

# **bengin**

## **Advanced Tools for Visualizing, Measuring and Managing Intangibles**

5<sup>th</sup> European Institute for Advanced Studies in Management (EIASM), Workshop on

**Visualizing, Measuring and Managing Intangibles and Intellectual Capital**

Dresden (Germany), 8-9 October 2009 – © 2009 peter.bretscher@bengin.com – www.bengin.net

## Speaker



### **Peter Bretscher,**

**Founder and owner,  
Engineering Office for Business Development  
Ingenieurbüro für Wirtschaftsentwicklung, Eggersriet / Switzerland**

Function in the Ing.Büro: Advisor to organizations in the design of economic steering and management systems that integrate the intangible perspective

- Engineering background (worked 20 years in several functions along the whole value chain of an international R&D and manufacturing company based in Switzerland)
- Developed over the last 20 years the “Business Engineering System” (Tools for Business Administration) a MindSet and models for structuring and quantifying the tangible and intangible resources.
- In addition he is supporting companies, consultants, and other organizations in innovation and project management, in intellectual property and patent management, and in setting up business plans and defining enterprise strategy
- He has initiated and is leading the “bengin” project. Its mission is to facilitate the awareness for and further development of management concepts that enhance the traditional economic model
- Since 1994 he is teaching business engineering und business planning at the University of Applied Sciences in St. Gallen, Switzerland.  
E-Mail: [peter.bretscher@bengin.com](mailto:peter.bretscher@bengin.com),  
Website: <http://www.bengin.com/>, Blog: <http://www.bengin.net/wp/>, Twitter: <http://twitter.com/peterbretscher>

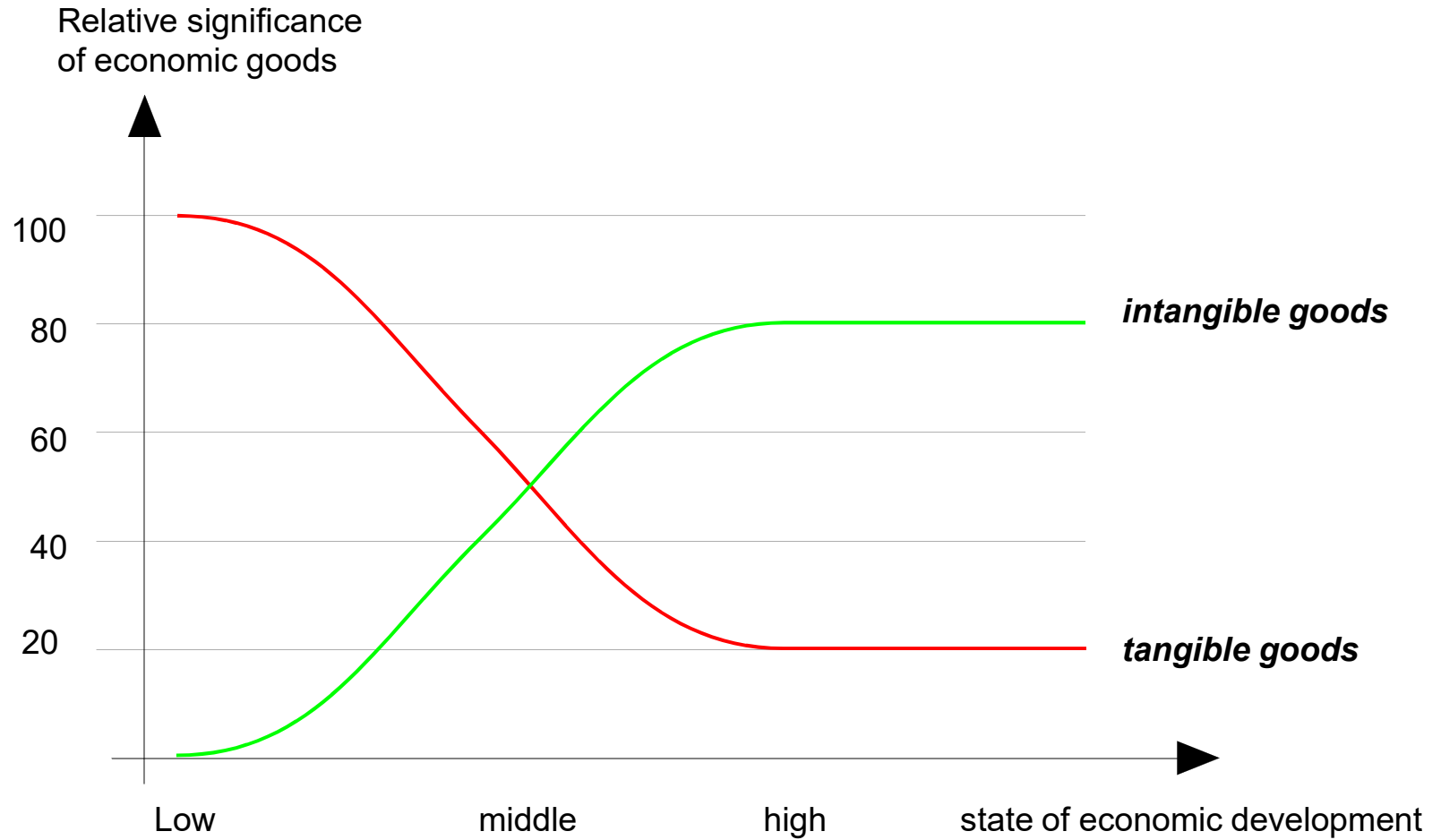


## Agenda

- **Development of Economy**
- **Innovation of Products  
- and Economic MindSet as a Product**
- **Two Outdated Paradigms Revised**
- **The Vector Solution**
- **Conclusion and Outlook**

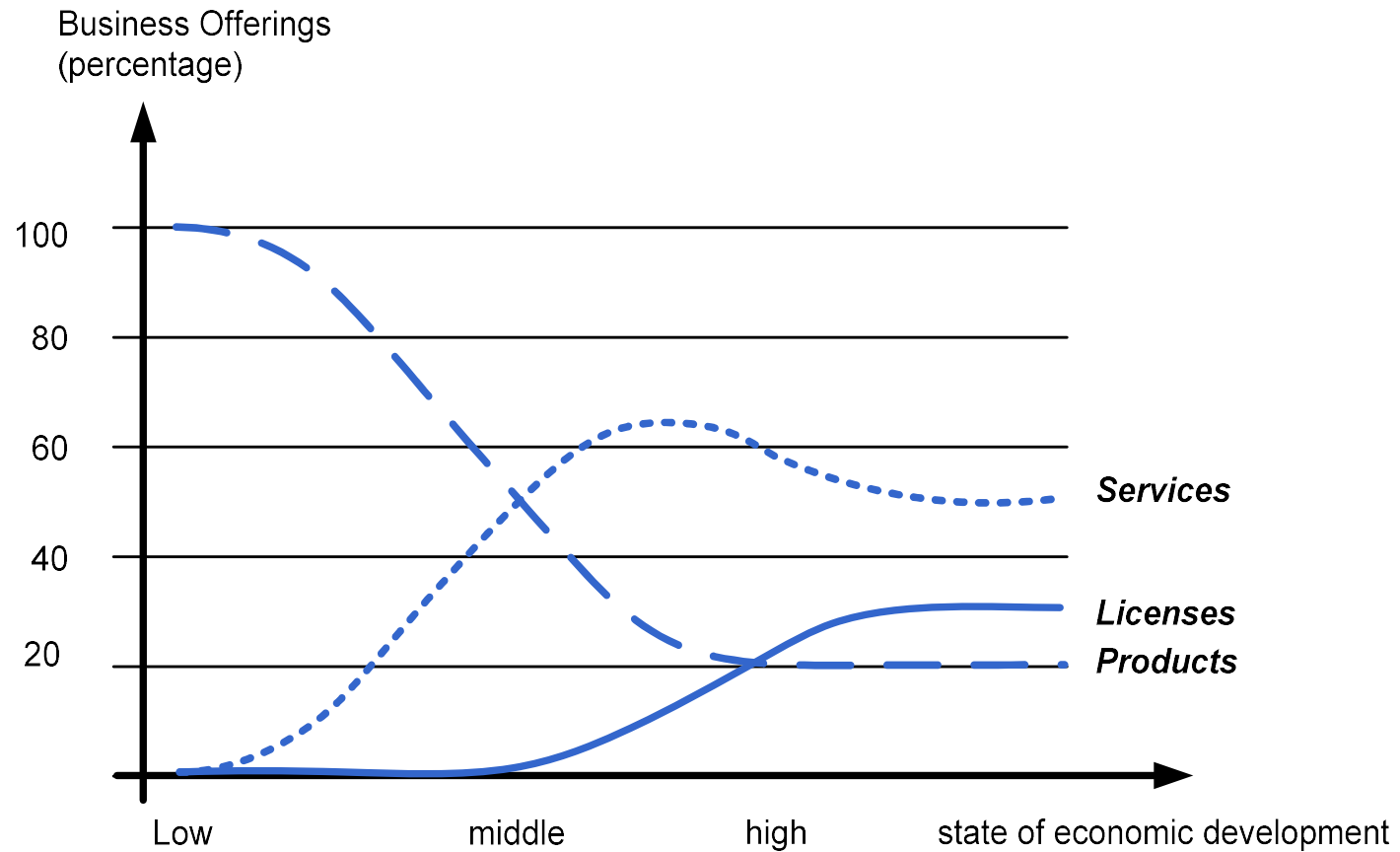


# Development of economic assets





# Development of Business Offerings





## Summary

«Many of the patterns of nature we can discover only **after** they have been constructed by our mind.»

Friedrich von Hayek

This are two developments we see in the real reality.

**Intangibles** are (and will be) **more and more important**.

**Intangibles** in a form of **knowledge** (use-how, make-how, think-how) **and** in a form of **intellectual property rights**.

In order to enable a sustainable development we need an enhanced **theory that has the means for structuring and quantifying this (new) reality**.

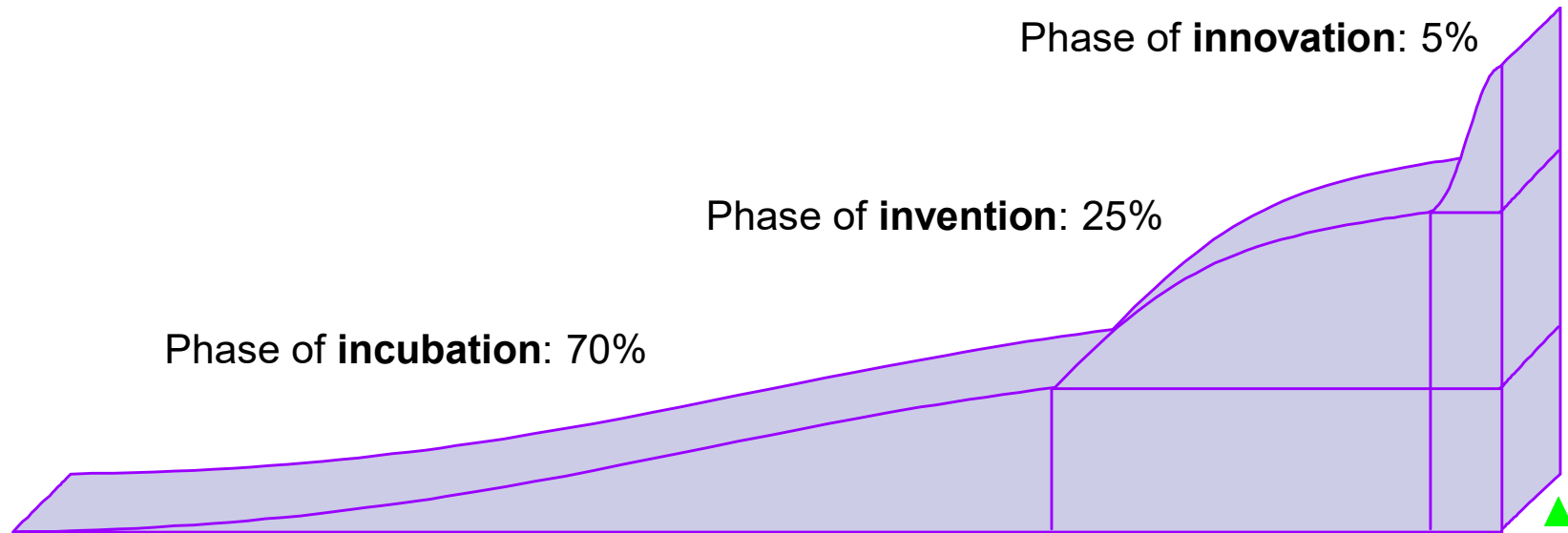


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# Idea to Innovation

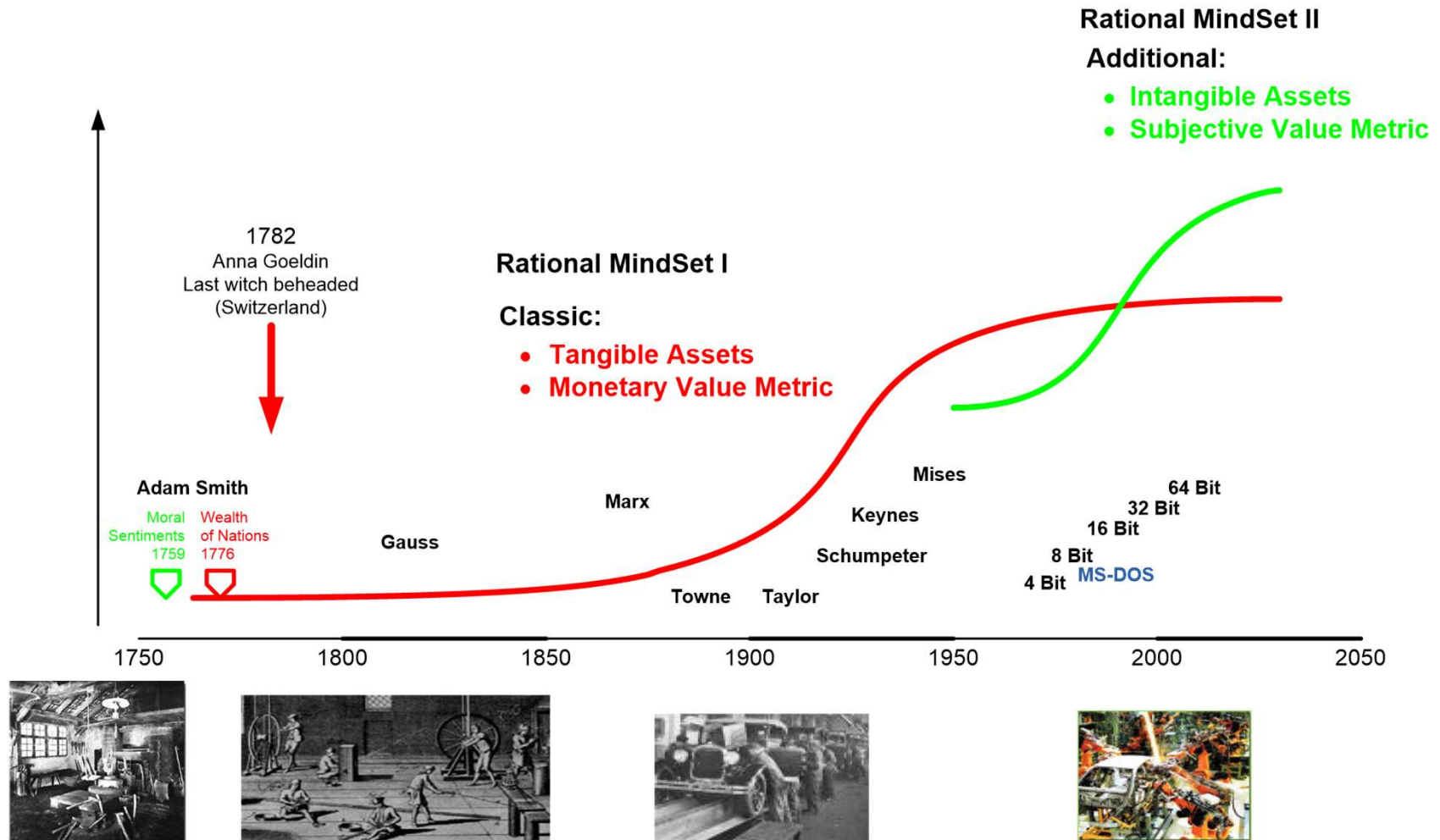


## Examples:

Concrete	40	28	20	years
Inforced concrete	22	7	18	years
Aluminium	29	53	26	years
Telephone	?	14	2	years
Radio	56	13	2	years
Radar	29	2	1	years
TV	22	22	8	years
Computer	115	9	5	years
ICs	40	2	3	years

