



UNIVERSITY
OF APPLIED SCIENCES
UPPER AUSTRIA

eHealth 2016 - Track 2 (24.05.2016 14.00-15.30)
Requirements and Opportunities for eHealth Systems

AAL Service Performance Measurement Cube

– Key Criteria for AAL New Service Development

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School of Applied Health and Social Sciences

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- I. AAL Services and Requirements
- II. AAL Service Development Loom
- III. AAL Service Performance Measurement Cube
 - 1. Relevant AAL Service Performance Measurement Criteria (SPMC)
 - 2. AAL SPMC Set for New Service Development
- IV. AAL Service Excellence Model

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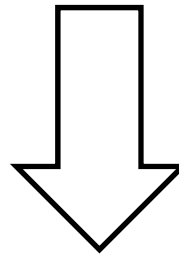
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I.01 AAL Definition

From Ambient Assisted Living to Active and Assistive Living

*“The overall objective of AAL is to enhance the quality of life of older adults while strengthening the industrial base in Europe through the use of **ICT**. “*

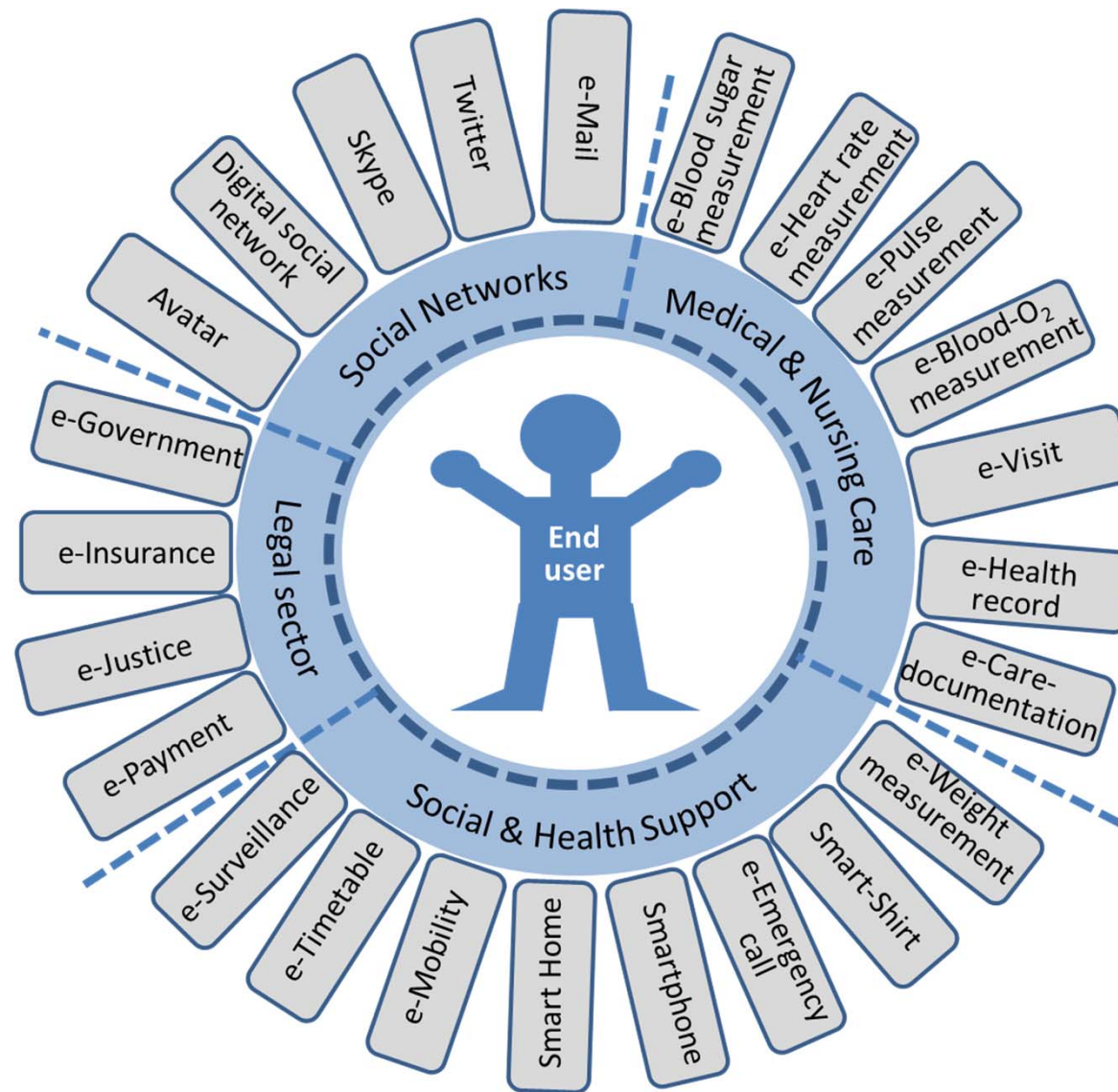
(<http://www.aal-europe.eu/>; 2016)



