



„The hard part is finding a problem to solve“
[Kevin Systrom from Instagram]

13. Instruments for Deep Pain-Gain Analysis (Improved Value Proposition Design)

Prof. Dr. Uwe Aßmann
Softwaretechnologie
Fakultät Informatik
Technische Universität Dresden
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<http://st.inf.tu-dresden.de/teaching/saab>

- 1) Value Proposition Analysis
- 2) Pain Analysis
 - 1) Problem Decomposition and Partial Ordering
 - 3) Gain Analysis
 - 4) Pain-Gain Banana as another Customer Travel
 - 5) Customer Value Management (CVM)

Pains can be shallow or deep.

For an innovation, rather find a *deep pain*.

Obligatory Literature

- ▶ A. Osterwalder, Y. Pigneur et al. Value Proposition Design. Wiley.
- ▶ [BlankDorf] Steve Blank, Bob Dorf, Nils Högsdal, Daniel Bartel. Das Handbuch für Startups – die deutsche Ausgabe von 'The Startup Owner's Manual'. Deutsche Übersetzung von Kathrin Lichtenberg. 2014. O'Reilly.
 - <http://www.daniel-bartel.de/das-handbuch-fuumlr-startups.html>
- ▶ <https://blog.strategyzer.com/posts/2014/10/13/10-characteristics-of-great-value-propositions>
- ▶ <https://blog.strategyzer.com/posts/2014/9/16/why-every-company-needs-a-chief-corporate-entrepreneur>
- ▶ [Verhoef] Peter C. Verhoef, Katherine N. Lemon. Successful customer value management: key lessons and emerging trends. European Management Journal, 31(2013)1: 1-15 DOI: <http://dx.doi.org/10.1016/j.emj.2012.08.001>





13.1. (Potential) Customer Interviews as Simple Tests for Hypotheses

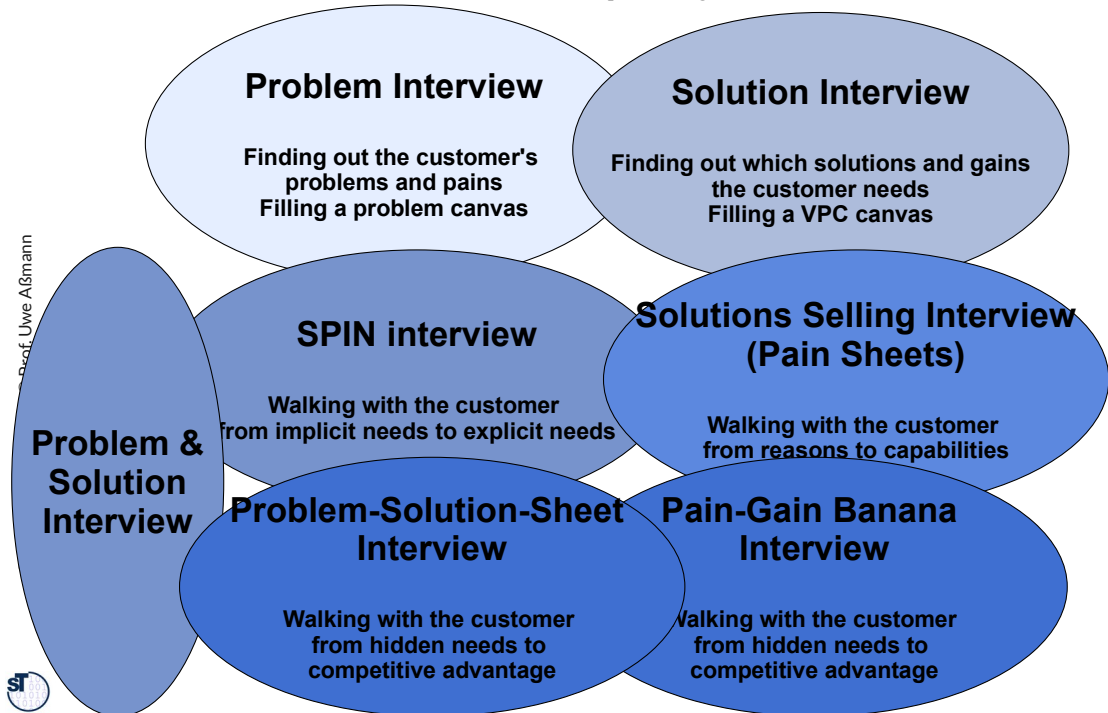
Customer Interviews are a special form of sales meetings (pre-sales meeting). They have to conduct pain-gain analysis, guide the customer modeling by testing customer hypotheses, and guide the BMC development.

Interviews are the fastest, cheapest way to learn more about what your customers are doing and what problems they're facing. [Alvarez]

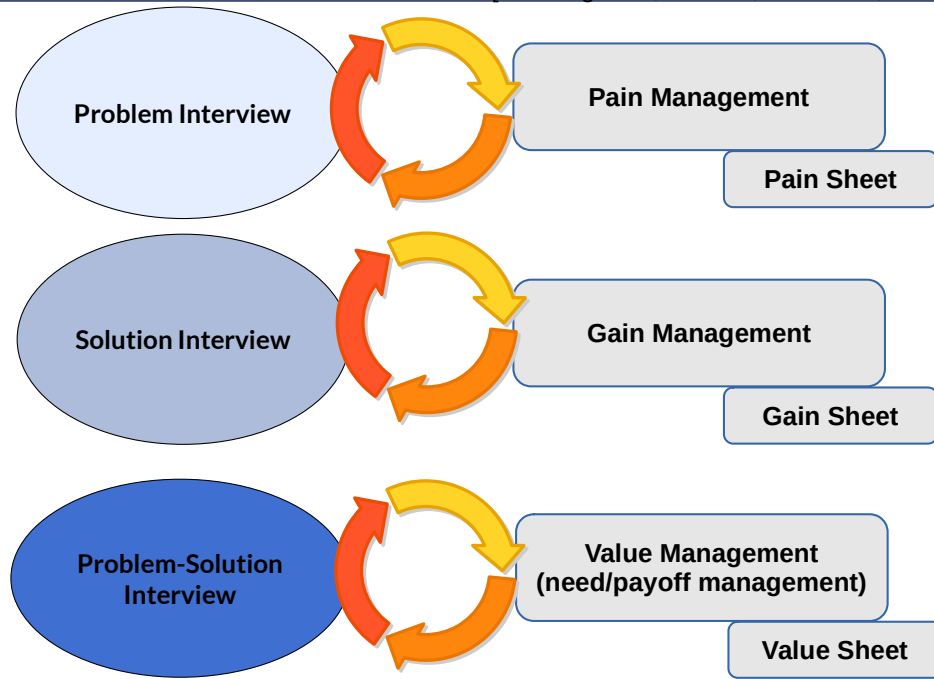
People will talk to you because we all like to help others, like to sound smart, like to fix things, and like to complain. [Alvarez]

It's not the customer's job to know what they want. [Steve Jobs]

Forms of Customer Interviews, based on Sales Funnel Traveling



Different Issues in BM Sprints





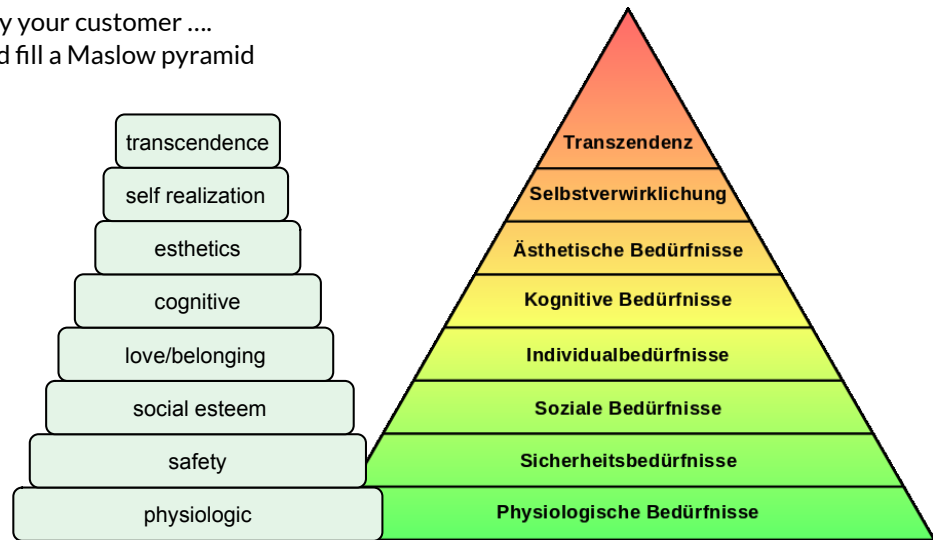
13.2 Deep Pain Analysis with Different Types of Pains

