many (most) high tech ventures fail trying to make it across this chasm.

A Summary of “Crossing the Chasm”

Early Adopters are the rare breed of visionaries "who have the insight to match an emerging technology to a strategic opportunity,... driven by a 'dream'. The core dream is a business goal, not a technology goal, and it involves taking a quantum leap forward in how business is conducted in their industry or by their customers...

Visionaries drive the high-tech industry because they see the potential for an 'order-of-magnitude' return on investment and willingly take high risks to pursue that goal. They will work with vendors who have little or no funding... As a buying group, visionaries are easy to sell but very hard to please... because they are buying a dream...

They want to start out with a pilot project, which makes sense because they are 'going where no man has gone before' and you are going with them. This is followed by more project work, conducted in phases with milestones, and the like."

A Summary of “Crossing the Chasm”

The **Early Majority** are **pragmatists**... "they care about the company they are buying from, the quality of the product they are buying, the infrastructure of supporting products and system interfaces, and the reliability of the service they are going to get..."

Pragmatists tend to be 'vertically' oriented, meaning that they communicate more with others like themselves within their own industry than do technology enthusiasts and early adopters...

It is very difficult to break into a new industry selling to pragmatists. References and relationships are very important...

Pragmatists won't buy from you until you are established, yet you can't get established until they buy from you...

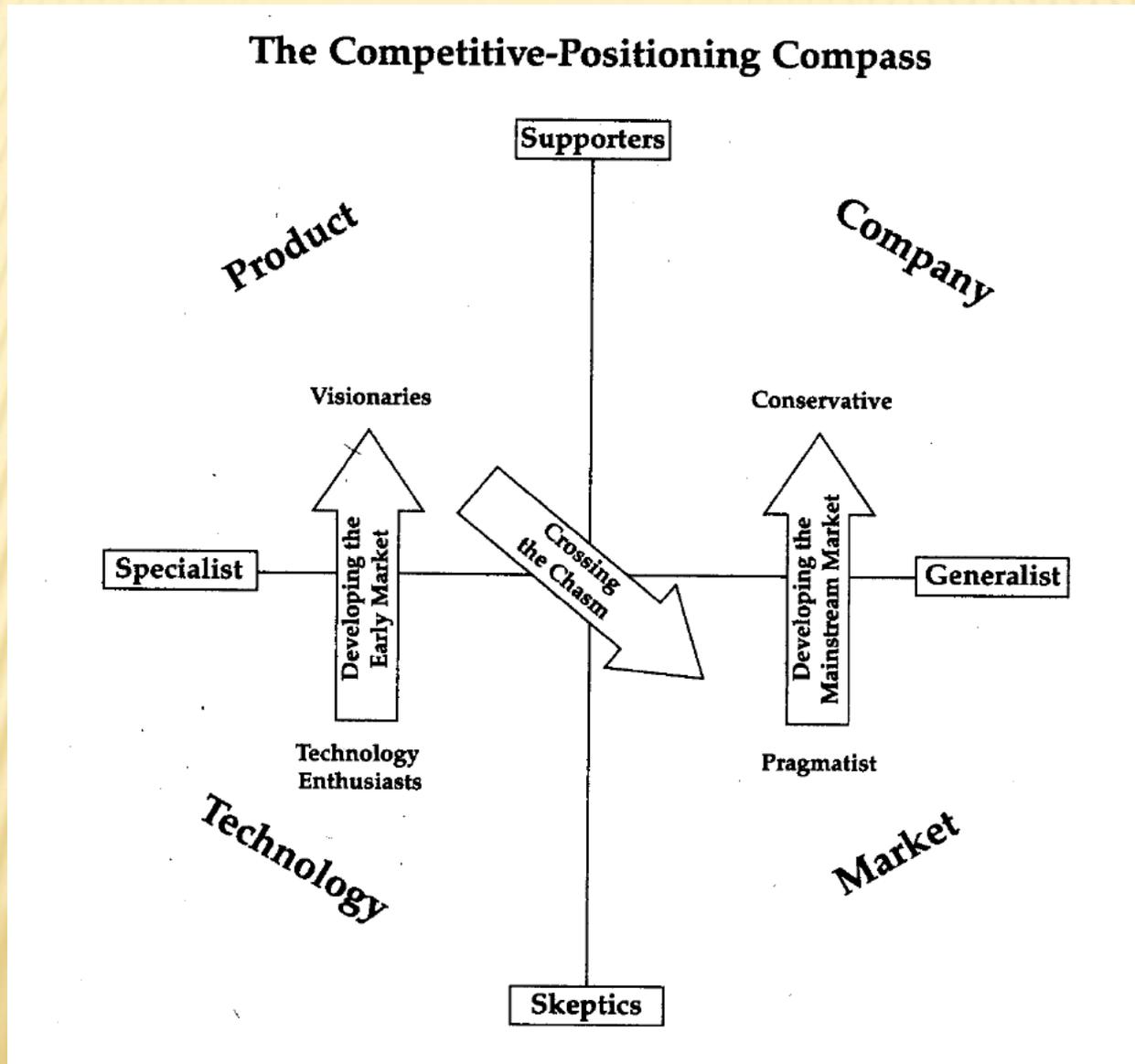
A Summary of “Crossing the Chasm”