Applied Research > **Selected (AAL) Specific Requirements:**

- End-User Involvement
- Market and Industry orientated Business Models
- Focus on the Market Entry
- Combined Push/Pull Strategy

I.02 Modular AAL Services



(Kriegel / Schmitt-Rüth / Güntert / Mallory, 2013, S. 81)

I.03 Dimensions of a AAL business model grid

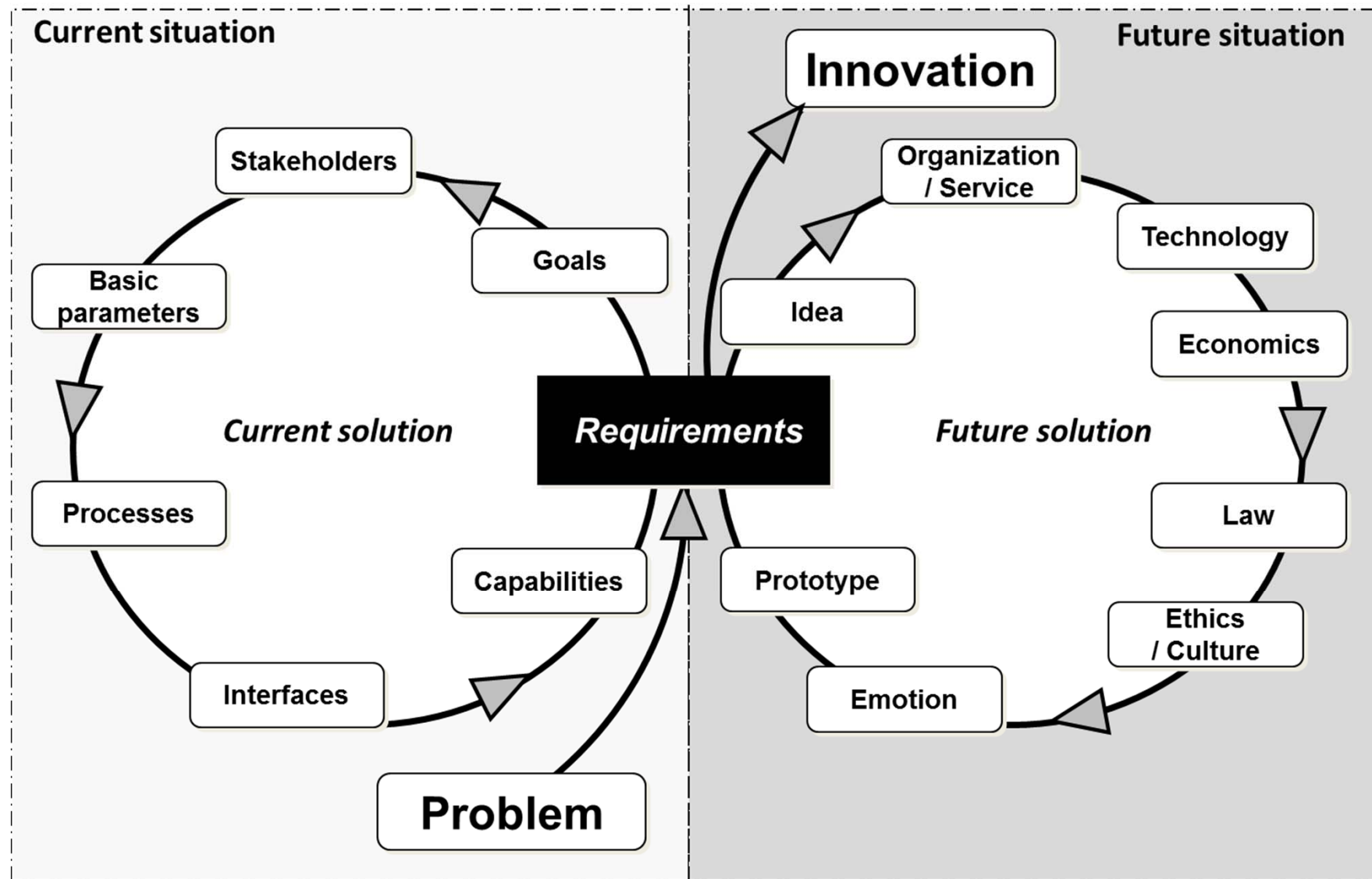
Dimension		Description	Dimension		Description
1	Customer Segments	Customers have different needs and expectations with respect to the product/service and the provision of services . The segmentation in very homogeneous groups of customers enables targeted customer processing. The question is: Which customers (segments) are expected to be addressed by the service?	7	Value Proposition	The value proposition of a product is the core of the provider-customer relationship and aims usually at the solution or satisfaction of a customer's problem or need. Value proposition promises an explicit benefit for the customer. The question is: Why should the customer make use of the service?
2	Revenue Sources	The sources of income are the inflow of income which the service provider/supplier receives and ensure success in the long term. The questions is: What types of services are paid to what extent and to what amount by the customer or cost unit?	8	Cost Structure	The cost structure includes and describes the total costs resulting from the offer as well as the provision of a service , arise. The question is: What are the relevant costs associated with the business model?
3	Communication and Sale Channels	In connection with the provision of services at the point of service, there is an exchanges of information, data, products and resources between providers and customers through appropriate channels. The questions is: Via which channels do the exchange and communication of hardware/software, money, information, etc. takes place?	9	Key Ressources	Key resources include the most important capital goods which are required for the offer and provision of a service. The question is: Which resources (labor resources, labor, information, disposition) are needed for the provision of the service?
4	Customer Relationships	Customer relationships enable the reciprocal interaction between customers and suppliers. The question is: What kinds of customer relationships and customer contact are expected or offered ?	10	Key Activities	Key activities include the most important processes and sub-activities that are required as part of providing the service. The question is: Which processes and (sub-) activities are required or provided by the provision of the service?
5	Ethic	Ethics comprise society orientated and informal values (moral) of human activity and their evaluation. The question is: What are the ethical criteria which need be taken into account within the business model?	11	Privacy	Privacy includes securing the privacy of the customer (individuals or groups). In particular, in an increasingly automated and digitized world, personal data and information should be protected against the unauthorized access by third parties. The question is: Which data protection frame is connected to the business model and necessary players?
6	Emotions	Emotions of the customer are individual and subjective, which are based inter alia on different psychological experiences, priorities, social behavior and reactions. They influence buying behavior significant. The question is: Which desires and emotions services should provide?	12	Key Partner	Key partners are actors and networks that are required for the development and provision of the service. The question is: What external partners can be/are required or used concerning the provision of services?