- .. diving into the VPC

Customer Analysis with Maslow

- ▶ Play your customer
and fill a Maslow pyramid

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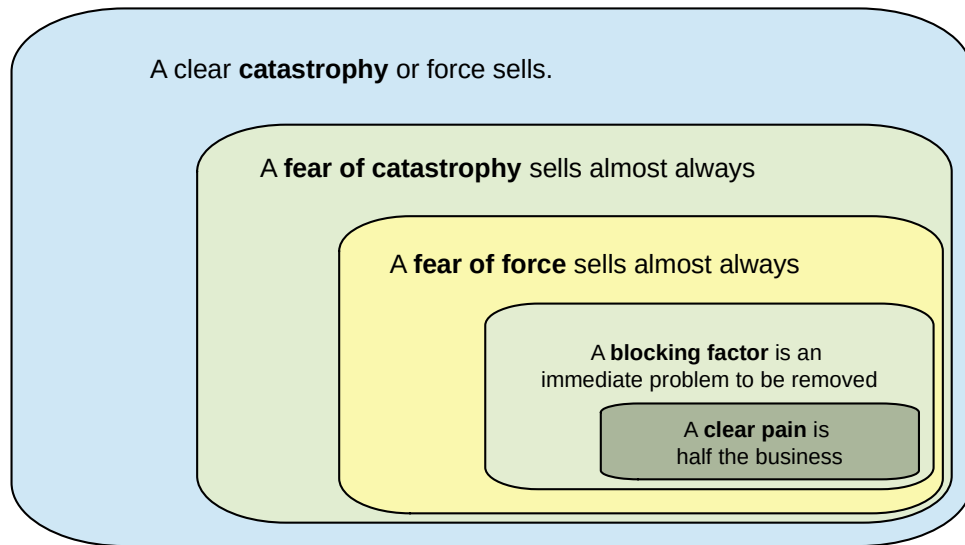
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One of the deepest pains in Dresden is the fear of a new flood of the Elbe river. How can you help people preparing to survive the next flood?

The Pain Hierarchy: Pain Drives Selling and Buying

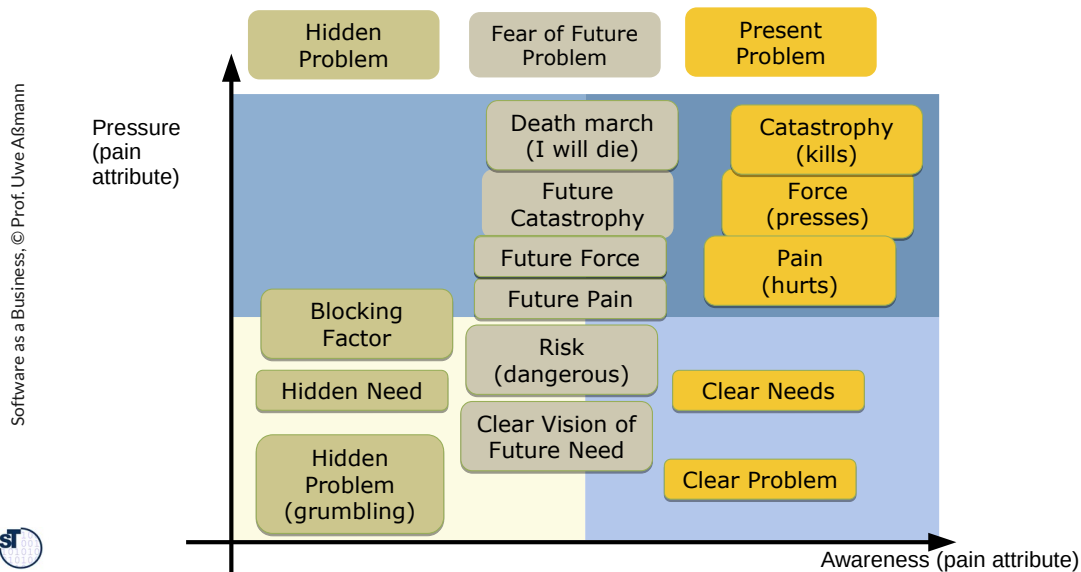
- ▶ For business, find a good pain.



Pain analysis in the Pressure/Awareness-Product (Pain Portfolio)

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- ▶ **Pressure** and **awareness** are two important factors influencing customer decisions. Their product is a wonderful *pain metrics*, which determines decisions
- ▶ Problems with high pressure and awareness **MUST** be solved and lead to buy decisions
- ▶ Pressure and awareness are two *attributes* of a pain in a pain model.



Hidden-Effect questions can relate to

- Stakeholder
 - Organizational effect
 - Effect on customers
- Efficiency: Cost, Time, Quantity, Quality

Examples of Future Force

- ▶ New country-wide governance rules
 - New finance rules of tax authorities
 - Laws (e.g., the EU law on dynamite)
 - New taxes, raise of taxes
- ▶ New social governance rules
 - Gender equality issues
 - Quotas
- ▶ Health problems: Age, illness, Alzheimer, heart attack
- ▶ Future Software problems:
 - Year 2000 Problem
 - European rules for data protection (DGUV)
- ▶ Future Force of Competition Change
 - New competitors and competing products
 - USP and UCA gets lost
 - New business models of competitors



How to Achieve Disruptive Innovations (Game Changers)

- ▶ A **Blocking factor** is a (hidden) problem directly hindering that the goal of the customer is reached
- ▶ A **Blocking factor remover** (block remover, overcomer) is a special kind of pain killer, applicable to different types of innovations
 - It enables a discontinuous revolutionary, radical innovation (*enabler* for a discontinuous innovation)
- ▶ A **discontinuity enabler (blocking factor changer)** is a pain killer removing a blocking factor that leads to a change in a market
 - A **disruption enabler (game changer)**: It may even enable a disruptive innovation
- ▶ Questions for Game Changers:
 - What blocks the radical innovation?
 - What blocks the disruptive innovation?
- ▶ An innovative company should work on **blocking factor removers and game changers**



Game Changer Power-to-X in Karlsruhe (KIT):
Container with all steps for methanole synthesis with 60% of efficiency
<https://www.youtube.com/watch?v=KOawGXRRJFY&t=342s>

Pain Analysis and Pain Priority List

- ▶ The **pain priority list** is an extension of the problem/pain diary with the list of pains prioritized by *pressure-awareness product from the pain portfolio*
- ▶ Produce with G-A-P analysis: **Generate** pains, **Assess** them, **Prioritize** them

Problem	Pressure	Awareness	Pain Priority (Pain Metrics)
tooth pain	10	10	100
tooth inflammation	10	5	50
tooth hole	3	8	24
weak tooth health inherited	1	1-5	1-5
ignorance of health measures	1	1	1
forgetting to brush teeth	1	4	4
eating too much sugar	1	3	3



Exc.: Classify: is it a Problem, Need, Pain, Catastrophy? Determine Pain Priority

- ▶ Climate catastrophe
- ▶ Corona
 - What is worse:
Corona or Climate catastrophe?
- ▶ Islamistic terrorism in the West
- ▶ Bad smells
 -
- ▶ Loneliness
 -
- ▶ Bad breath
 -
- ▶ Shortsightedness
 -
- ▶ Attack on your software
 -