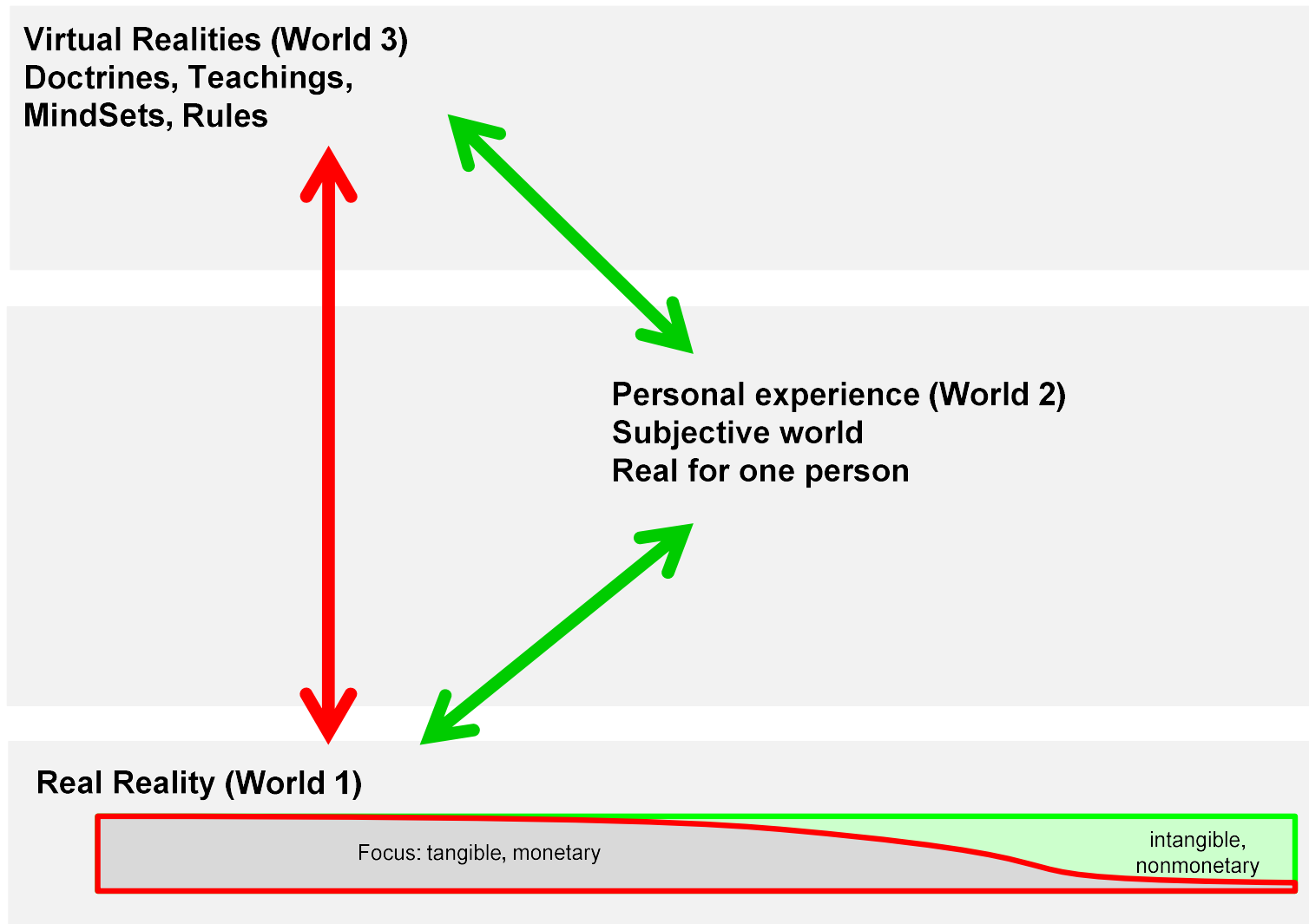


# Development of Business Theory (S-Curve of Product Development)





# Three Worlds – trigger for invention?





## World 3: Six interdependent fields

**Virtual Realities (World 3)**  
Doctrines, Teachings,  
MindSets, Rules

1776

2000

**Real Reality (World 1)**

Focus: tangible, monetary

intangible,  
nonmonetary



# World 3: Six interdependent fields





## Summary

«Count what's countable.  
Measure what's measurable.  
Make measurable what's not measurable.»  
Galileo Galilei

Tools for mapping economy and the rules for planning and reasoning business objects are divided in **six interdependent specialized fields** of profession.

In order to have an reasonable impact all areas/fields have to work on solutions.

Even if a coordinator would be an idea....

I expect, that the **development will follow a „swarm behaviour“**.

The **direction** is driven by the need for:

- (i) a framework that structures the **intangibles** and
- (ii) a value-metric that allows calculation with **subjective values**.



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## Enhancing Paradigms

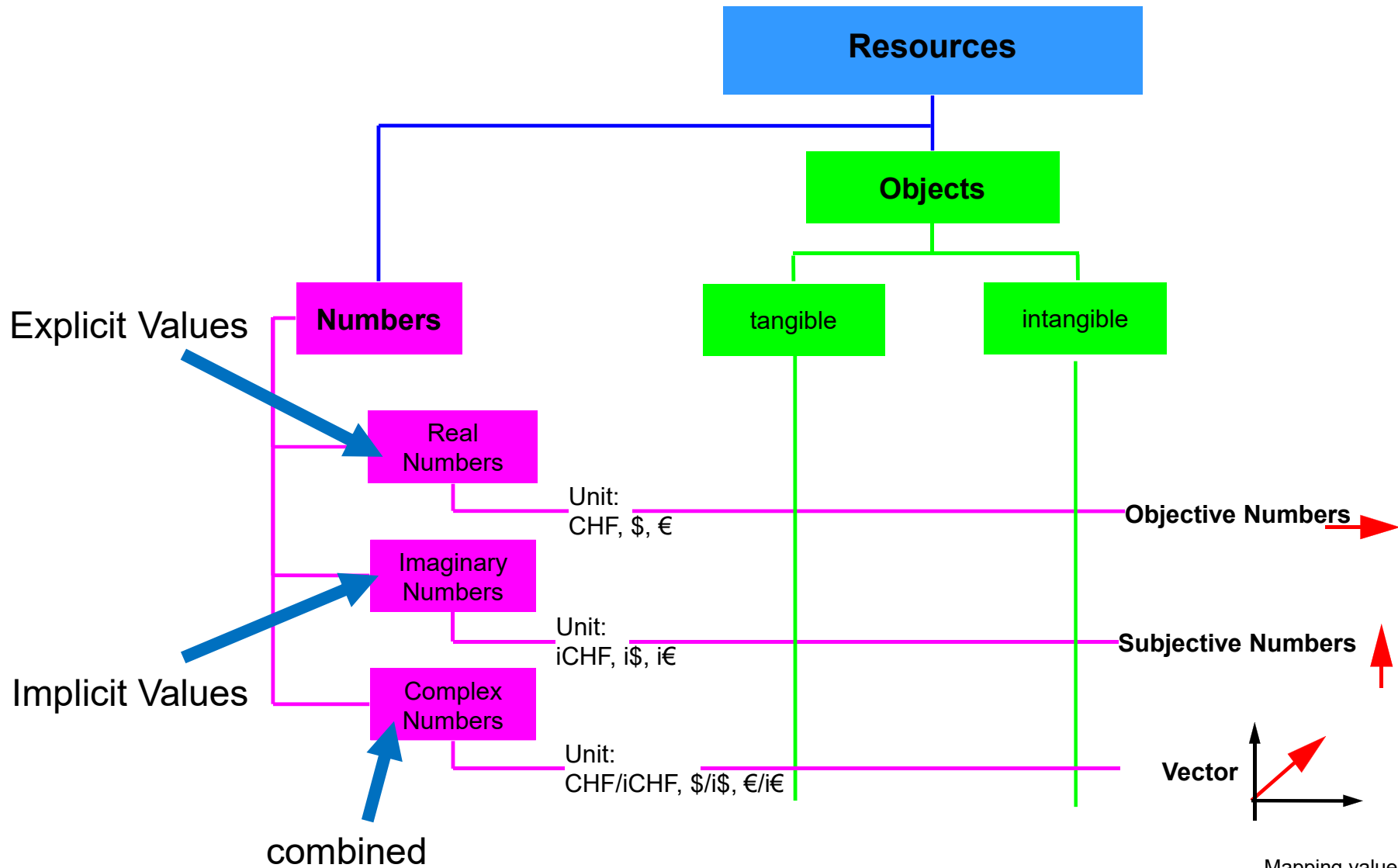
**Deeply ingrained assumptions, teaching programs, mental models, „taken as granted“. They determine how we are aware of the reality and influence our behaviour.**

At least 17 paradigms to be revised.

- 1. Land, Labor, Capital** (as resources)  
... to be substituted by a framework that is based on tangible and intangible resources.
- 2. Value paradigm**  
Value – as a result of a valuation process – has objective AND subjective aspects / dimensions.  
A scientifically correct value metric system has to reflect this necessity. Therefore it has to be multidimensional.  
(Linear measure vaporises the essence.)



# Objects, Attributes, Value-Measures







## Summary

«It is the theory which determines  
what we can observe.»

Albert Einstein

Enhancing this two overhauled paradigms is possible.

(Even if it takes some time.)



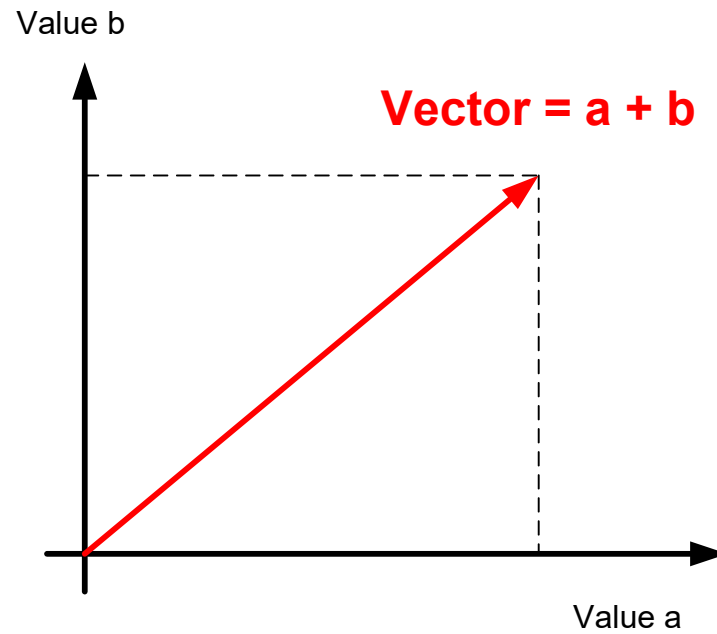
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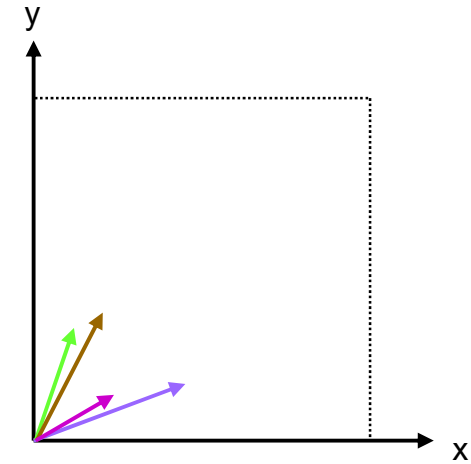


# The Vector

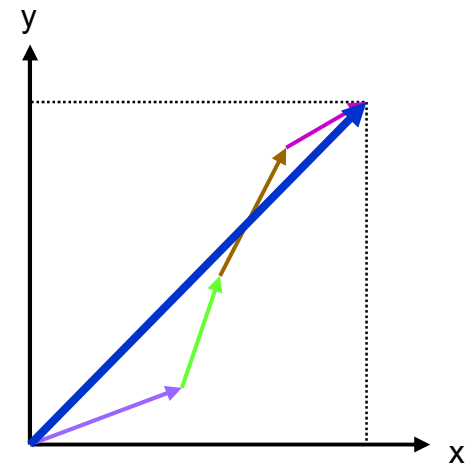
## Single 2D-Vector



## 4 vectors of objects



## Adding vectors

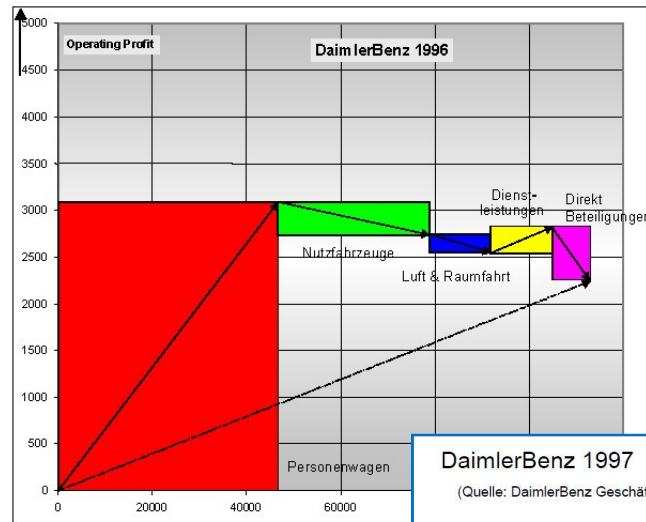


# Vector Type 1

## DaimlerBenz 1996

(Quelle: DaimlerBenz Geschäftsbericht 1997)

Zahlen 1996	Umsatz	Operating Profit
Personenwagen	46652	3090
Nutzfahrzeuge	32152	354
Luft & Raumfahrt	13053	196
Dienstleistungen	13143	288
Direkt geführte Beteil.	8014	585
Element6	0	0
Element7	0	0
Element8	0	0
Element9	0	0
Element10	0	0
<b>Summe</b>	<b>113014</b>	<b>2243</b>

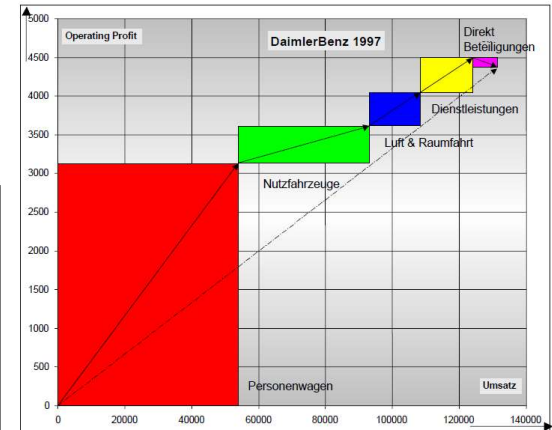


Die strichlierte Linie zeigt das durchschnittliche Verhältnis von "Operating Profit" zum "Umsatz".  
Flachere Vektoren zeigen eine unterdurchschnittliche und steilere Vektoren eine überdurchschnittliche Performance.