(Kriegel / Auinger / Reckwitz / Schmitt-Rueth / Weißenberger / Tuttle-Weidinger, 2016, S. 135)

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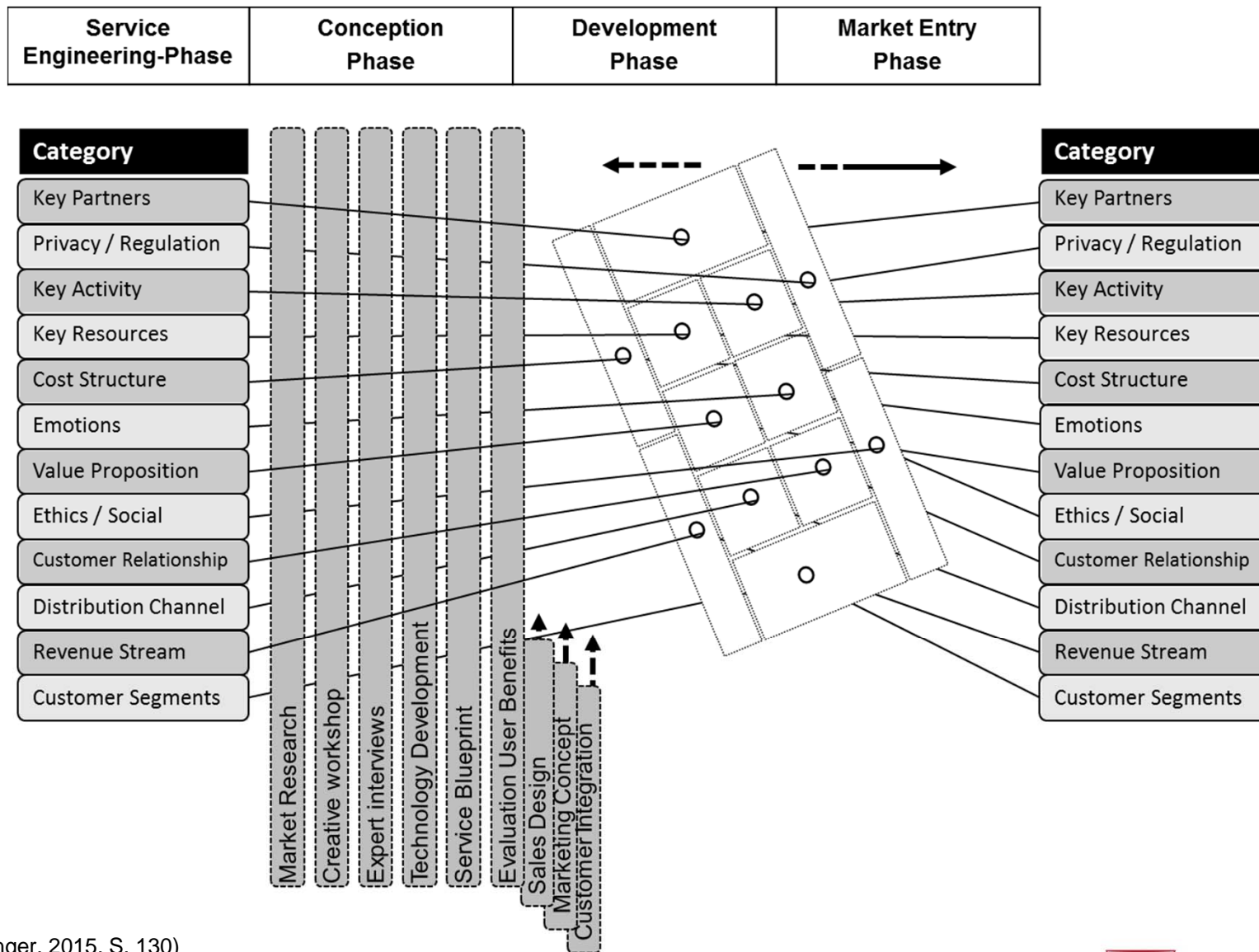
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II.01 New Service Development in Health Care