Power-to-X
<https://www.youtube.com/watch?v=K0awGXRRJFY>

Vaccine

Partnership portals

Glasses

Odol mouth water

threat modeling,
attack modeling

Deodorant



Exc.: Getting Research Funding with Pain

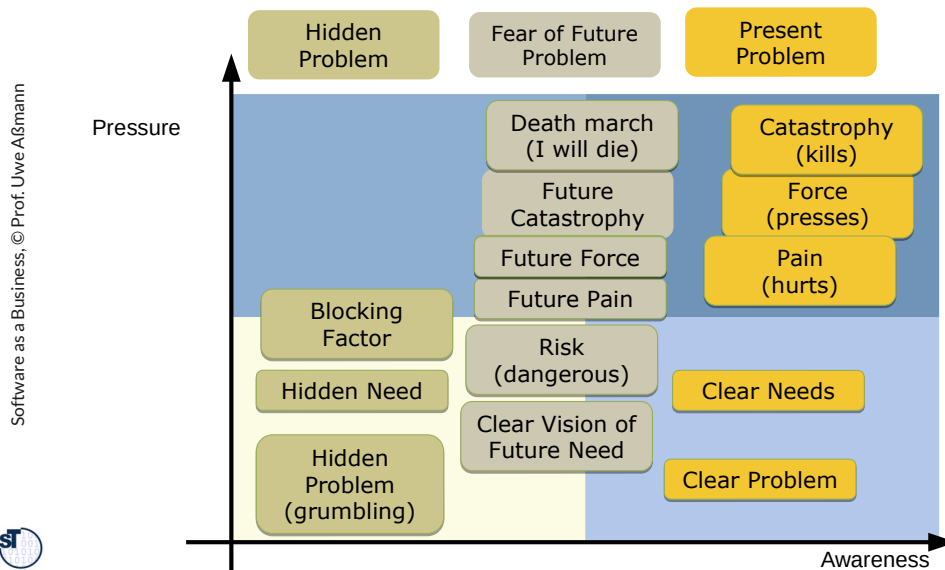
- ▶ Funding for the Climate Catastrophy
- ▶ Funding for the Hadron Collider
 - Gain: World formula
- ▶ Funding for the Energiewende



Exercise of Pain analysis for Your Project

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- ▶ **Pressure and awareness** are two important factors influencing customer decisions. Their product determines decisions
- ▶ Problems with high pressure and awareness **MUST** be solved and lead to buy decisions



Compare here the problems:

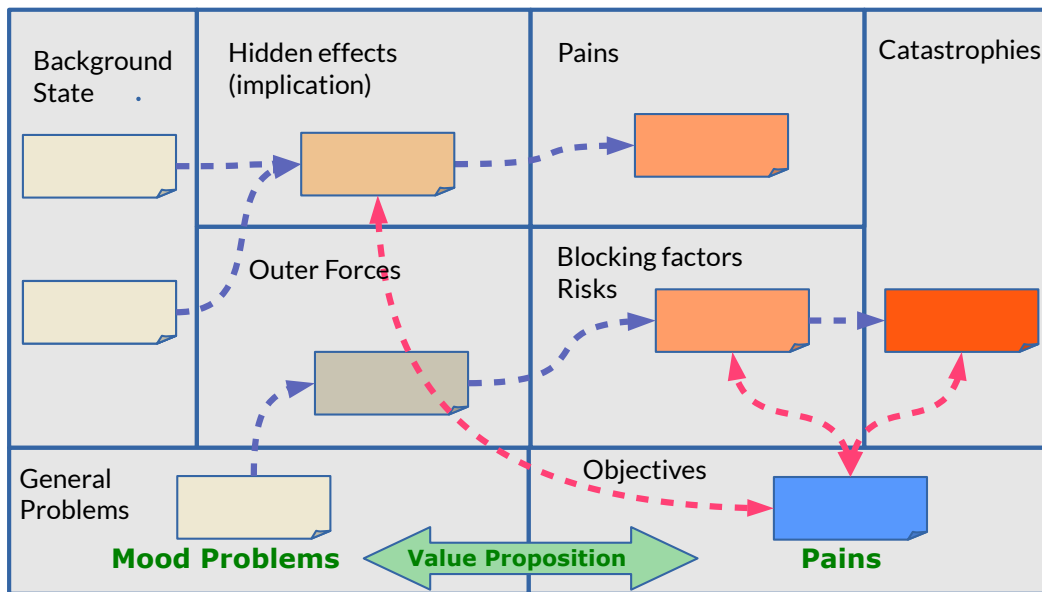
- Not being able to wake up in the morning (for drone breakfast)
- Not being able to find a parking lot (for parking robots swarm)
- Not being able to estimate whether a woman likes you (for Love Meter with Body Area Network)

Pain Refinement with the Pain Canvas

- ▶ A **problem hypothesis** is tested in pain analysis. If it is validated, it becomes a **tested (real) pain (fact)**.
- ▶ A **pain canvas (problem classification canvas)** classifies the problems into different classes of *pains*
- ▶ It forms the left part of the Pain-Gain Banana and can be used for
 - Stating a problem hypothesis in VPA
 - Specifying questions for customer interviews
 - Preparing selling and sales interviews.
- ▶ The problem canvas is derived from different sources, e.g., SPIN, Maslow, ZOPP

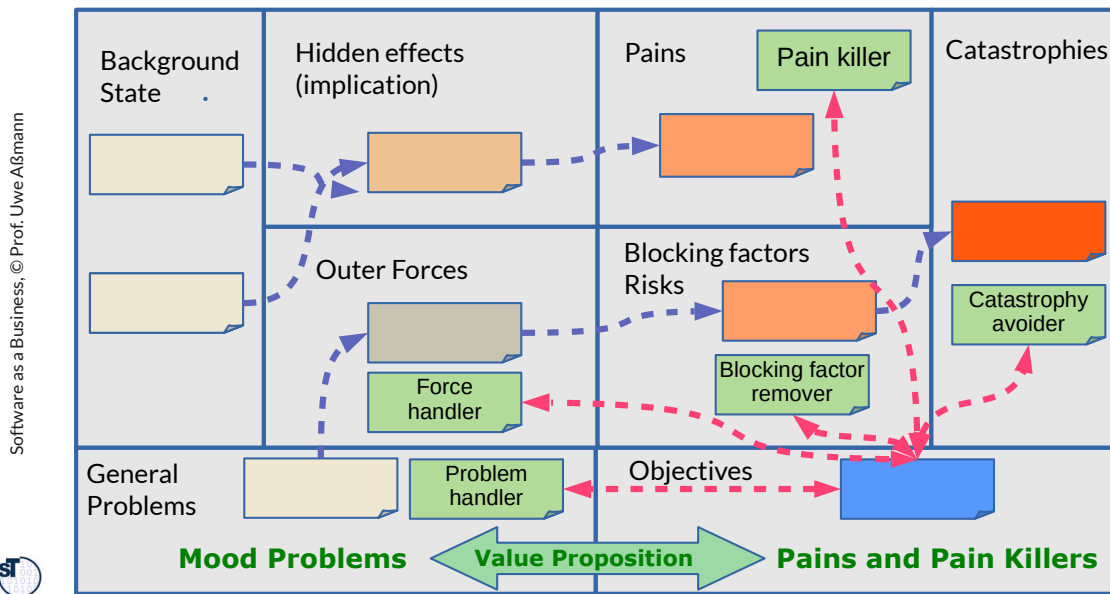
Pain Refinement with the Deep Pain Canvas (Problem Classification Canvas)

- ▶ Detailing the lower part of the VPC
- ▶ Put a problem first into the "General" or "Background" field, then classify it and refine it (from left to right)
- ▶ Think about which stakeholder has which objectives. First untested, then tested



Pain Killer Canvas

- ▶ By adding *pain killers*, the Pain Canvas can be extended to the **pain killer canvas**