"Overall, to market to pragmatists, you must be patient. You need to be conversant with the issues that dominate their particular business. You need to show up at the industry-specific conferences and trade shows they attend. You need to be mentioned in articles that run in magazines they read. You need to be installed in other companies in their industry. You need to have developed applications that are specific to their industry. You need to have partnerships and alliances with the other vendors who serve their industry. You need to have earned a reputation for quality and service.

"Pragmatists are not anxious to reference visionaries in their buying decisions. Hence the chasm. Four fundamental characteristics of visionaries that alienate pragmatists:

1. Lack of respect for colleagues' experiences.
2. Taking greater interest in technology than in their industry.
3. Failing to recognize the importance of existing product infrastructure.
4. Overall disruptiveness.

A Summary of “Crossing the Chasm”



Visionaries vs Pragmatists

“You can succeed with visionaries and get a reputation as a “high flier with a hot product” but that is **ultimately not where the dollars are**. Instead, those funds are in the hands of more prudent souls who do not want to be pioneers.”

Filtration and Non-wovens saw several companies enter nanofibers as “Visionaries” but now behave as “Pragmatists”

- H&V
- Ahlstrom
- Freudenberg

"Overall, **to market to pragmatists, you must be patient**. You need to be conversant with the issues that dominate their particular business. You need to show up at the industry-specific conferences and trade shows they attend. You need to be mentioned in articles that run in magazines they read. You need to be installed in other companies in their industry. **You need to have developed applications that are specific to their industry**. You need to have partnerships and alliances with the other vendors who serve their industry. **You need to have earned a reputation for quality and service**.

“Chasm” Things Elmarco Has Done Well

- × Have had market segment awareness
- × Sold to visionaries to accelerate product learning
 - × Gen 2 addresses many potential customer concerns
 - × Better polymer capabilities awareness
- × Focus on Filtration has created very good awareness of Elmarco in this area and we are close to having a “de-facto” beachhead area (were not far away)
 - × Good presence at vertical trade shows, conferences etc.
- × Lab Tool established Elmarco as a supplier for the general technology, established as the market leader for Academic / Research segment
- × Sampling
 - × Visionaries – supported their goals to come up with a “Technology Solution”
 - × Pragmatist – extensive sampling serves to reduce their risk perception

“Chasm” Things Elmarco Has Not Done Well

- ✘ Failed to focus on a limited number of Application areas – (Jack of all trades master of none?)
- ✘ Not yet developed the “Whole Product” sufficiently to make a Pragmatist buying decision easy
- ✘ Incomplete demonstration of Value Proposition
 - ✘ might include insufficient performance / throughput of our current technology
- ✘ Sold to Visionaries that ultimately were not successful, therefore not giving Elmarco a good reference point
 - ✘ What customers needed to see vs what we were able to deliver
- ✘ Quality standards not yet up to Pragmatist level