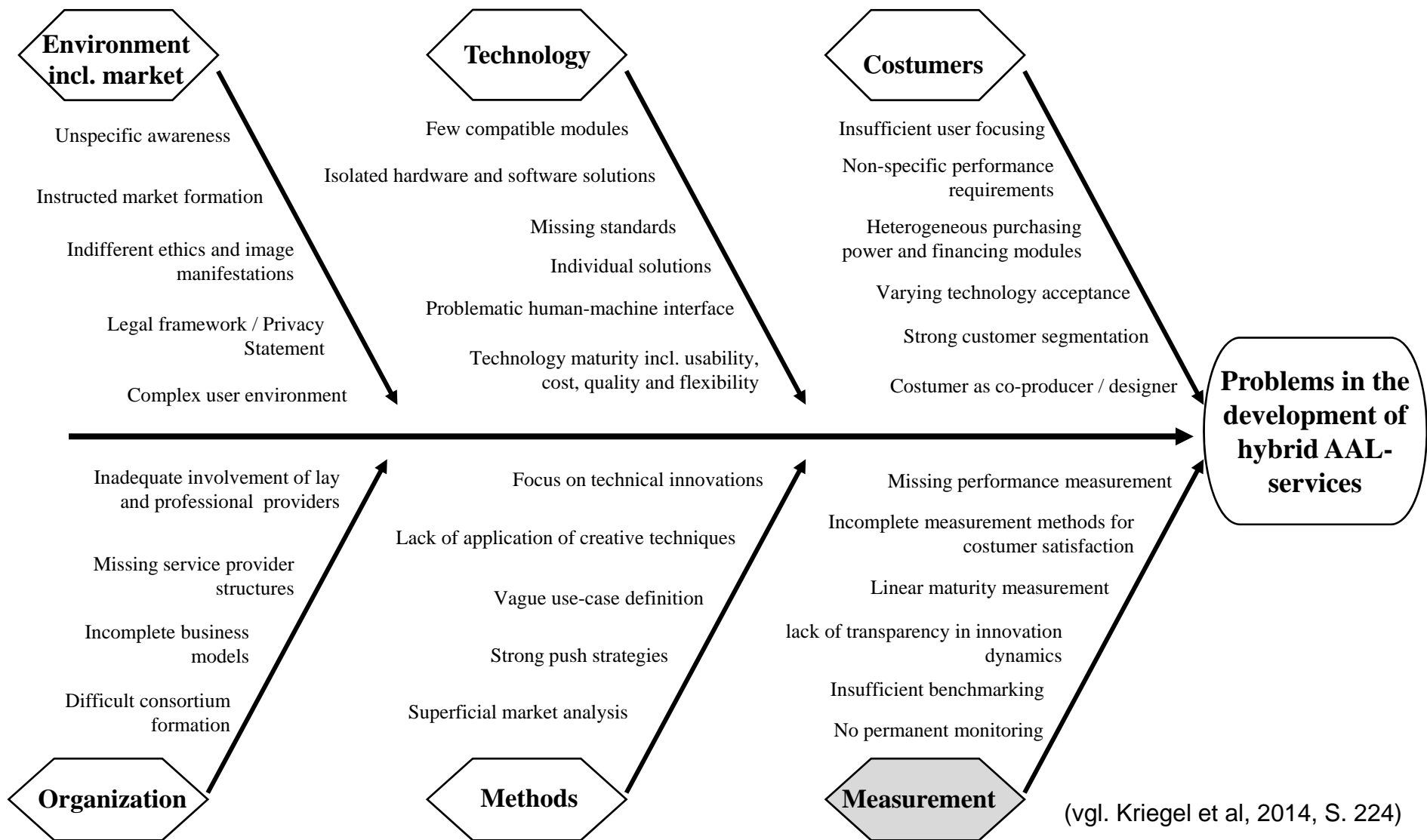
(Kriegel / Schmitt-Rüth / Güntert / Mallory, 2013, S. 79)

II.02 New Service Development Loom



(Kriegel / Auinger, 2015, S. 130)