13.2.2. Looking Deeper: Problem Decomposition and Partial Ordering with Cause-Effect Analysis (CEA)

Problem Analysis Sheets

<http://www.creapedia.com/w/index.php5/Problem-Analyse-Schema>

Problem Decomposition

Problem Reframing

Root Cause Analysis

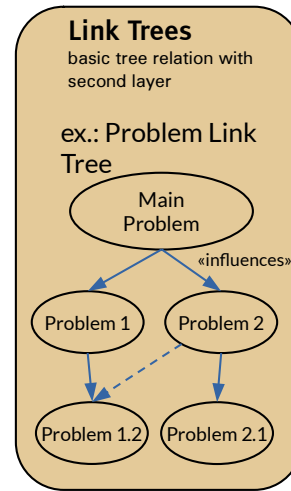
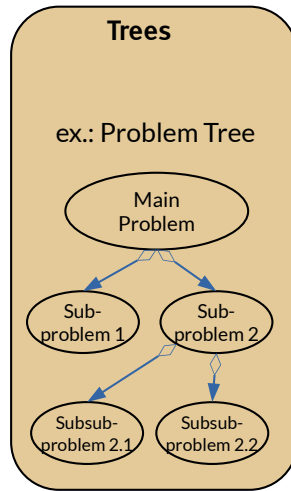
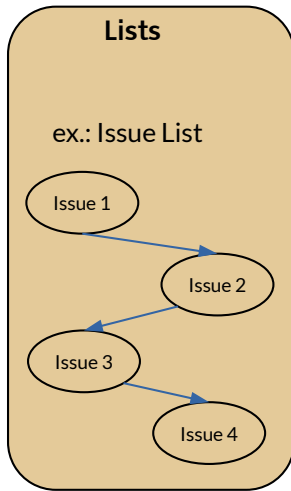
Cause-effect Analysis

Means-End Analysis

Bayesian (Influence) networks

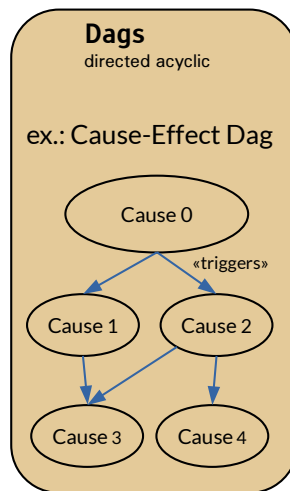
Other, Hierarchic Models

- ▶ For values, problems/pains, gains, customers, channels, resources etc. we need not only canvases but all kinds of *hierarchic (structured)* models:



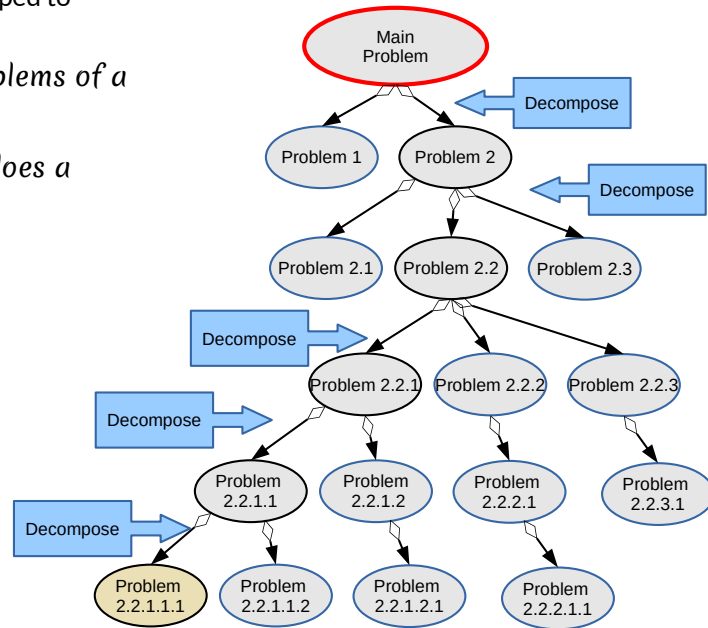
Cause-Effect Analysis

- ▶ Causes and effects may form partial orders (directed acyclic graphs, dags)
- ▶ Problem trees can be transformed to Cause-effect dags
- ▶



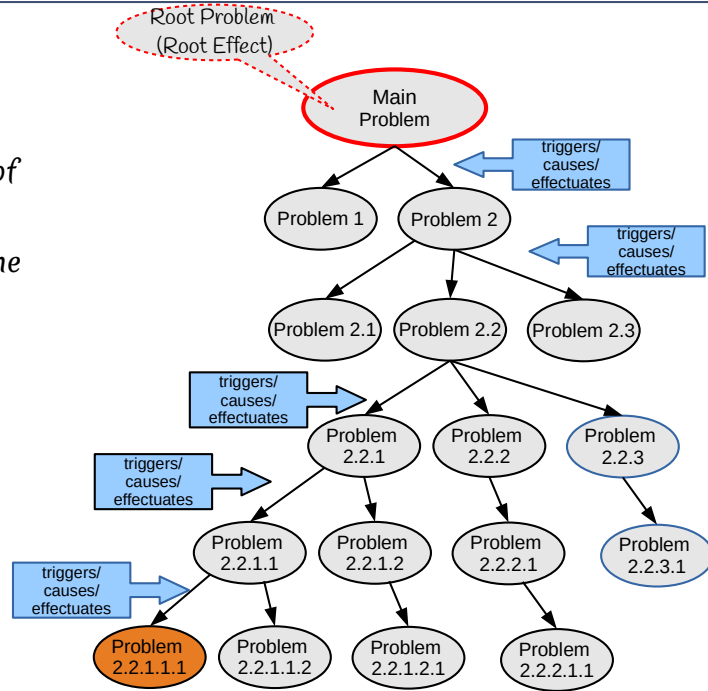
Questions to Develop Problem Trees

- ▶ Problem trees are developed to-down by questions:
- ▶ “What are the subproblems of a problem?”
- ▶ “Which subproblems does a problem HAVE?”



Effect Analysis: Reorganization of Problem Trees into Problem-Effect Trees

- ▶ Subproblem relationships are transformed to cause-effect relations
- ▶ “What are the effects of a problem?”
- ▶ backwards: “What are the causes of a problem?”
- ▶ This transforms the problem tree to a cause-effect tree

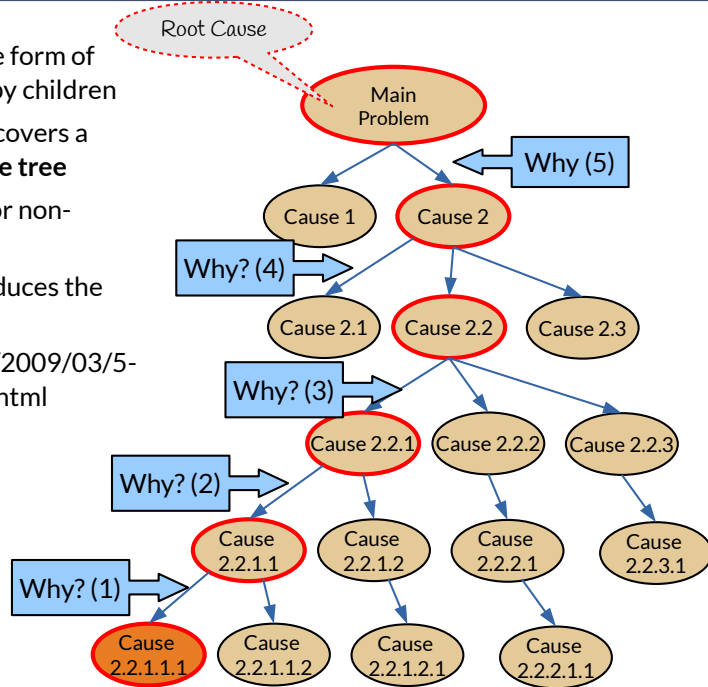


Cause-Effect Analysis Methods forming different Cause-Effect-Dags

- ▶ **Effect analysis** ask for effects "to which end?"
 - can be found in many different forms
 - Problem-Effect trees note effects top-down
- ▶ In many situations, we need to ask "why?" or "for what?"
- ▶ **Cause Analysis** ask for reasons: "Why?" and note causes top-down
 - 5 why analysis (Cause trees)
 - Ishikawa fishbones
 - Root cause analysis
 - Why-because analysis
- ▶ Results of analyses are models in different forms (cause-effect trees, cause-effect dags)
 - If a model contains a cycle, it is inconsistent or points to a "wicked problem"