## DaimlerBenz 1997

(Quelle: DaimlerBenz Geschäftsbericht 1997)

Zahlen 1997	Umsatz	Operating Profit
Personenwagen	53892	3132
Nutzfahrzeuge	39140	481
Luft & Raumfahrt	15286	432
Dienstleistungen	15498	457
Direkt geführte Beteil.	7555	-129
Element6	0	0
Element7	0	0
Element8	0	0
Element9	0	0
Element10	0	0
<b>Summe</b>	<b>131371</b>	<b>4373</b>



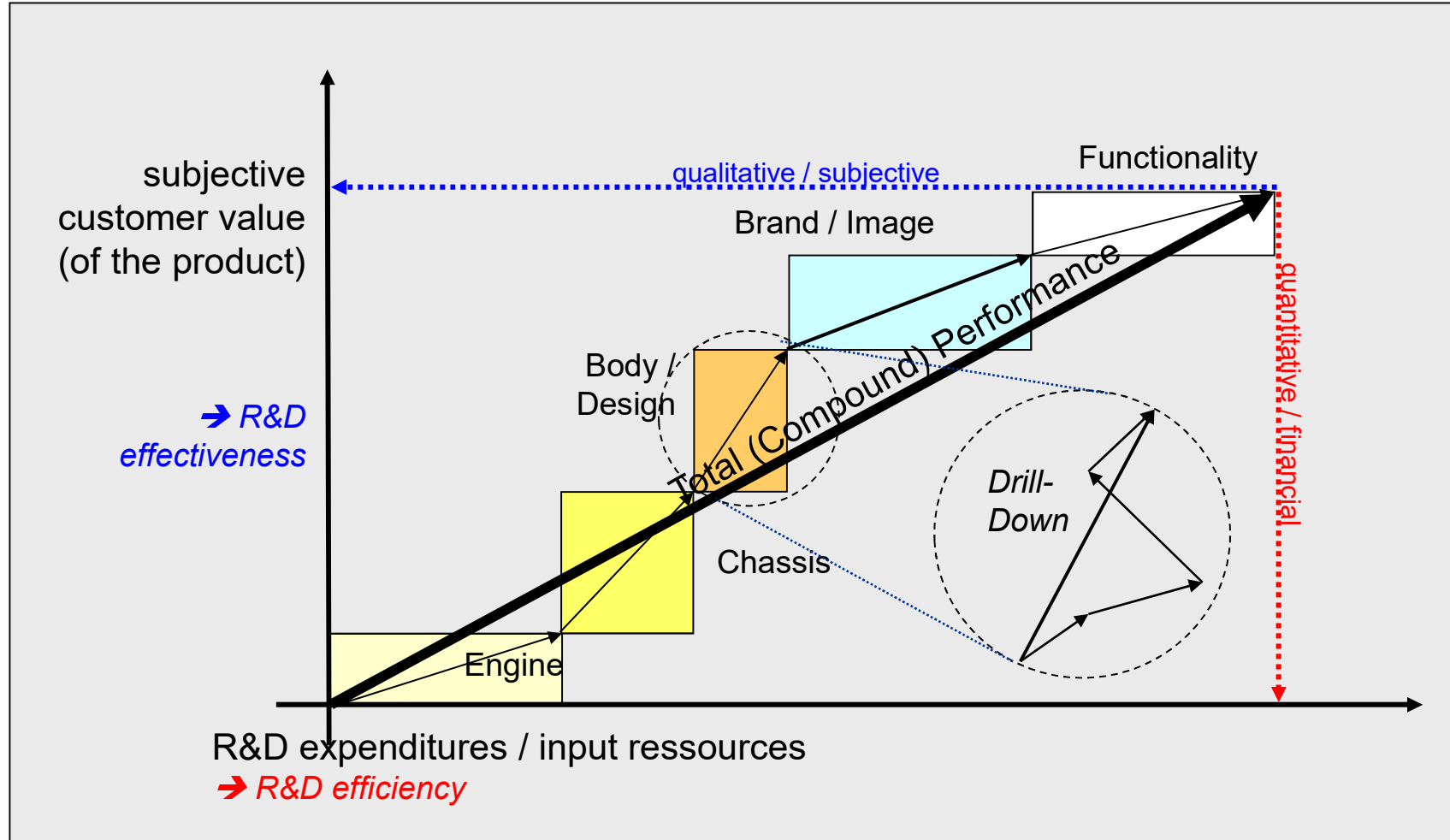
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Flachere Vektoren zeigen eine unterdurchschnittliche und steilere Vektoren eine überdurchschnittliche Performance.

More samples:

<http://bh.bengin.com>

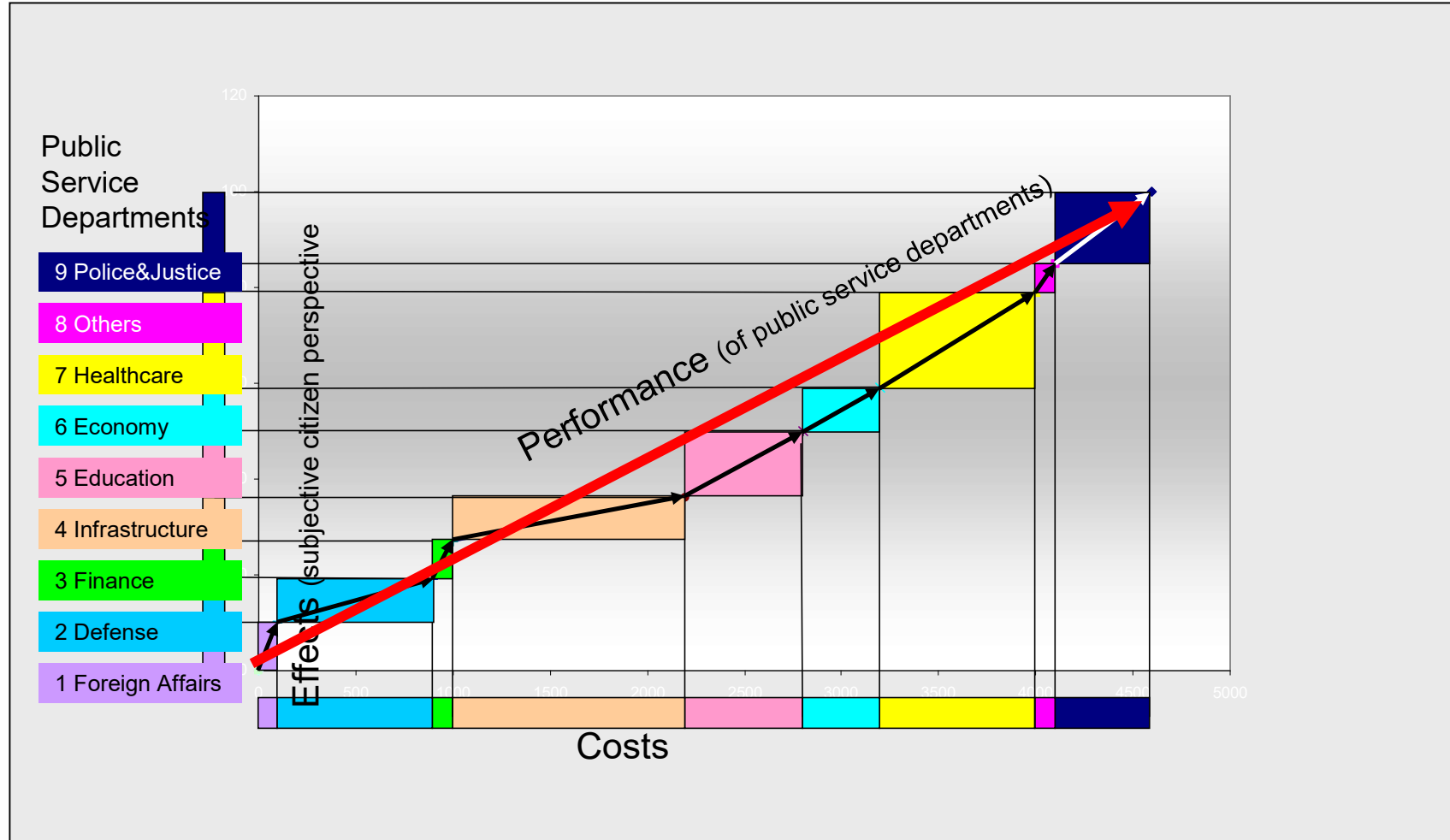
[https://www.bengin.net/soft/vektorbeispiele01\\_d.htm](https://www.bengin.net/soft/vektorbeispiele01_d.htm)