II.03 Challenges in the AAL Service-Development



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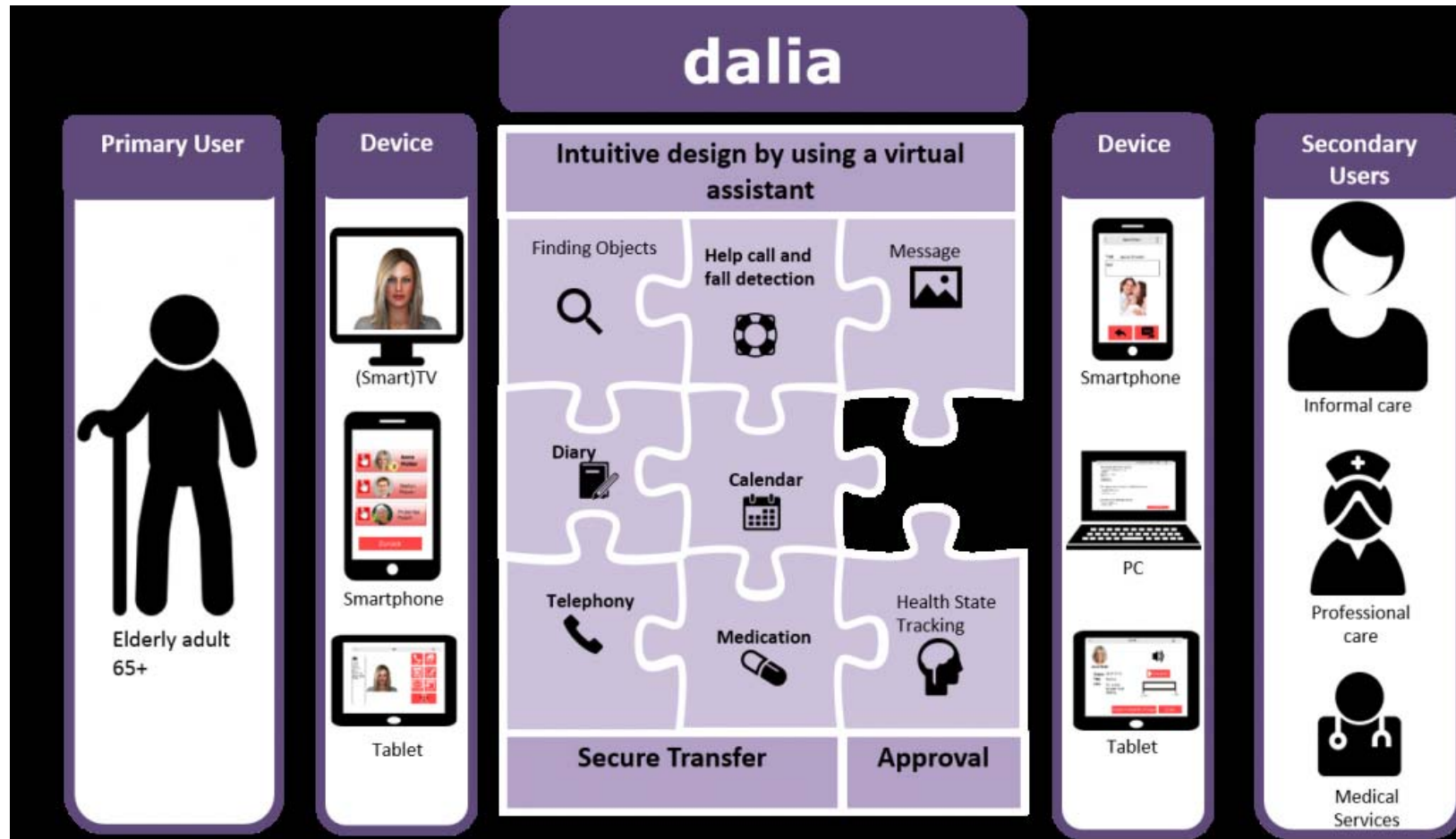
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III.01 Relevant AAL Service Performance Measurement Criteria I