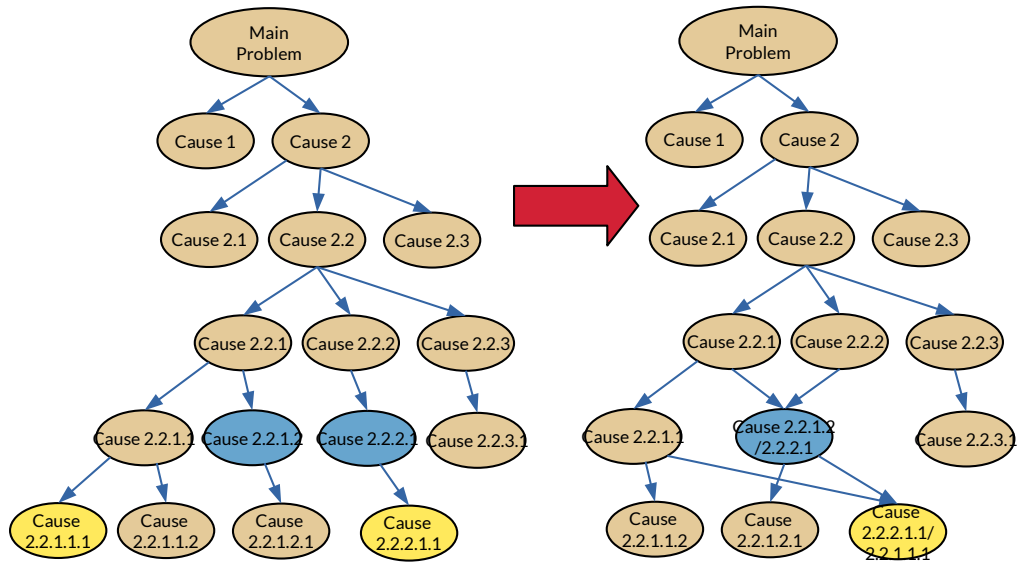
5 Why Analysis for Problem-Cause Trees

- ▶ 5-Why analysis is a simple form of root cause analysis used by children
- ▶ Every 5-Why analysis discovers a path in the **Problem-cause tree**
- ▶ Causes can be problems or non-problems
- ▶ Overlaying the paths produces the cause-effect tree
- ▶ <https://www.bulsuk.com/2009/03/5-why-finding-root-causes.html>



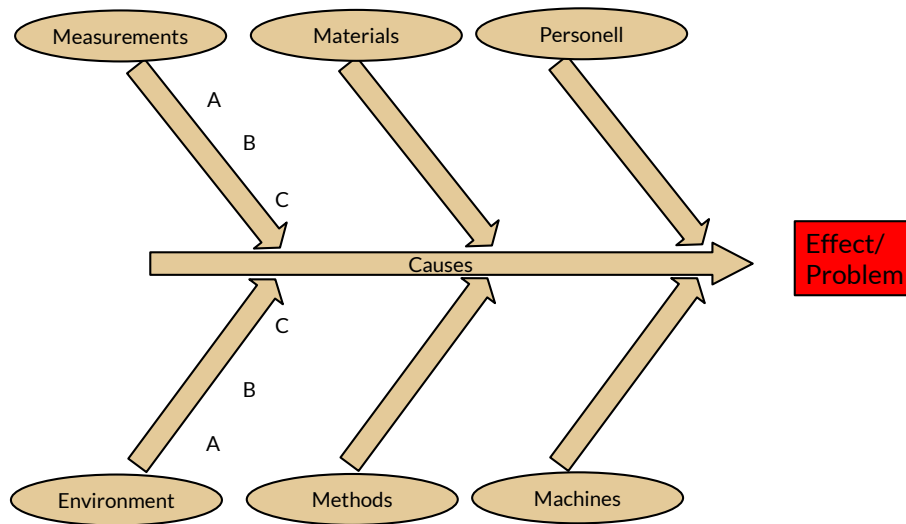
Identifying Common Causes and Effects

- ▶ The cause tree can be **folded** to a **cause-effect dag (graph)** overlaying *equal causes*
- ▶ A cause-effect graph over problems is very important tool because it distinguishes problems as causes from problems that are effects.
- ▶ **Leaf causes** are most important (**root causes**)

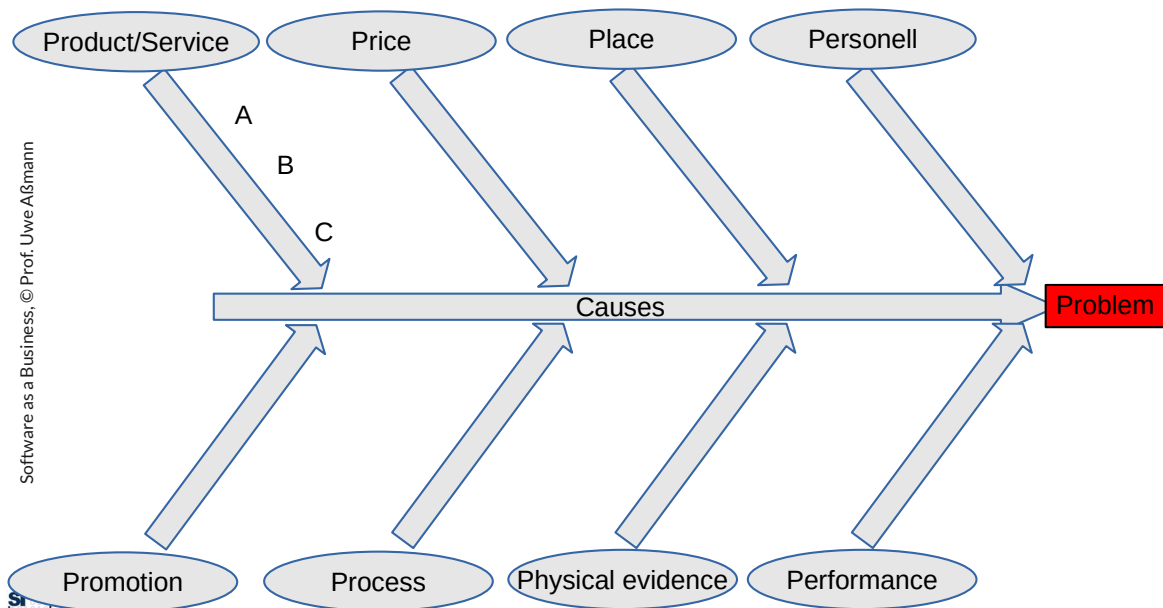


Ishikawa Fishbone with 6 Facets of Causes for Effect

- ▶ For Business or Software Engineering, different facets can be used
- ▶ Question: why does Fishbone not lead to singular root causes?

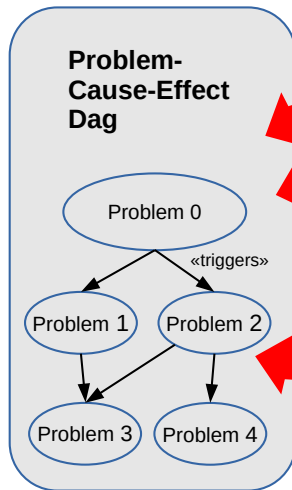


Ishikawa Fishbone for Product Marketing



Simple Problem Analysis with PAS for Problem-Cause-Effect-Graphs

- ▶ Problem-Analysis-Scheme (PAS) of Seifert and Hilligen is a question-based analysis to create a problem-cause-effect graph <http://www.creapedia.com/w/index.php5/Problem-Analyse-Schema>
https://www.sachsen.schule/~sud/methodenkompodium/module/3/1_7.htm
 - https://www.online.uni-marburg.de/demokratie/module/3/1_1_1.htm



«Ask for»	What is the problem about?
Effect	What does the problem provoke?
Cause	What / who is responsible for creating the problem?
Stakeholder	Who is affected by the problem?
Action/ Solution	What can we do against the problem and its effects?
Blocking	What is expected as resistance to solve the problem?
Motivation	Why do the stakeholders want to solve the problem?