# Vector Type 1 (Aggregation and Drilldown)





# Vector Type 1 (Public Service Departments)

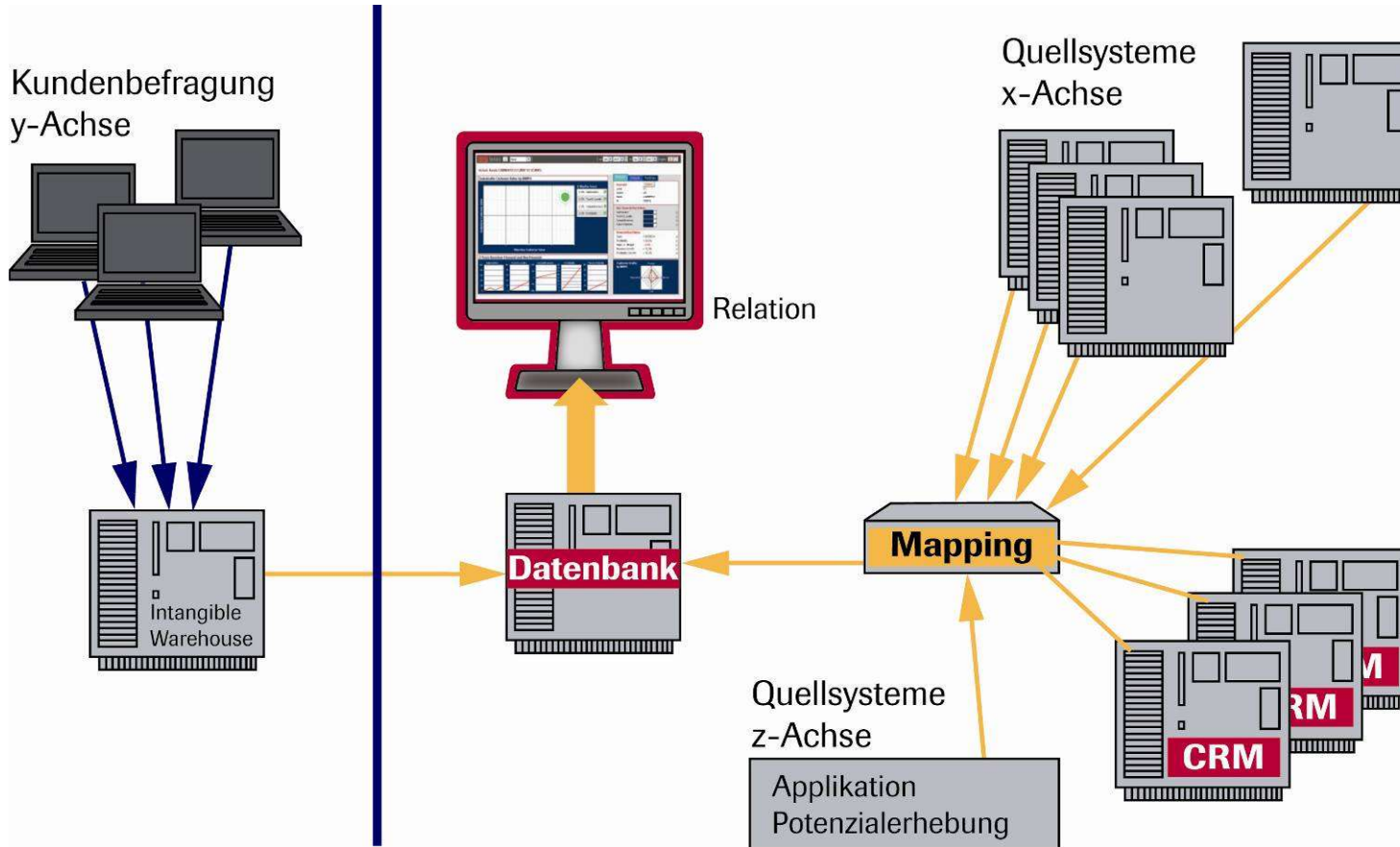




# Vector Type 1 (practical application)

**Asking customer**  
(Internet)

**Decision cockpit**  
(links internal economic data with answers of customers)



# Vector Type 2: Linking „objective“ with „subjective“ axis

subjective  
(intangible) view

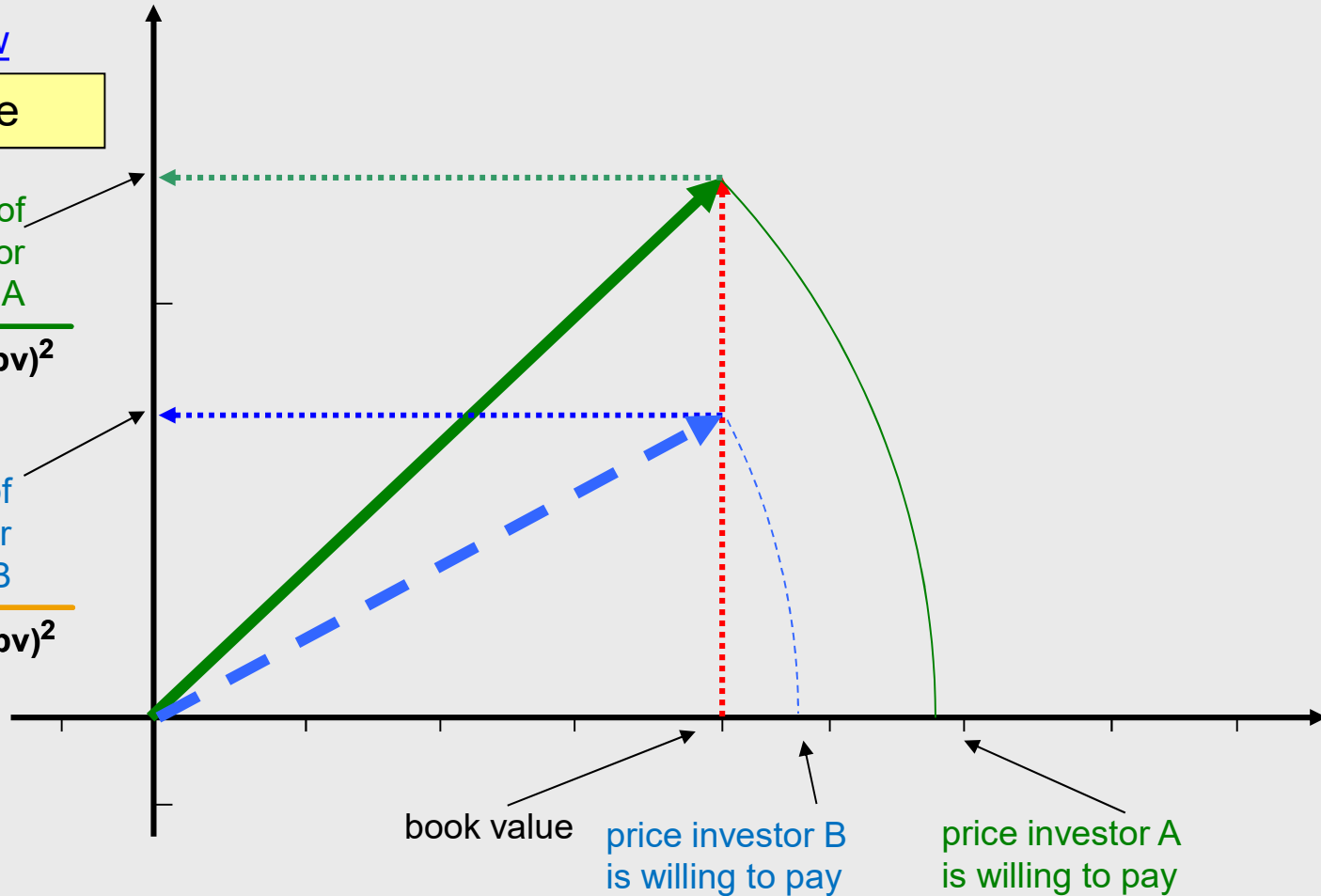
intrinsic value

use value of investment for investor A

$$uv A = \sqrt{(p A)^2 - (bv)^2}$$

use value of investment for investor B

$$uv B = \sqrt{(p B)^2 - (bv)^2}$$



objective (financial) view

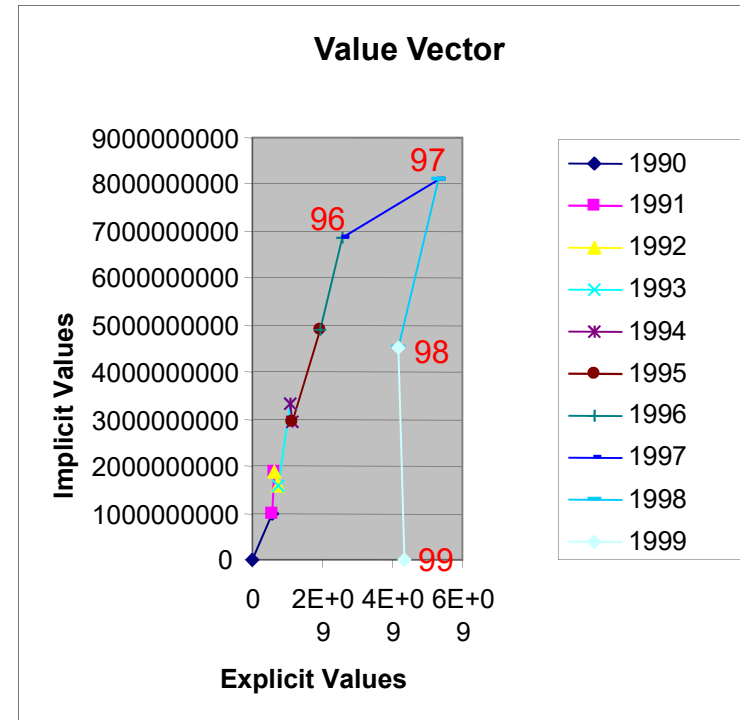
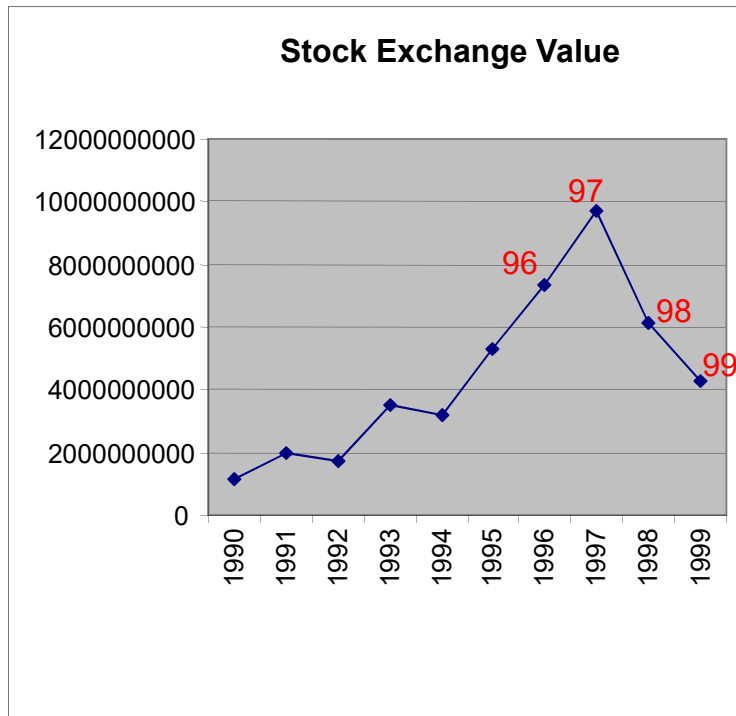
price



# Overpriced Papers? Is the Vector a prognostic tool?

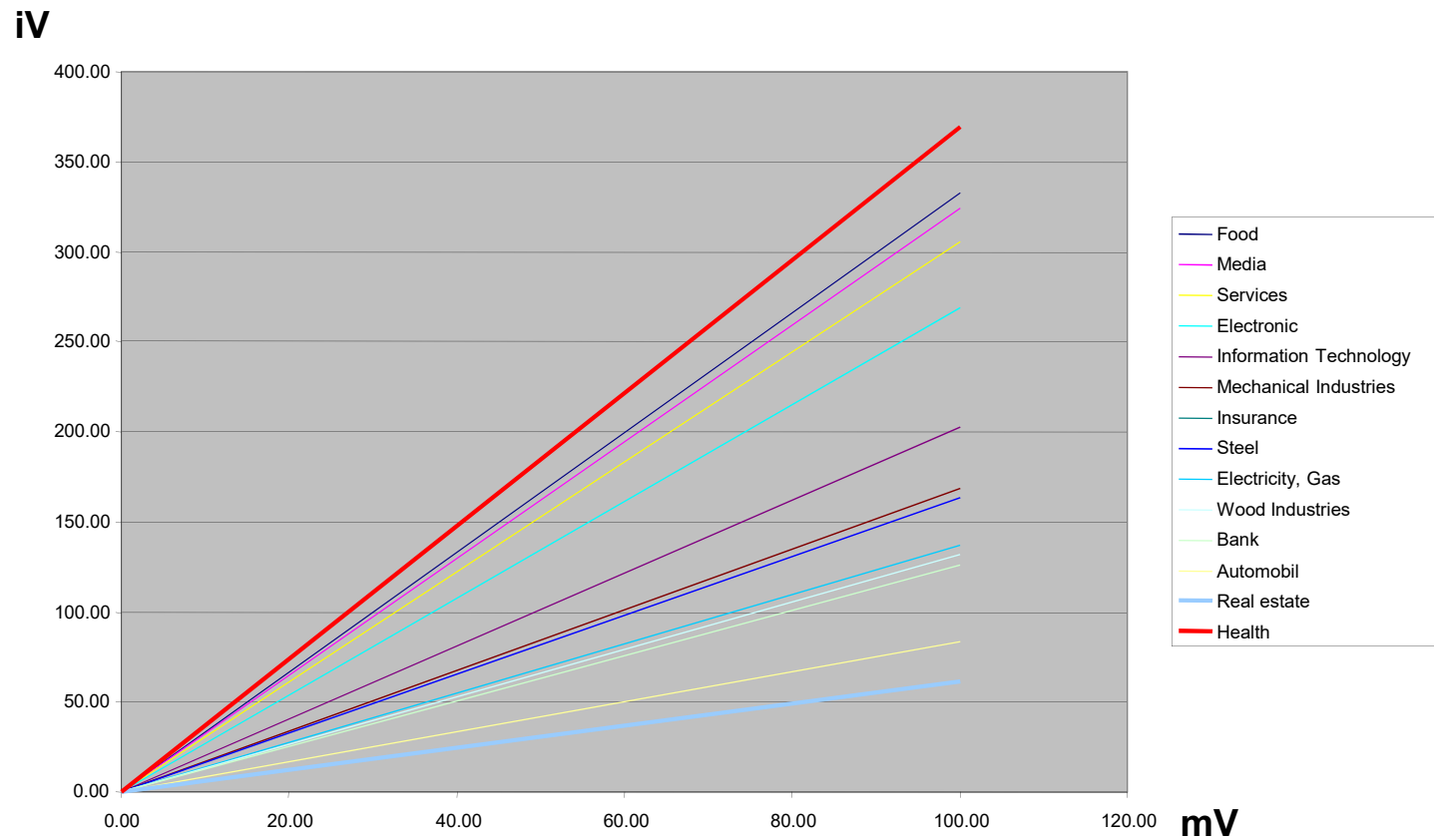
....a year before the downturn of the classic curve....

...the Vector Map indicated a change of Coca Cola Amatil.....



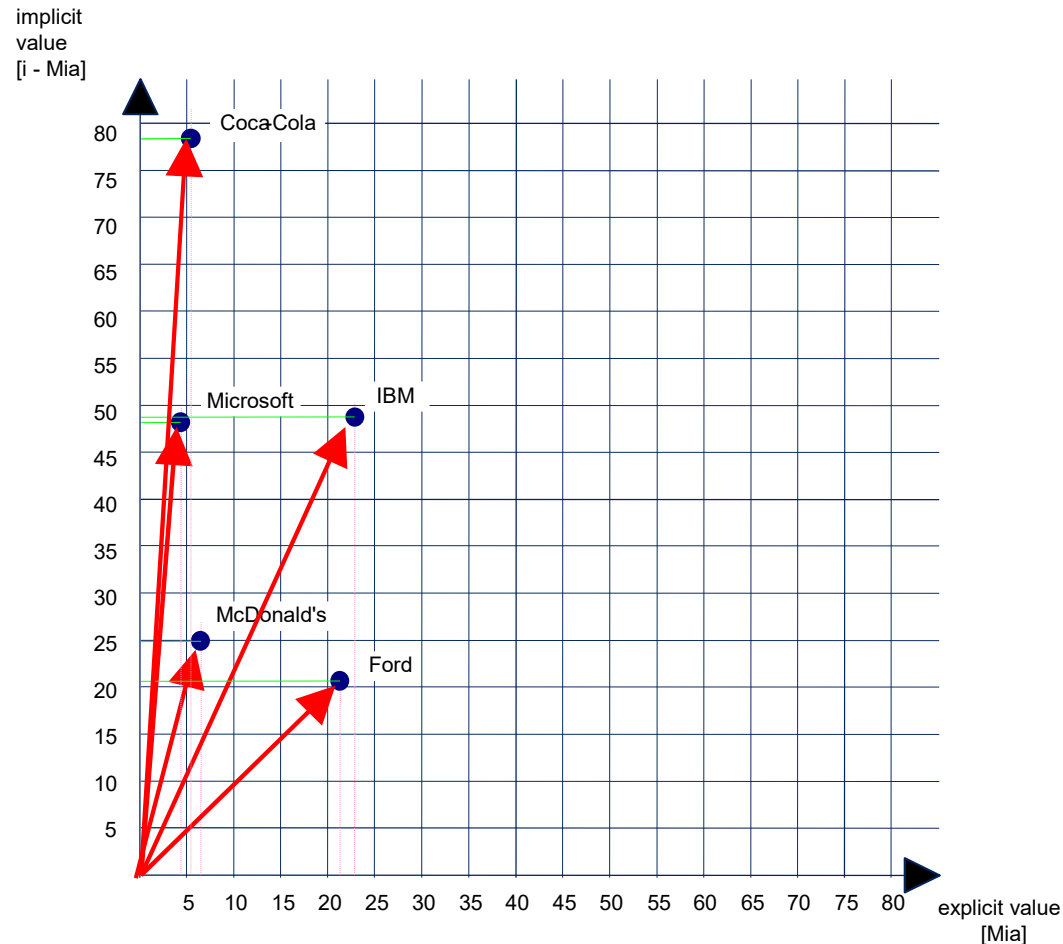


# 14 types of industry (Sveiby)



Source: Morgan & Stanley Capital International World Index; Cited in: Sveiby, Wissenskapital; Seite 23; Mi-Verlag 1998

# Intangible Assets or Shareholders Profit Expectation?

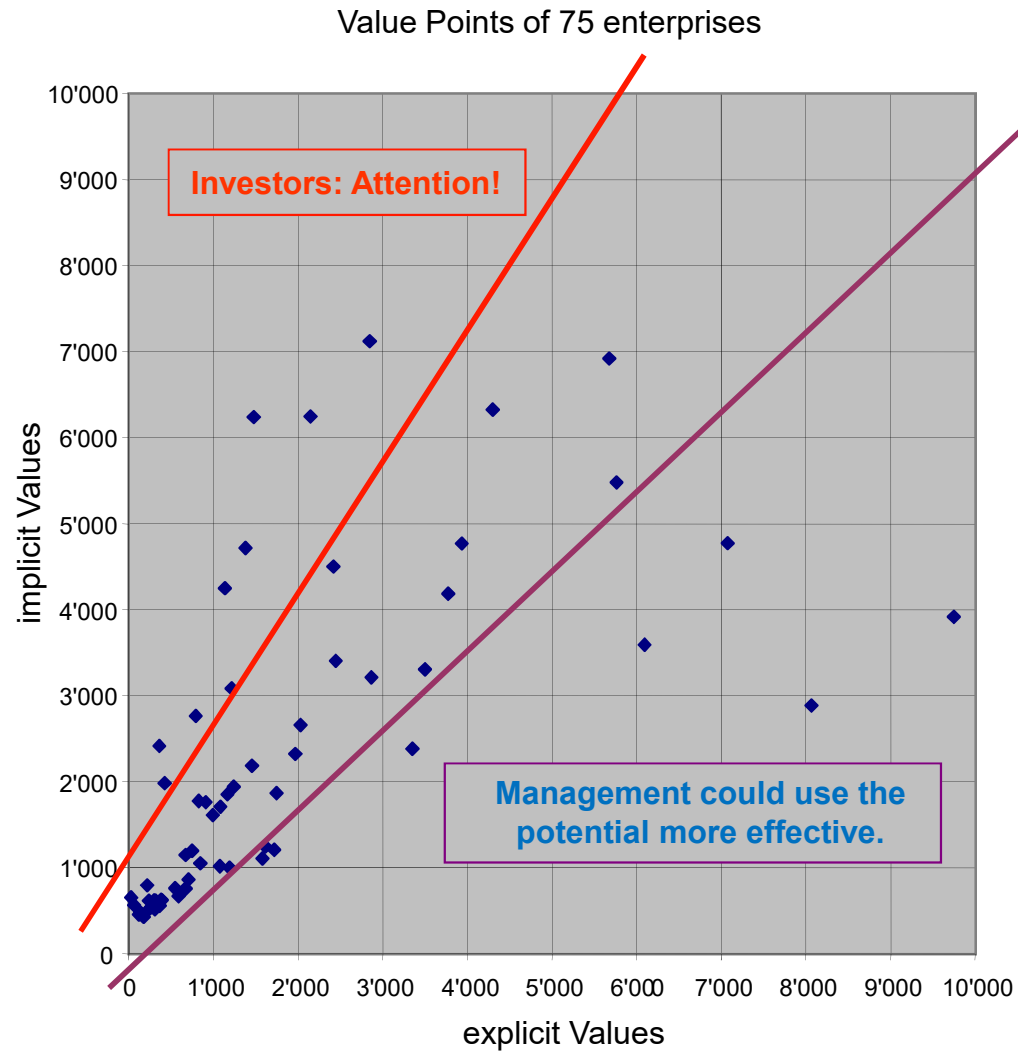


The explicit Value and the implicit Value together draw a complete picture about the company's value and its development.

The question remains:  
Is the implicit Value given by the real Value of the company?  
Is it given by some marketing tricks?  
Which part of it is made by the Shareholders Value Expectation?



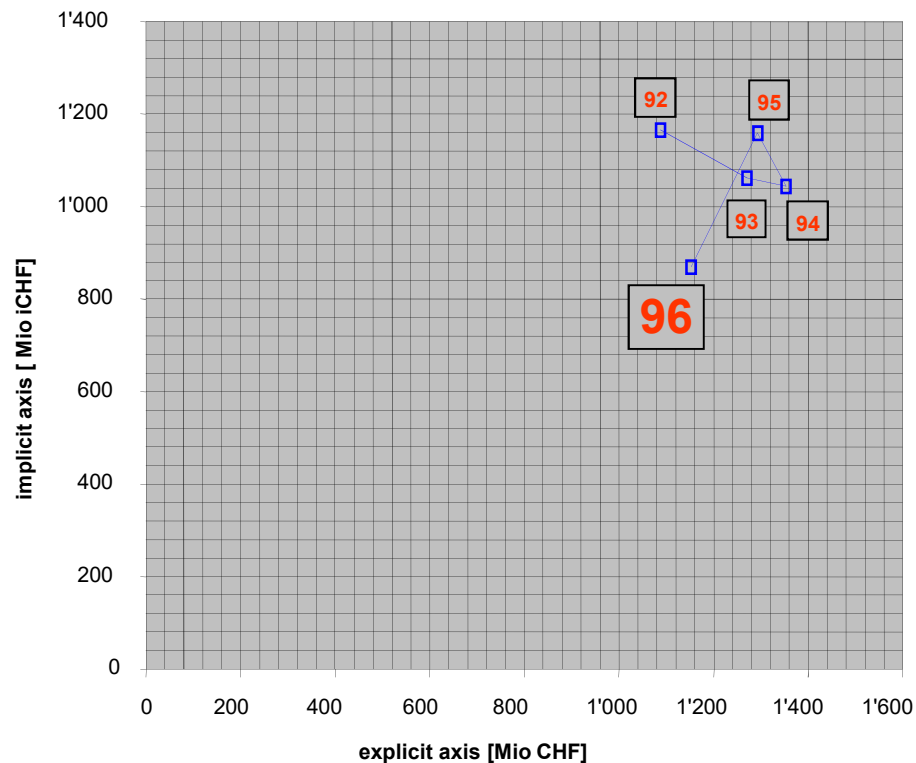
# A better model for new decisions





# Tracking the development of an enterprise

Pointer of vector for five years



Question:  
"What happened in the year 1996?"