Draft a problem-analysis matrix for the corona crisis “Corona infections in the university must be prevented.”

From the matrix, create a problem-cause-effect graph. Determine the root problem.

Other Methods

- ▶ Root-Cause Analysis (RCA) specifically searches the root cause
 - https://en.wikipedia.org/wiki/Root_cause_analysis
- ▶ Why-Because Analysis (formal)
 - <https://rvs-bi.de/research/WBA/>
 - http://www.rvs.uni-bielefeld.de/research/WBA/WBA_Introduction.pdf
 - <https://rvs-bi.de/research/WBA/TheWBACaseBook.pdf>
 - <https://www.aaai.org/Papers/Symposia/Spring/1998/SS-98-04/SS98-04-031.pdf>





13.2.3 Pain Management

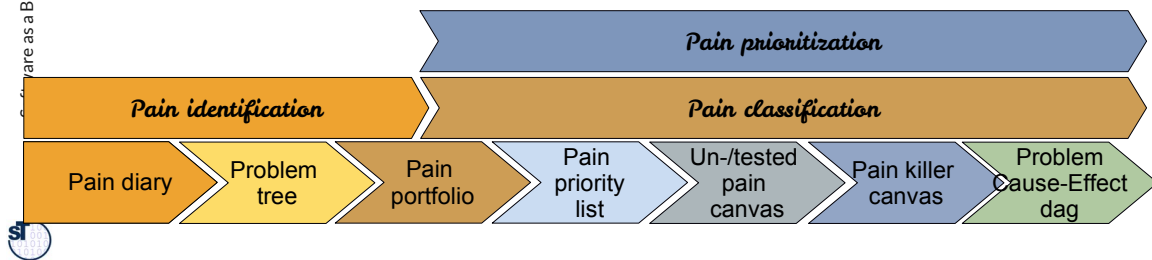
**Pain management is the PDCA process to maintain, develop, and improve the knowledge about pains of customers.
It an essential activity of a startup.**

- Like Risk management (→ course Softwaremanagement)
- Put up a PDCA process
- Identify pains, assess pains with pain metrics, classify pains with pain portfolio and Problem canvas

Pain Management with Pain Diary, Pain Sheet, Pain Priority List, Pain Canvas, Pain Killer Canvas

- ▶ A **Lessons Learned Canvas (LLC)** manages a pain sheet as a backlog and collects key metrics for pains
- ▶ Different forms of Pain Sheets:
 - A **pain diary** is a diary in which all problems, pains, deficiencies of techniques and tools are recorded day by day
 - A **Problem tree** decomposes main problems
 - A **pain priority list** ranks all known pains with a priority (product awareness * pressure)
 - An **untested pain canvas** classifies all pains into different classes, but is untested (no metrics)
 - A **tested pain canvas** has verified hypotheses about the pains (key metrics evaluated)
 - A **pain killer canvas** is a tested pain canvas with annotated pain killers
 - A **Problem cause-effect dag** records problem root causes (most important)

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The Basic Rule of Pain Management

Make sure your product or service is a pain killer, and not a vitamin.

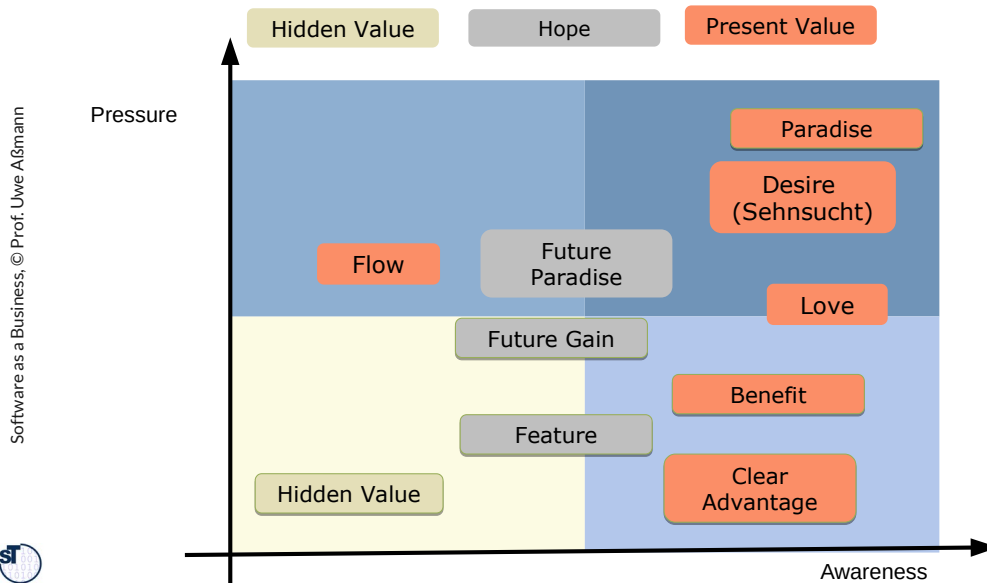


13.3. Deep Gain Analysis

After pain analysis, you should do a gain analysis with your customer. There are different kinds of gains...

Gains/ValueProduct in the Pressure-Awareness Portfolio

- ▶ **Hope** is a strong motivation
- ▶ **Hidden value** is implicit gain



Hidden-Effect questions can relate to

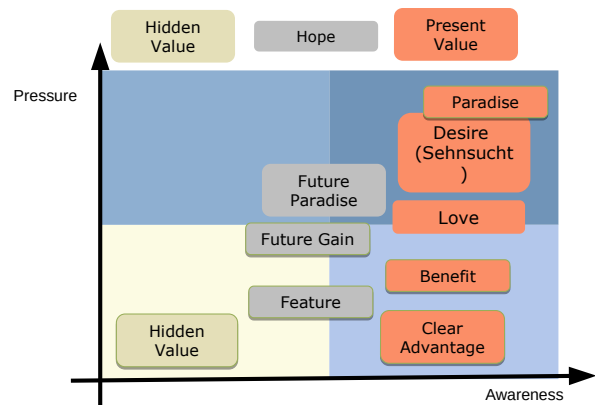
- Stakeholder
 - Organizational effect
 - Effect on customers
- Efficiency: Cost, Time, Quantity, Quality

Exc.: Classify: is it a Gain, Benefit, Desire, Flow? Determine Gain Priority

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- ▶ Hadron Collider
- ▶ Google Glass
- ▶ Mobile phone
- ▶ Tablet computer
- ▶ Communism
- ▶ Socialism
- ▶ Vom Tellerwäscher zum Millionär
- ▶ Lottery
- ▶ Miniatur Wunderland
- ▶ Holidays and tourism

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Exercise 1: Group the pains on the left into the pain portfolio on the right.

Exercise 2: With the pain portfolio, compare the problems:

- Not being able to wake up in the morning (for drone breakfast)
- Not being able to find a parking lot (for parking robots swarm)
- Not being able to estimate whether a woman likes you (for Love Meter with Body Area Network)

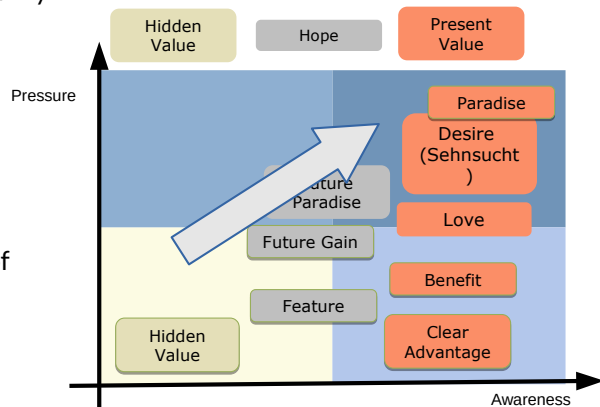


13.3.2 Gain Management

**Gain management is the PDCA process to maintain, develop, and improve the knowledge about pains of customers.
It an essential activity of a startup.**

Increasing Pain and Gain Pressure

- ▶ If you did not find a pressing problem (low pain product), try to “increase it” by reframing of problems to pains
- ▶ If you did not find a desire (low gain product), try to “increase it” by reframing of gains to desires
- ▶ How?
 - JTBD Canvas
 - Hidden-Effect analysis of SPIN
 - Irrealis Effect questions



Exercise 1: Try to increase the pain product of

- bad breath
- bad smell

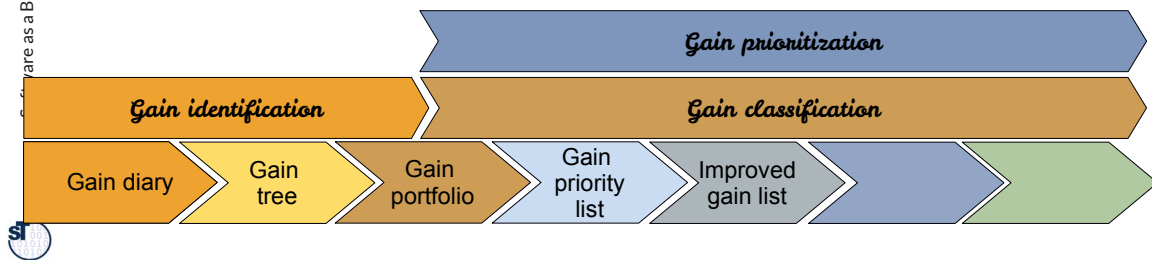
Exercise 2: Try to increase the gain product of

- electric cigarettes (“dampfen”)
- warm socks for winter

Gain Management with Gain Diary, Gain Sheet, Gain Priority List, Gain Canvas, Gain Killer Canvas

- ▶ A **Lessons Learned Canvas (LLC)** manages a also a **gain sheet** as a backlog and collects key metrics for gains
- ▶ Different forms of Gain Sheets:
 - A **gain diary** is a diary in which all desires, gains are recorded day by day
 - A **Gain tree** decomposes main gains
 - The **gain portfolio / the gain priority list** ranks all known gains with a priority (product awareness * pressure)
 - The **improved gain priority list** results after "gain improvement"

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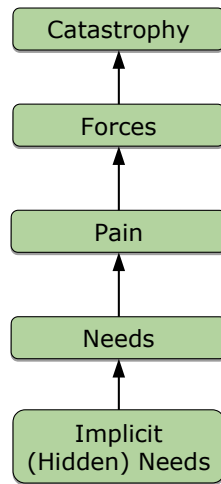


13.4 Another Question-Guided Travel Through the Sales Funnel To a Valid Value Proposition: Pain-Gain Analysis with the Pain-Gain Banana

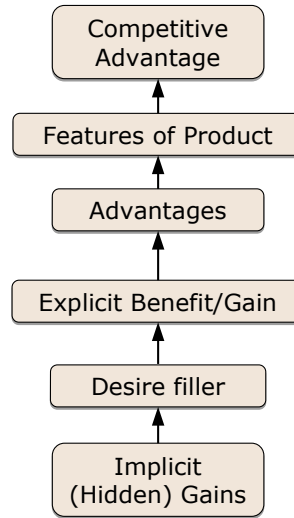
Guiding your potential customer LIVE through a pain/gain analysis, increasing the pain pressure and awareness for her

Severity Levels of Pain and Gains

- ▶ **Pains** are differently severe. The following levels can at least be distinguished:



- ▶ **Gains** are differently severe. The following levels can at least be distinguished:



Pain-Gain-Banana for Deep Pain-Gain Analysis

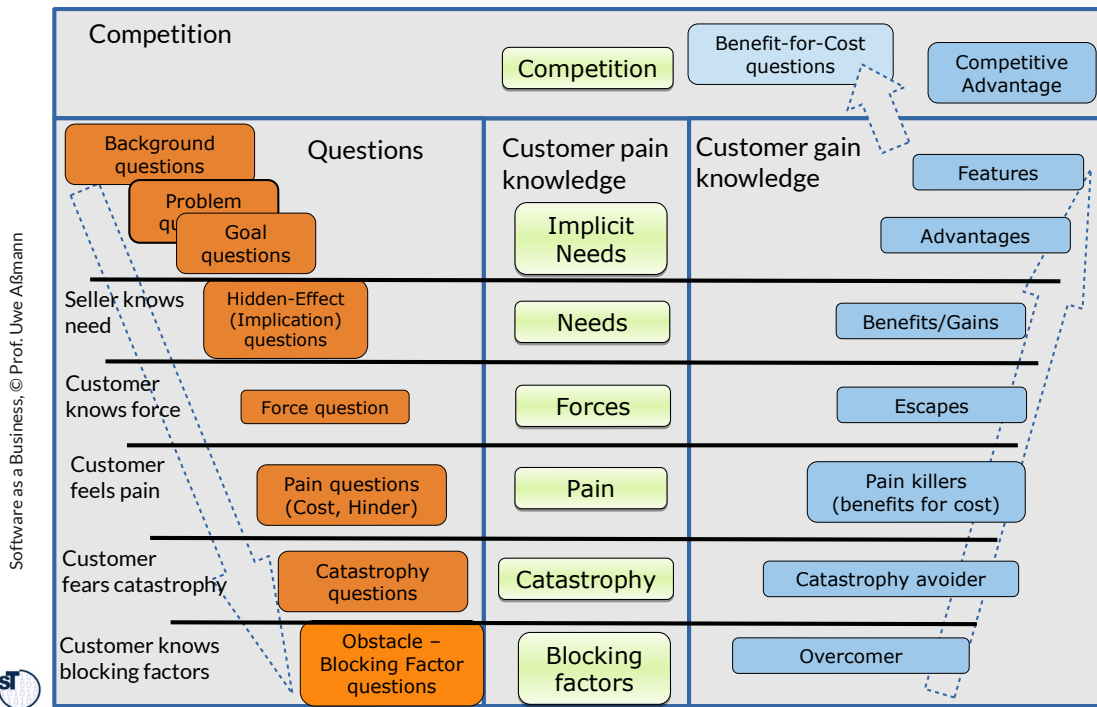
- ▶ We can define now a third Sales Funnel Travel⁴⁶ based on the different levels of pain and gain
- ▶ The **Pain-Gain Banana** canvas can be used for customer pain-gain analysis
 - Canvas transforms hidden pains to competitive gains
 - Derived from SPIN® selling, ZOPP, NABC and VPC
- ▶ Blocking factors directly transform pains to gains
- ▶ Goals transform future pains to future gains
- ▶ Catastrophies require urgent action



Hidden-Effect questions can relate to

- Stakeholder
 - Organizational effect
 - Effect on customers
- Efficiency: Cost, Time, Quantity, Quality