Answer:  
Part of enterprise sold.

2<sup>nd</sup> Question:  
Is this loss of intangible values compensated by the price received for the sold part of enterprise.

Answer: ?

→ Ask Auditor – if he's still available....



## Summary

When you can measure what you are speaking about and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in Numbers, your knowledge is of meagre and unsatisfactory kind.

Lord Kelvin

With **Vector 1** it is possible to show any desired **values in context**.

With **Vector 2** it is possible to introduce a **standard for subjective values**.

After the *relativity of time* for the *physicists* 100 years ago, an analogical step can be made by *economists* with the *relativity of value*.

It will enable a more sustainable economy.



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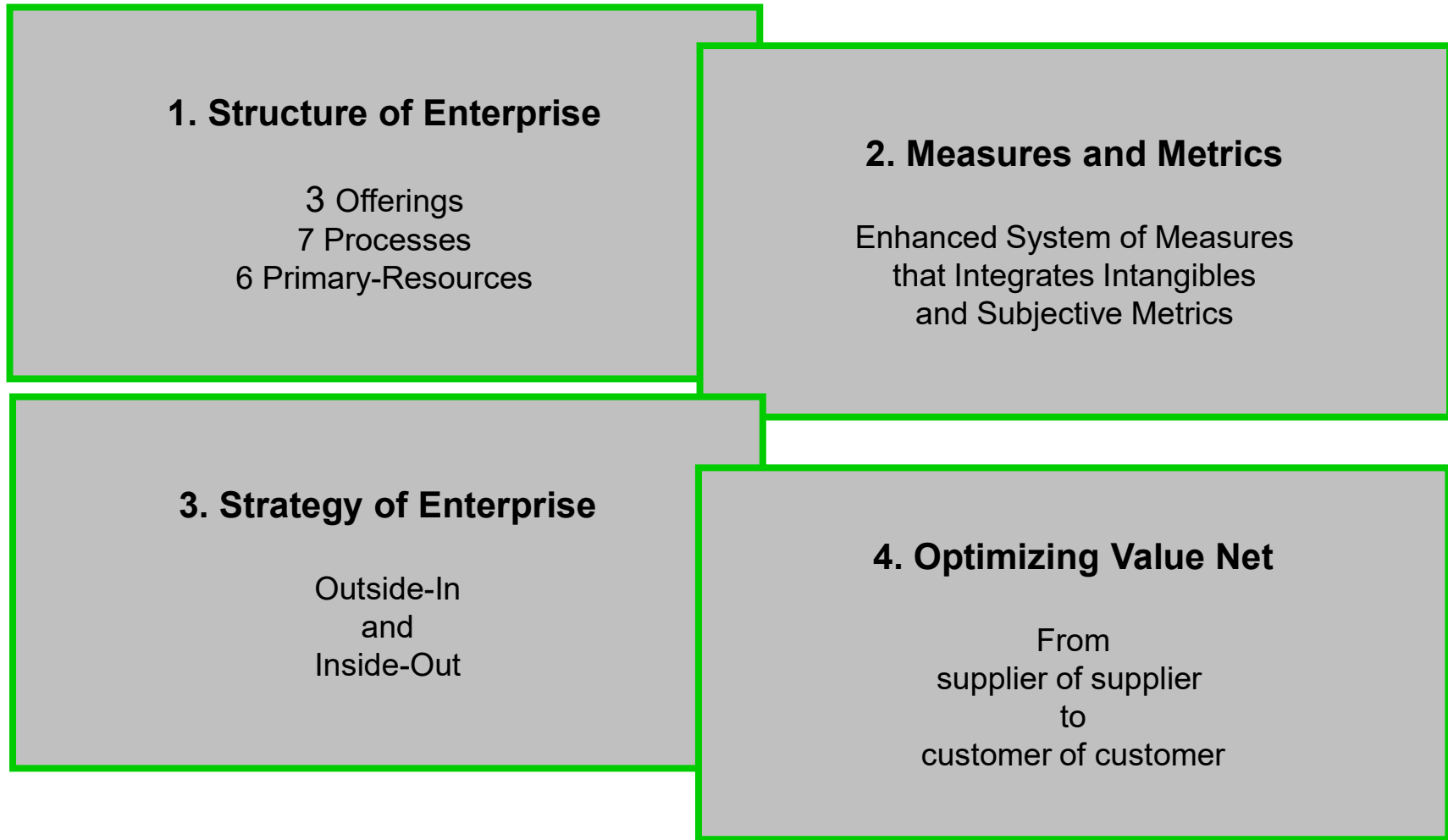
I am very **optimistic**, that the economic theory will reach a higher level of applicability.

An **enhanced economic paradigm** (in that intangibles and subjective values will count) will **improve the reasoning and decision process** and in it's consequences will **enable a new dimension of wealth**.

Three samples of influence we see at that time:



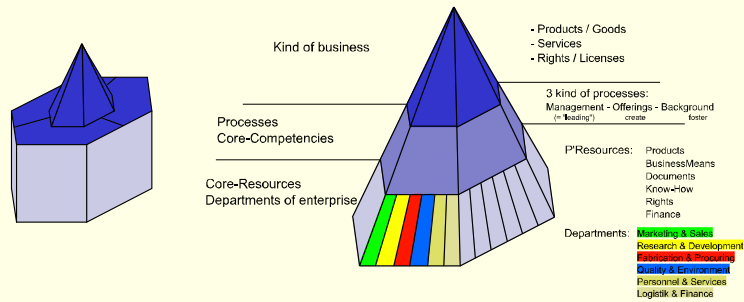
# Four Main Points



# Four Main Points

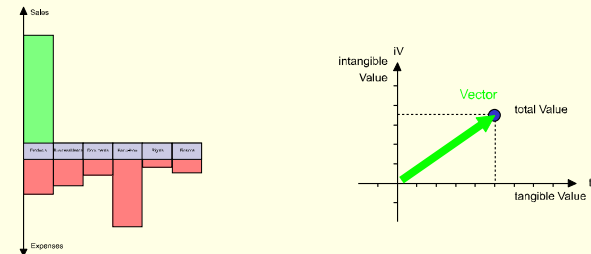
## 1. Structuring the Elements of a Corporation

Three levels: Offerings, Processes, Prerequisites



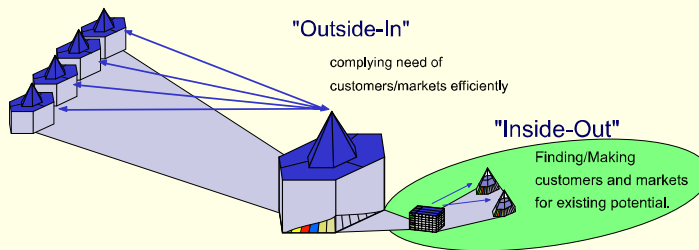
## 2. Quantifying means (numbers and indicators)

- from P&L account to the P&L profile
- Numbering system for tangible and intangible values



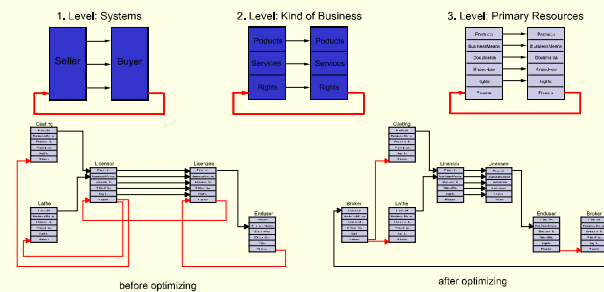
## 3. Development of enterprise (Strategies, options...)

- Market-oriented (outside-in) and offerings-oriented (inside-out)

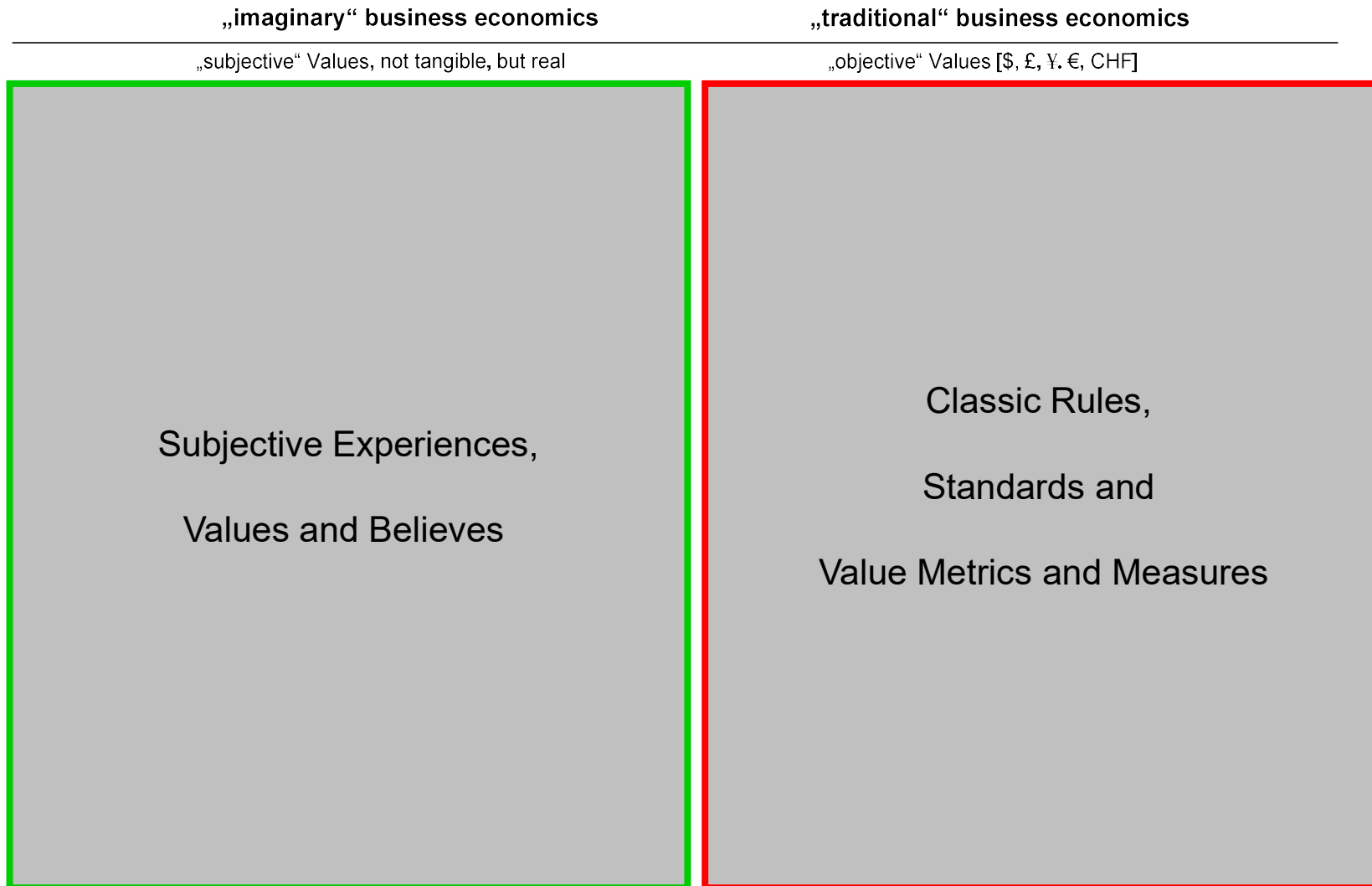


## 4. Closed Loop Business Relations

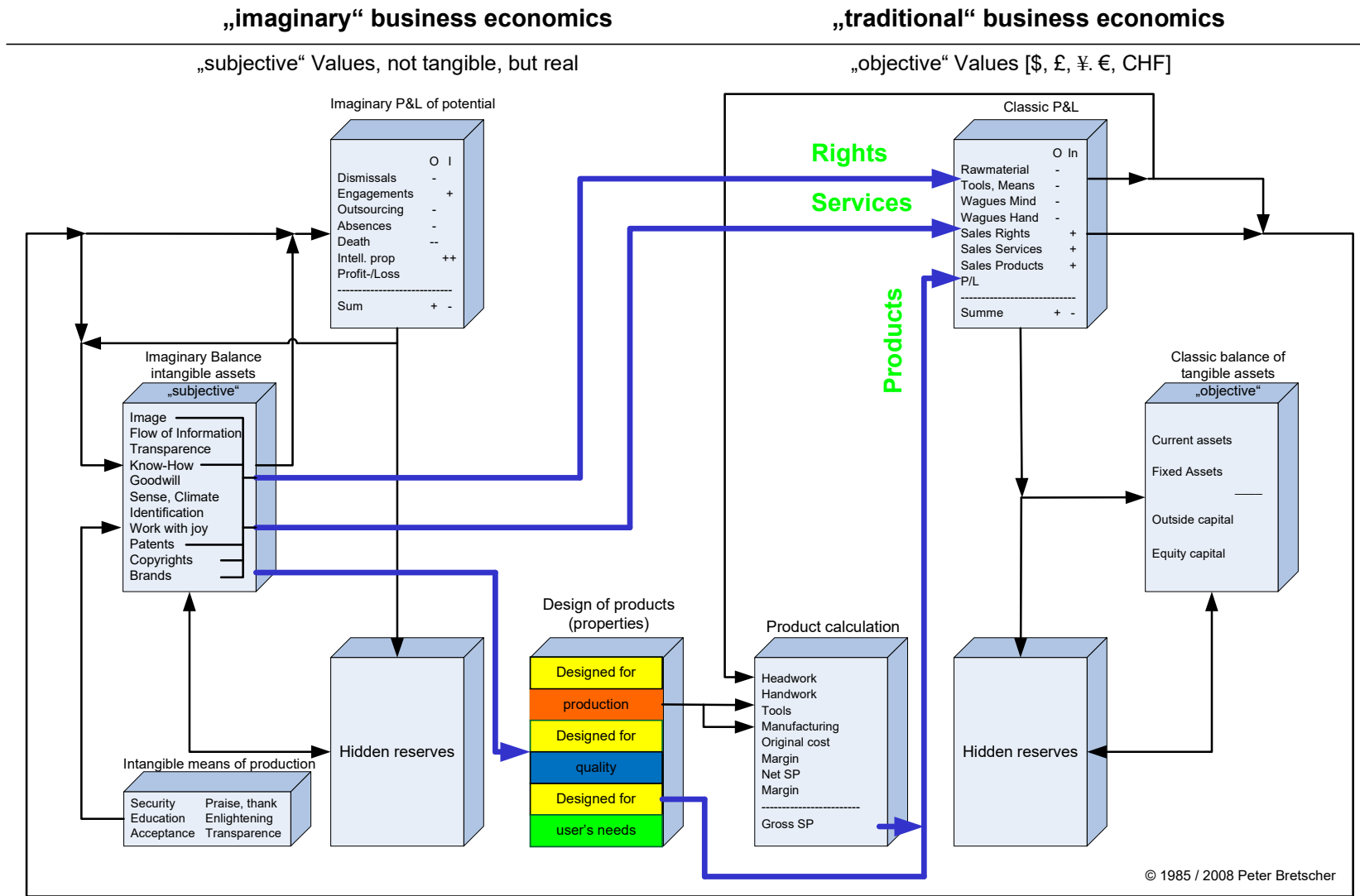
- planning, design, optimize Value Adding Net [VAN]
- from the supplier of the supplier to the customer of the customer