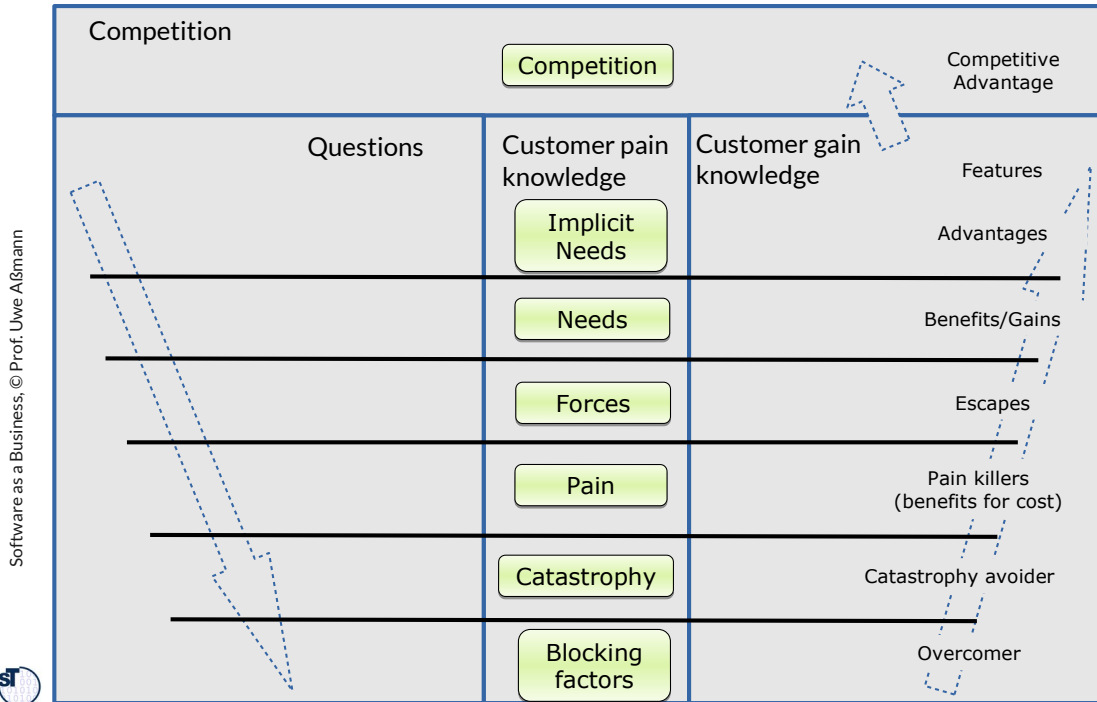
Pain-Gain-Banana Question Canvas: The banana intensifies the pain and the gain



Hidden-Effect questions can relate to

- Stakeholder
 - Organizational effect
 - Effect on customers
- Efficiency: Cost, Time, Quantity, Quality

Pain-Gain-Banana Stripped Form



Hidden-Effect questions can relate to

- Stakeholder
 - Organizational effect
 - Effect on customers
- Efficiency: Cost, Time, Quantity, Quality



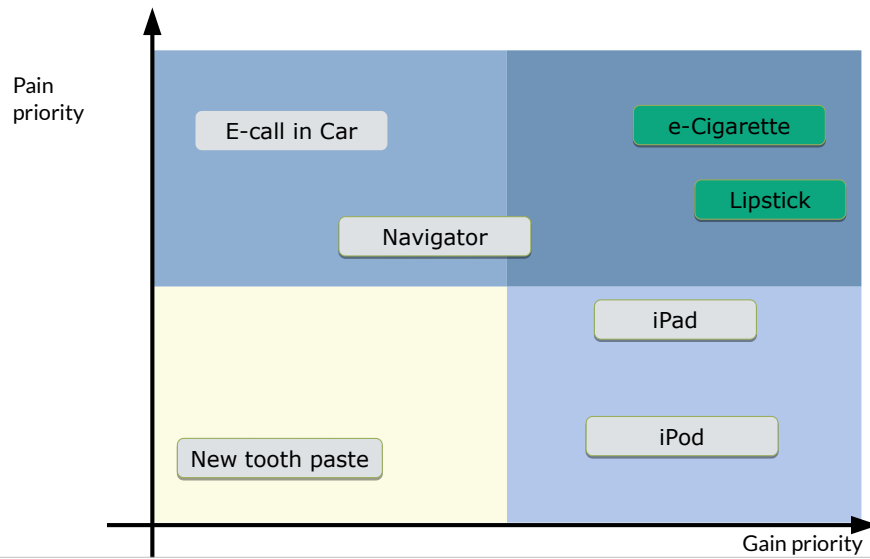
13.6. Customer Value Management

- Value is the relationship of pain-gain-capability.

Pain-Gain-Stickiness as Pain/Gain Product

A **sticky** product/service has high pain **and** gain priority.
(green: infectious)

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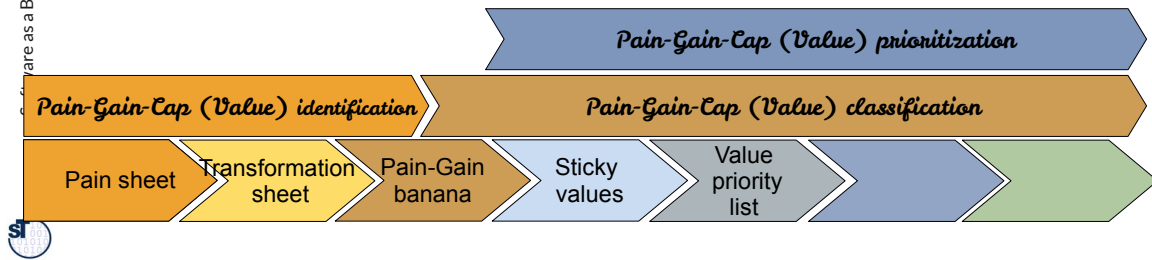


Pain-Gain Value Management

Reasons/ Causes	Impact/ Effects	Capabilities
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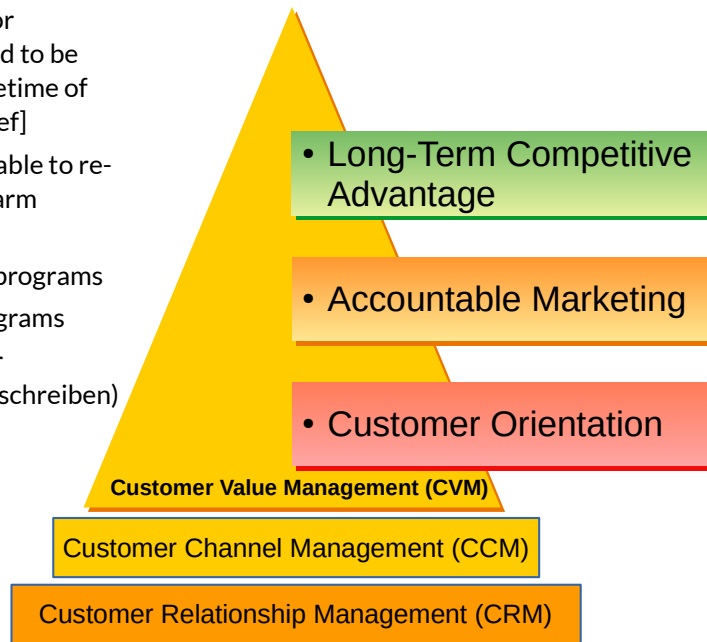
- ▶ Different forms of Pain-Gain-Capability Sheets:
 - A Bosworth **pain sheet** [Bosworth] suggests this 3-step table (reasons → impact → capabilities) for thinking about the cause-effect relationships of the pains, as well as the gains of the customers
 - A SPIN transformation sheet
 - A set of **pain-gain bananas** relates all known pains with all known gains, as well as to capabilities and features of your product or service
 - A **value priority list** sorts the pain-gain sheets for importance
- ▶ The **Lessons Learned Canvas (LLC)** can contain the pain-gain sheets

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Continuous Customer Value Management (CVM)

- ▶ Value propositions for customer groups need to be managed over the lifetime of the customer [Verhoef]
- ▶ CVM, CCM, CRM enable to re-win the customer (warm acquisition)
- ▶ Customer retention programs
- ▶ Customer bonus programs
- ▶ Finding out customer experience (Preisausschreiben)



The End

- ▶ Explain the difference between customer empathy, activation, stickiness, virality and referral.
- ▶ What is the difference between untested, assessed, and tested canvases?
- ▶ What is a strong real tested pain?
- ▶ Why is a Pain Canvas an important form of pain sheet?
- ▶ Why are catastrophies better for a good value proposition than blocking factors?
- ▶ Explain the influence of the UCA for virality.
- ▶ Why is the pirate metrics important for building good value propositions?
- ▶ How can you cross the border between Virality and Revenue in the LeanAnalytics stages?
- ▶ Explain the differences between the SPIN™ Canvas and the VPC. Which canvas do you prefer for a cold call?
- ▶ Explain the differences of SPIN Canvas and Pain-Gain Banana.
- ▶ Explain the differences of pain sheets, gain sheets, and value sheets.