# Back- and Frontside of the Economics MindSet



# Back- and Frontside of the Economics MindSet



# Pricing Values?

## Economic Value Architecture & Engineering

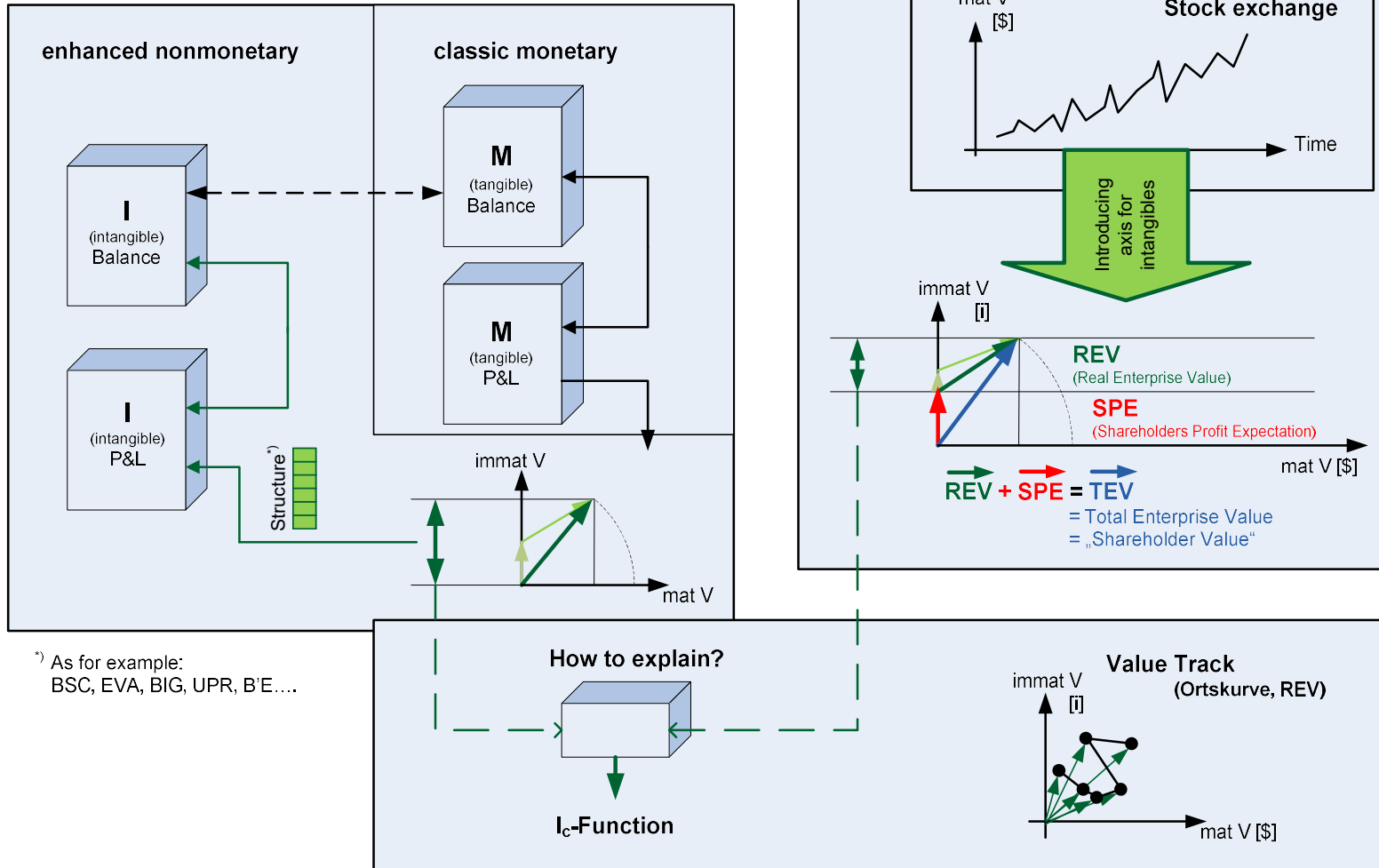
Tangible and intangible  
**assets** of an enterprise,  
**potential** of an enterprise,  
**values** of an enterprise

Market for **Papers**  
(Stock-Exchange)

How to determine „fair value“ (price) for a paper?

# Pricing Values?

## Economic Value Architecture & Engineering



<sup>\*)</sup> As for example:  
BSC, EVA, BIG, UPR, B'E....



And now?

A long journey begins with just one step.

Chinese

You are welcome and invited to take part of that journey.

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Eggersriet, Switzerland

# **bengin**

Beyond Limits of Classic Business Paradigms

# **Thank You**

**Web <http://www.bengin.com>**

**Blog <https://bengin.net/wp/>**

**Twitter <https://twitter.com/peterbretscher>**

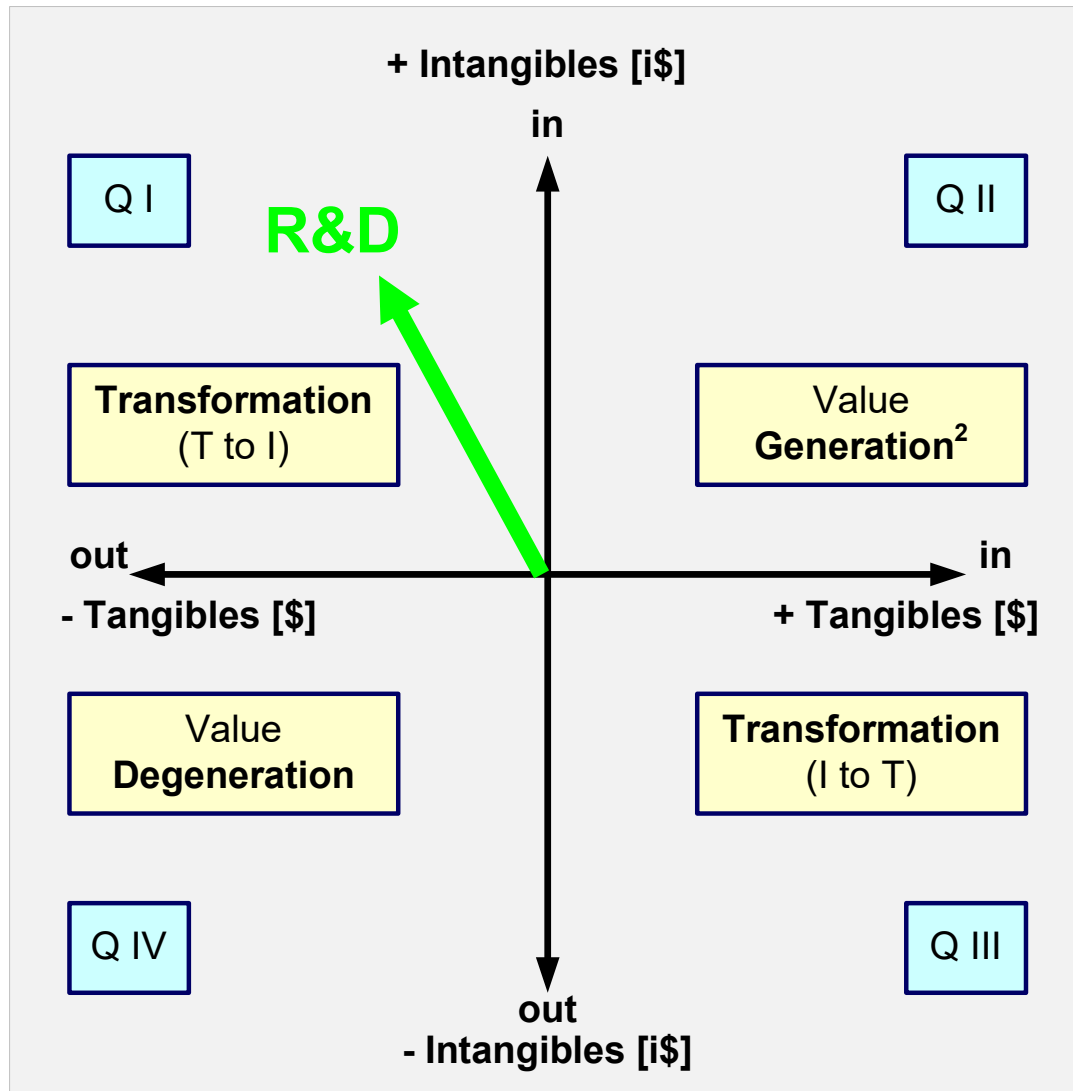
**Special Website <https://bengin.net/dresden/>**



# **backing slides**

**bengin**

# The four Quadrants of Value generation



## Q I: Transform -T/+I

- New projects
- Revisions of offerings
- Insourcing/merging
- ....

## Q II: Generation +T/+I

- Daily business
- Selling, dispatch
- (Re)Production
- ....

## Q III: Transform -I/+T

- Outsourcing
- Leaner production
- ....

## Q IV: Degeneration -I/-T

- Graveyard
- ....

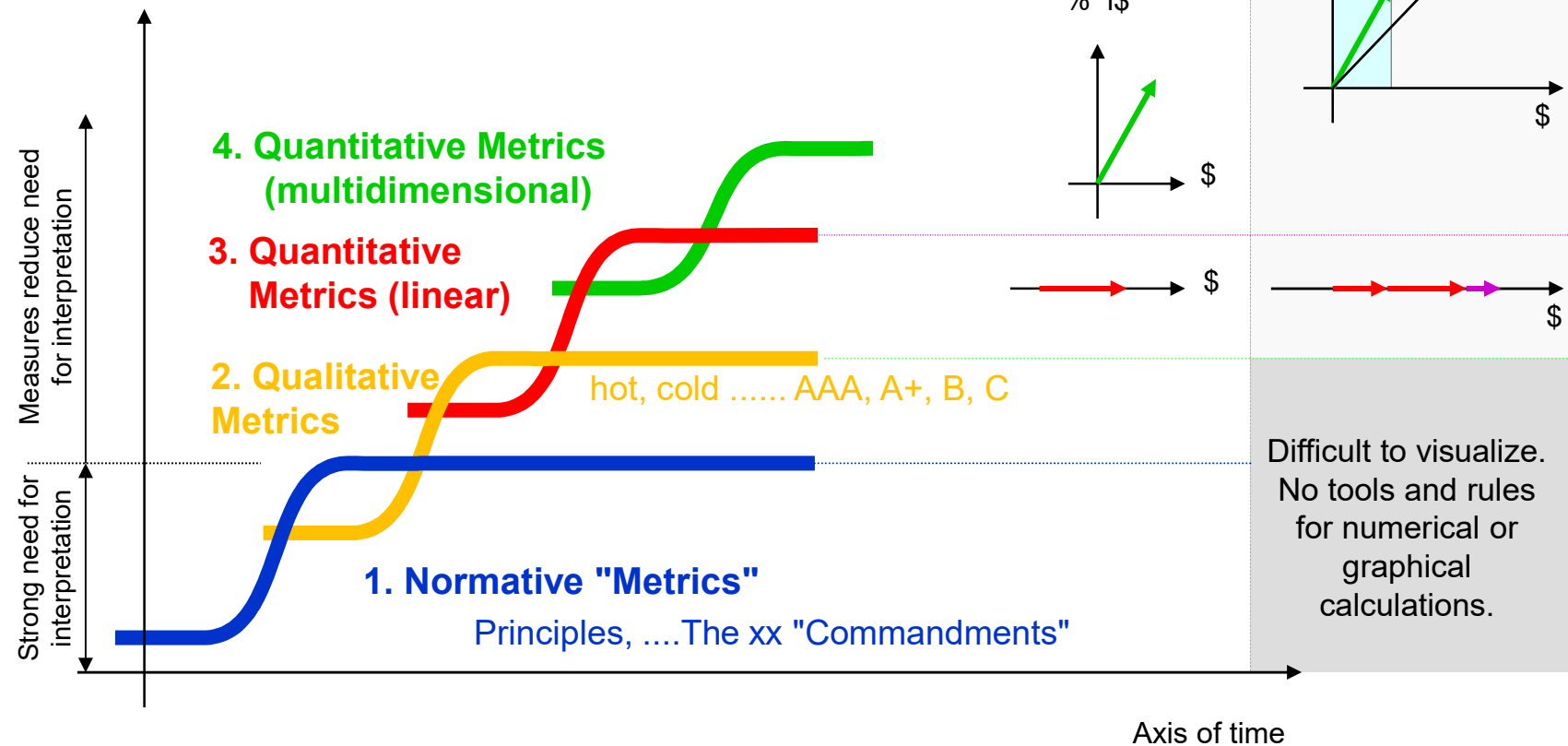
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# Development of (economic) Value-Metrics

(Compound Value-Metric System with the subjective, implicit Value axis)

Why Metrics?

- comparing, comprehensible, reproducible
- Making rationale (and indirect) communication easier.



# Von verschiedenen Organisationen in verschiedenen Projekten

Strukturen nach Strategy Articulation Map (SAM) & Indicators L&S

ANDERSEN

Strukturen nach einem Hochbauamt

BSG

- A Bau
- A Interim
- A Kulturpolitik
- A Zentralverwaltung
- A Finanzen

A Financial and Physical

Strukturen nach Score - Groups

NOVARTIS

Rechnung 2001

- A Pharmaceuticale
- A Licensing

Strukturen nach Departemente Schweizerische Eidgenossenschaft

Budget/Ausgabenplanfond 2003

- A EDA Departement für auswärtige Angelegenheiten
- A EDI Departement des Innern
- A EJPD Justiz- und Polizeidepartement
- A VBS Departement für Verteidigung, Bevölkerungsschutz und Sport
- A EFD Finanzdepartement
- A EVD Volkswirtschaftsdepartement
- A UVER Departement für Umwelt, Verkehr, Energie und Kommunikation

Strukturen nach Departemente Kanton Graubünden

- A Justiz, Palast- und Sanitätsdepartement
- A Innere, Verkehrs- und Erziehungsdepartement
- A Departement des Innern und der Volkswirtschaft
- A Erziehungs-, Kultur- und Umweltschutzdepartement
- A Finanz- und Militärdepartement

Strukturen nach Value Creation Index

ERNST & YOUNG

- A Alliances/M&A activity
- A Value of human capital/employees
- A Quality of management

Strukturen nach Departemente Kanton St. Gallen

- A Volkswirtschaftsdepartement
- A Departement für Innere & Militär
- A Erziehungsdepartement

Strukturen nach PwC (Industriemfrage)

PRICEWATERHOUSECOOPERS

- A Strategy & Innovation
- A Customers & Markets
- A People & Reputation
- A Manufacturing & Logistics
- A Financial Performance

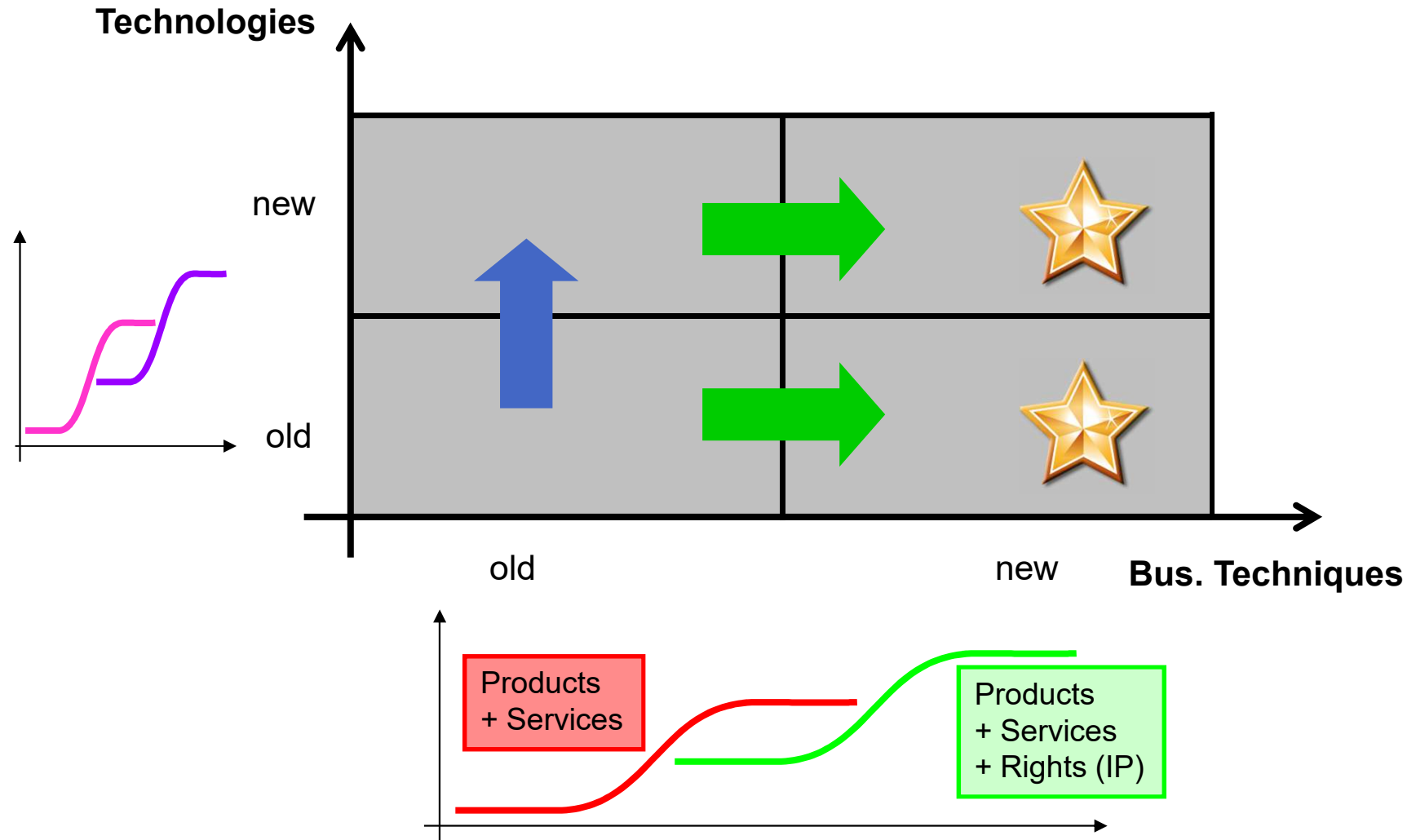
nach Umsetzungs-Performance Rating

ratingfactory

- A Leadership
- A Management Fokos
- A Kundenportfolio Management
- A Leistungsgestaltung
- A Qualitätsmanagement
- A Vertrieb
- A Umweltmanagement



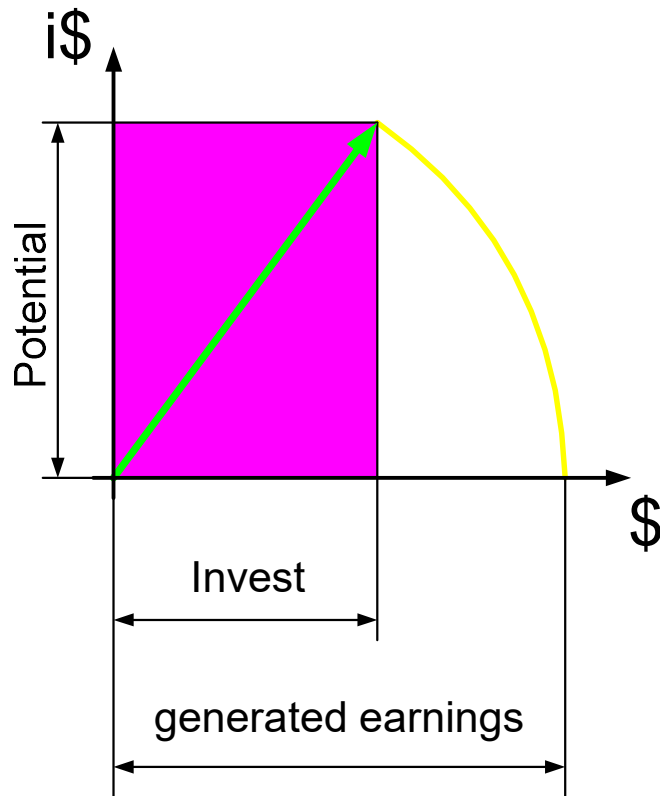
# Innovating Business Models



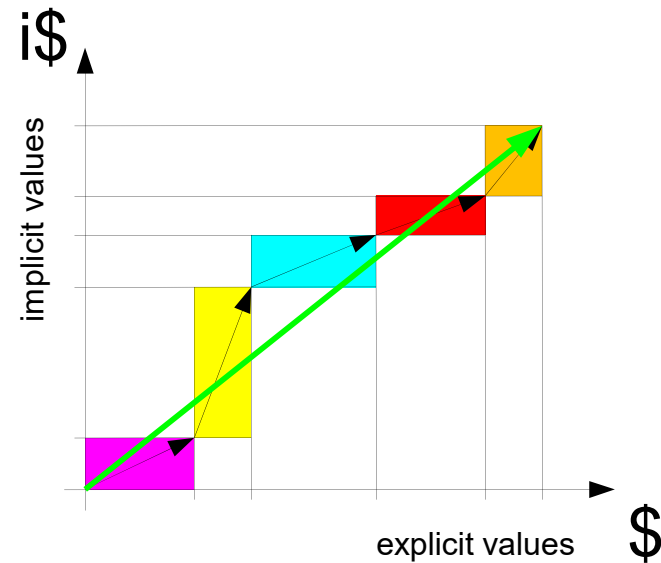


# Measuring performance

## Creating Values

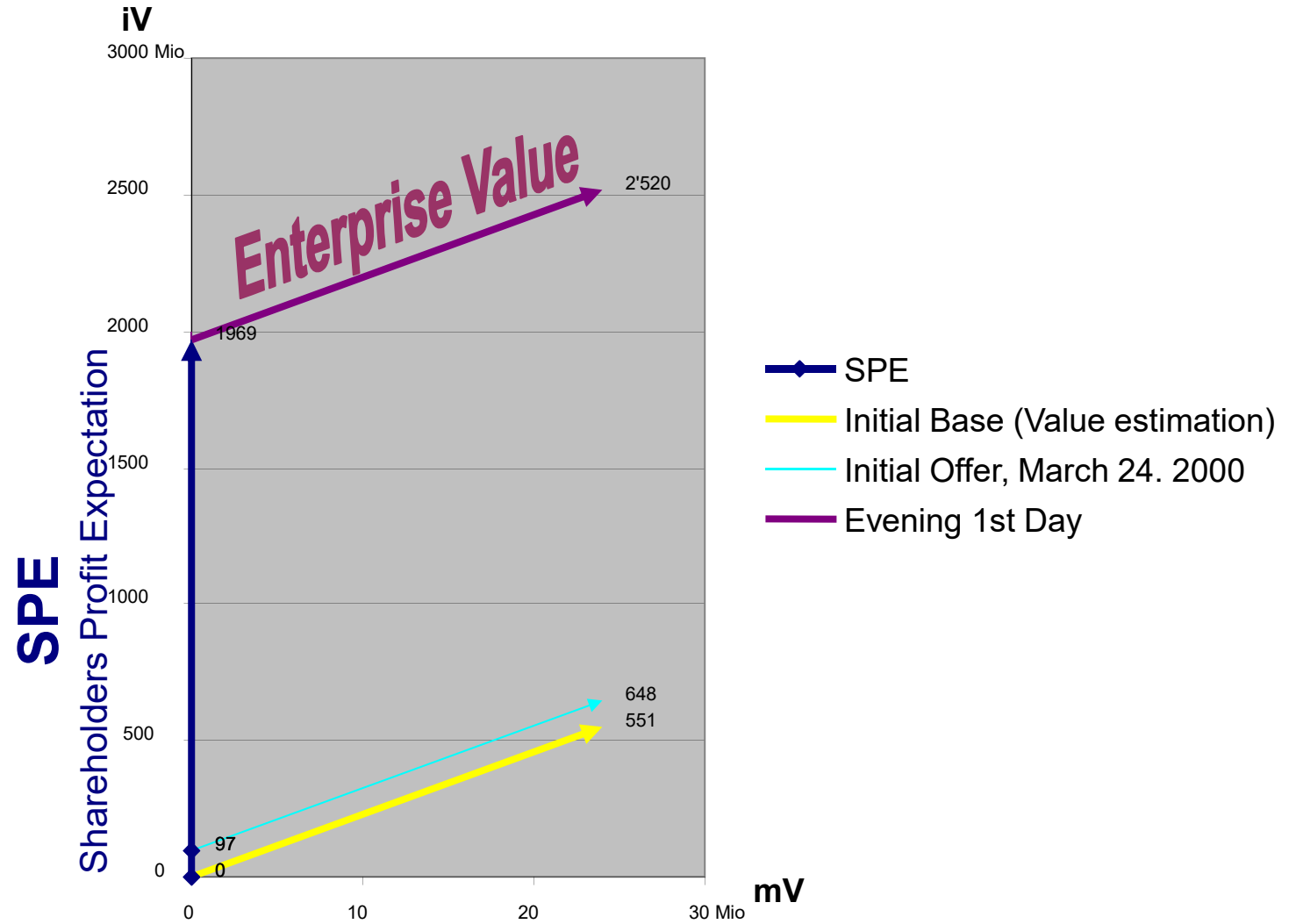


## Counting Values



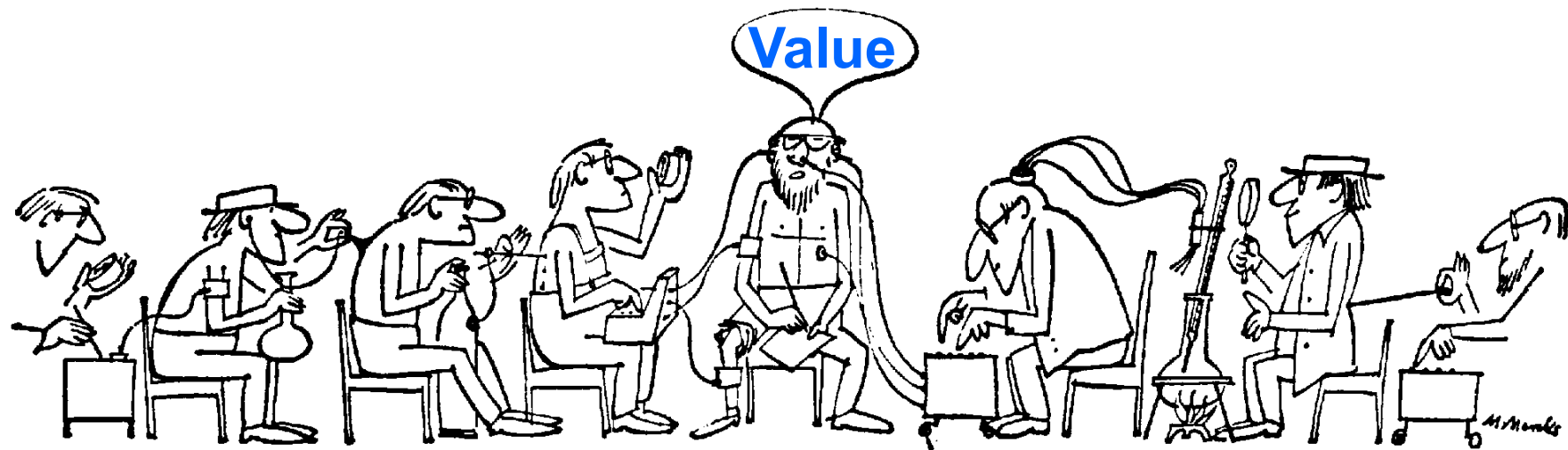


# Value (Price) Development of Paper (Shareholders view)





## Explained world

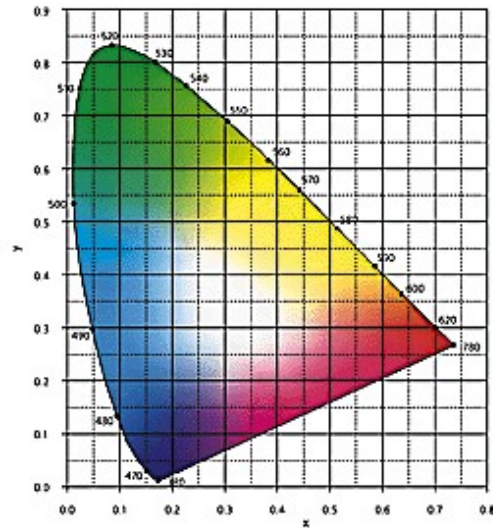
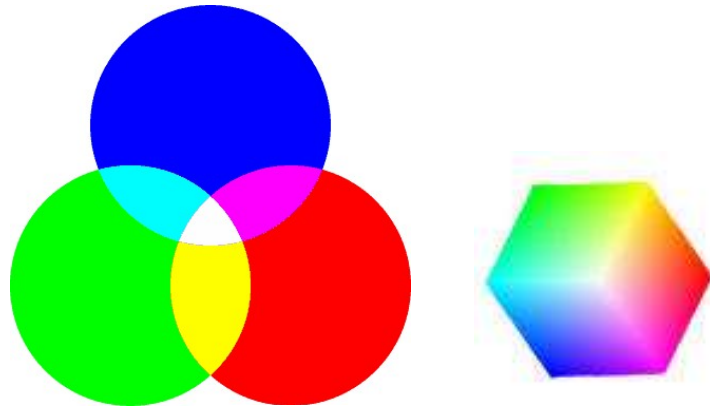


Nach: Marle Marks,  
Manager Magazin 3/85

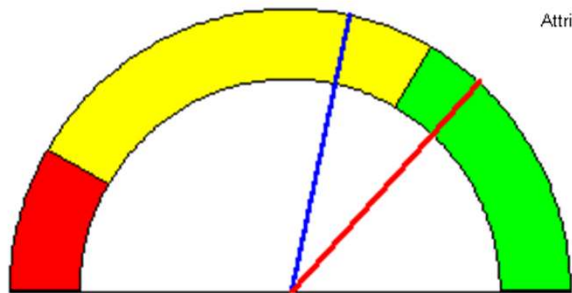
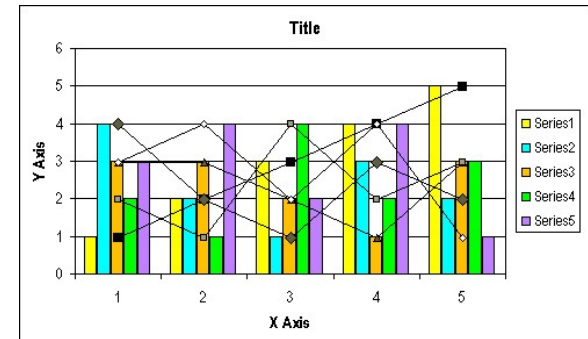
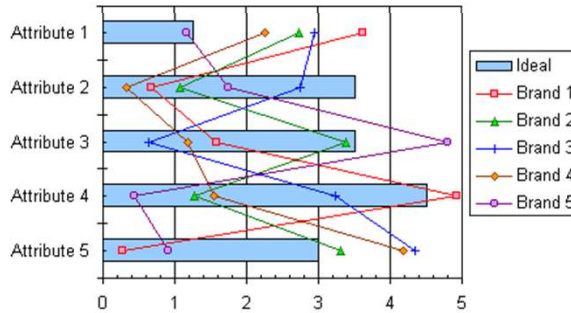
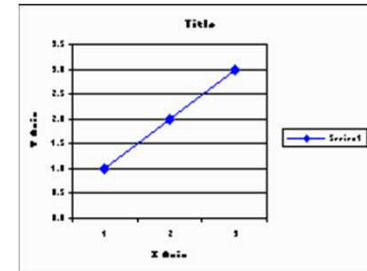
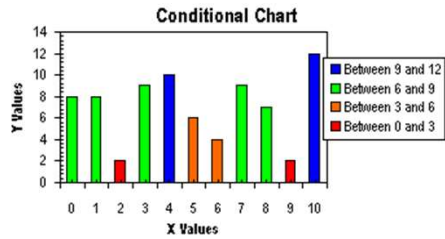
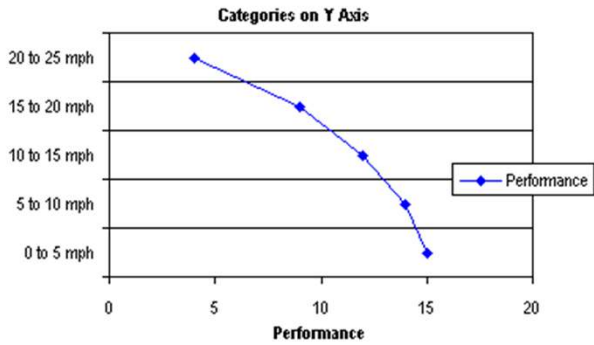




# Color measures



# 1D – 2D rulers, metrics



## Key Performance Indicators

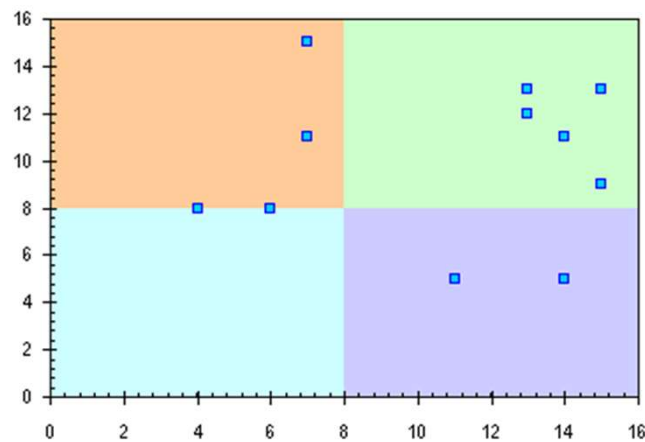
Blue: 2002 Performance

Red: 2001 Performance

Green Band: Above Projections

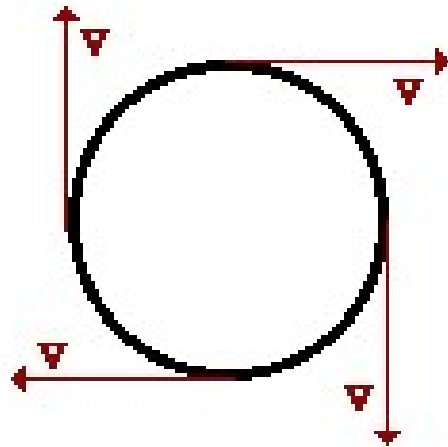
Yellow Band: Below Projections

Red Band: Negative Performance



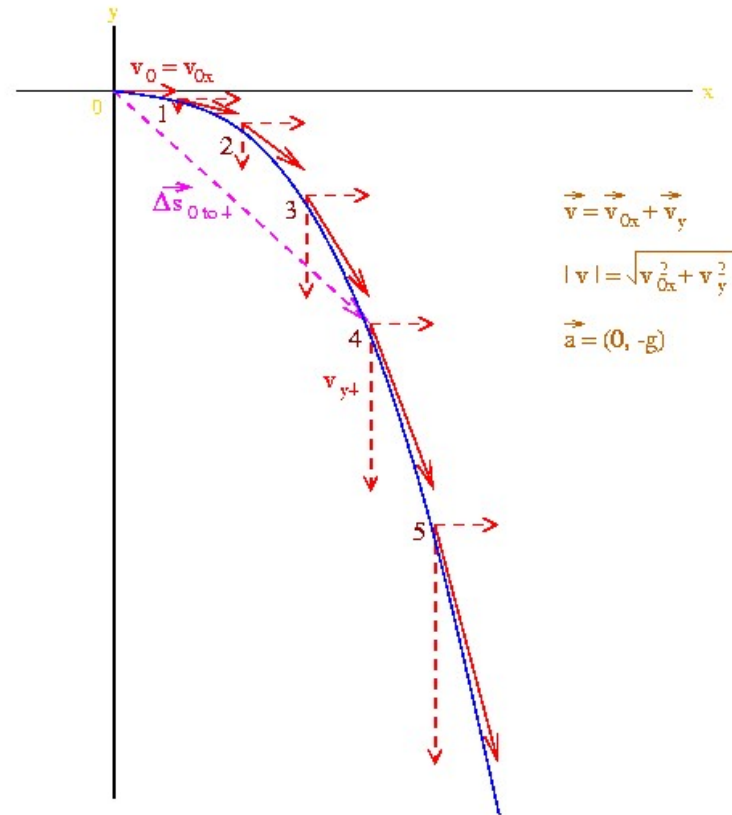


# Vector: Velocity



The direction of the velocity vector at every instant is in a direction tangent to the circle.

## Projectile Motion

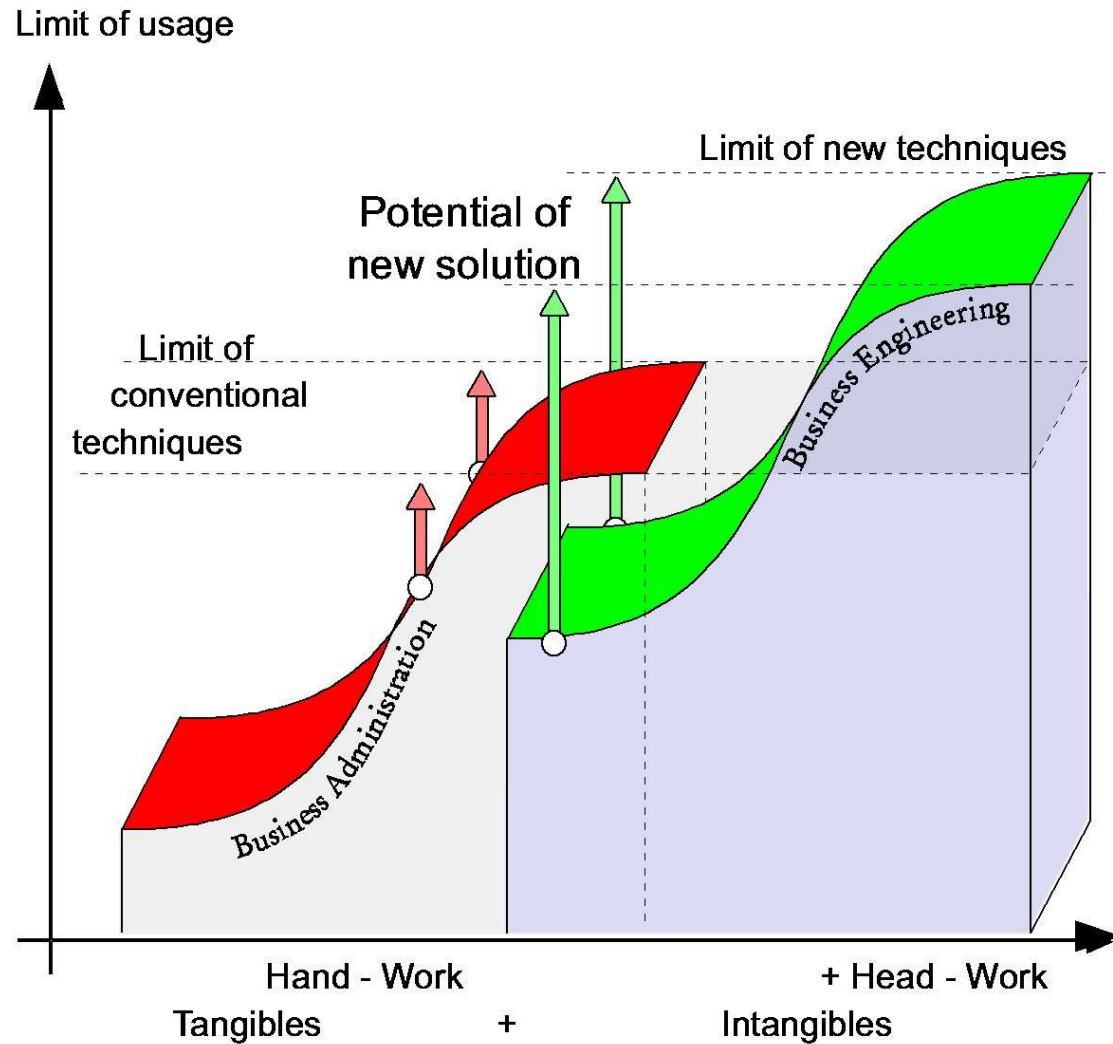


$$\vec{v} = \vec{v}_{0x} + \vec{v}_y$$

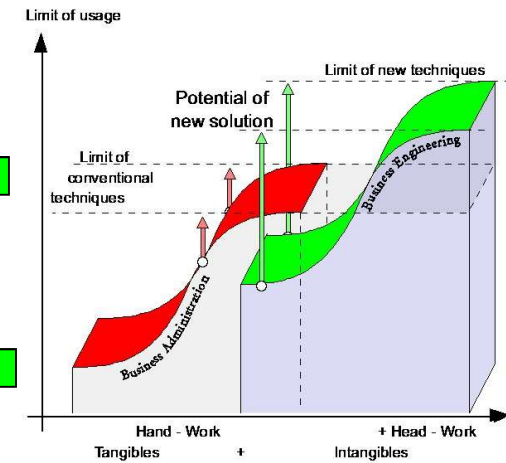
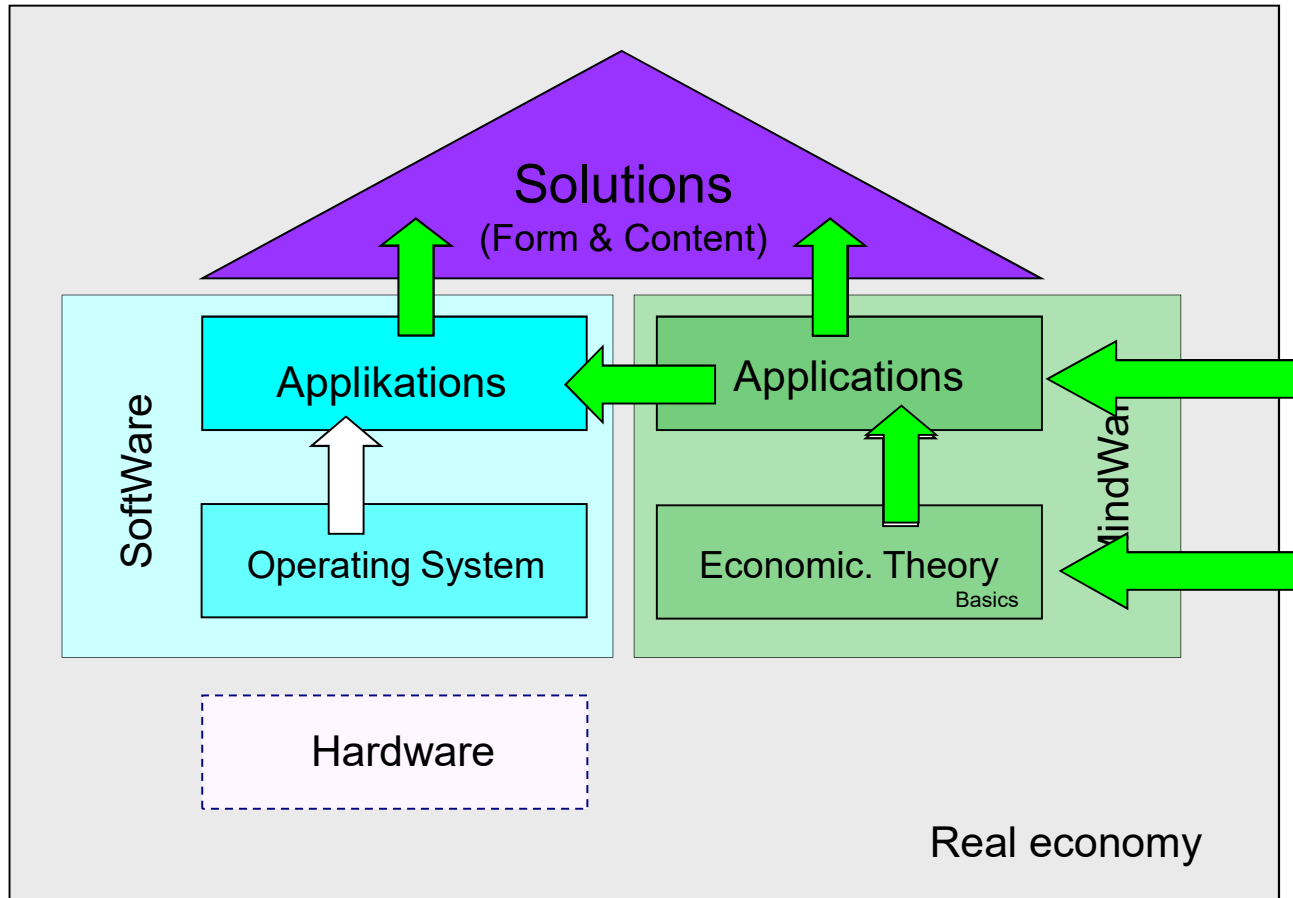
$$|\vec{v}| = \sqrt{v_{0x}^2 + v_y^2}$$

$$\vec{a} = (0, -g)$$

# Next step: Focus on economic MindSetting / Paradigms

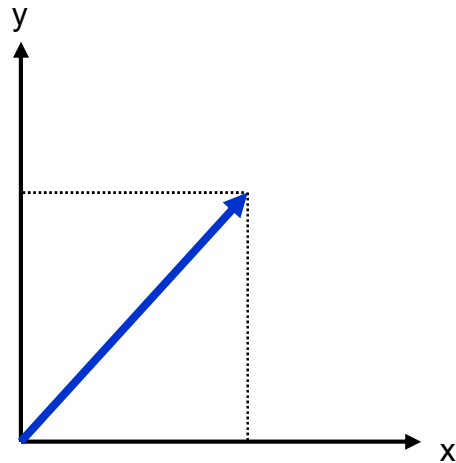


New MindWare & SoftWare → quantum leap in the simulation and planning of today's economy.



# Basics of 2D-Value-Vector

Illustration 1

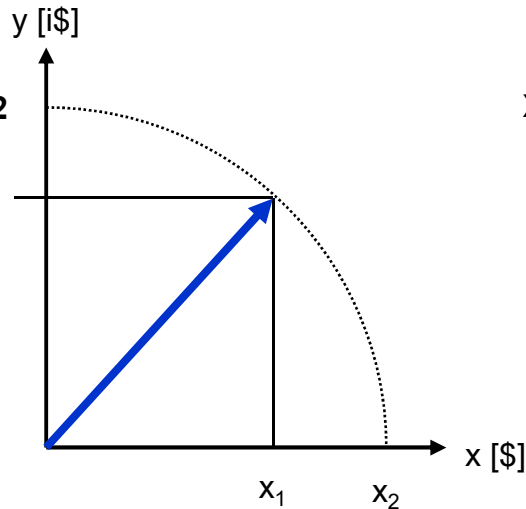


**x, y = two arbitrary properties of an object**

x	y
Cost	Price
Transports initialized	Transports finished
Budget	Rechnung
Medical Properties	Subjective condition
Turnover	Sparten gewichtet

x	y
Turnover	Volume [m <sup>3</sup> ]
Cost	Deckungsbeitrag
Price	Retouren
Turnover	Mitarbeiterzufriedenheit
Retouren	Kundenzufriedenheit

Illustration 2



**x, y = explicite ("objective") and implicite ("subjective") Value-Properties as a Multi-Value-Compound.**

x <sub>1</sub>	x <sub>2</sub>	Samples
Sum of balance	Sum of Share Price	Shareholder Value
Wagues	Turnover	Weighted added Value
Price VW	Price Porsche	Subjective Added Value