<i>Key Performance Criteria</i>	<i>Description</i>
Level of Attention	Extent of perception by the customer regarding a product and/or vendor. Attraction and concentration count as indicators of the intensity and duration of attention. [24]
Break-Even-Analysis	Analysis of the breakeven point (break-even point), in which proceeds and costs of a product are equal. The profit margin is identical to the fixed costs. [25]
Protection of Privacy	Personal and health-related consumer data enable targeted and customized advertising and marketing opportunities. Therefore, these are always at the forefront by vendors and developers. It is important to ensure appropriate security as well on the supplier side. [26]
Privacy Policy	In conjunction with the digitization and the associated products and business models, the question arises about the privacy of customers in the processing of personal data . For this purpose, appropriate frameworks and guidelines must be observed(z.B. 95/46/EG). [27]
Data Security	A certain degree of information security refers to the characteristics products which store and process information. It is essential to ensure confidentiality, availability, integrity and protection against hazards or threats, prevention of economic damages, and minimizing risks. [28]
Distribution Network	Network and channels or processes by which the distribution and the sale of products between producers, suppliers and distributors through to the (end) customer take place. [29]
Personal Initiative	Personal initiative includes one`s own initiative and the first steps to a responsible decision and action. [30]
Research and Development (R&D) Cost Component	The use of resources of a company/consortium influencing the innovation success. Through external R&D-activities and a targeted management of research and development costs, better innovation performance is possible. [31]
R&D-Networking	For dealing with time-, content- and market-related challenges in the context of product development, it is important to develop appropriate solutions like simultaneous technological and market development, dynamic development of hybrid service bundles by means of networking by independent businesses. [32]
Horizontal and Vertical Integration	By grouping homogeneous players and functions (as well as upstream and downstream production levels) under a uniform management enables economies of scale and scope as well as optimizing the supply chain and networks with regard to common innovation successes. [33]
ICT-Infrastructure	Use of technology and structure in the field of information and communication. Factors such as distribution, interfaces, capacity or speed play an important role. [34]
Degree of Innovation	The level of innovation is a function that describe the cost-benefit ratio of the new product and previous solutions (state of the art). [35]
Interdisciplinarity	The use of different perspectives, approaches and methods from various disciplines with the aim of enabling future and successful innovations. [36]

(Kriegel / Auinger / Reckwitz / Schmitt-Rueth / Weißenberger / Tuttle-Weidinger, 2016, S. 136)

III.02 Relevant AAL SPMC – ICT Infrastructur



(www.dalia-aal.eu, 2016)

III.03 Relevant AAL Service Performance Measurement Criteria II

<i>Key Performance Criteria</i>	<i>Description</i>
Share of Investment / Return on Investment (ROI)	Profitability, the ratio of a profitability measure to the capital investment of an accounting period, measures the efficiency of product development and enables a comparison in competition. [37]
Purchasing Power	Monetary amount remaining per business entity after all fixed payment obligations were made, and which is available for potential buying decisions. [38]
Communication	The development of innovations depends on the transfer and the exchange of information, knowledge, awareness or experience. It is important to develop and establish appropriate channels, methods and skills. [39]
Cooperation	Today the development of innovation requires targeted and purposeful interaction of two or more actors to achieve a common goal in a coordinated division of labor and resource allocation. [40]
Coordination	Consortium formation and systematic classification with regard to innovation and product development requires the control of players and projects and necessary strategically oriented activities. [41]
Debtors and Creditor Analysis	Overview and analysis of creditors, which means the suppliers and the debtors, the customer / company / products. [42]
Customer-/ User Integration	Customer involvement in entrepreneurial innovation projects aims at a reinforced market-based-view and is seen as an important factor for successful service development. The customer perspective is involved as a co-designer. [43]
Customer Acquisition	Status, planning and implementing targeted actions of customer acquisition. [44]
Customer Acceptance	Customer acceptance is the positive acceptance decision by the customer and includes, inter alia, aspects of the benefit assessment, the usability, the expectation of conformity, the costs and the context- and network effects. [45]
Customer Needs	The subjectively perceived lack of a business entity with the desire to eliminate these by demand and consumption. [46]
Customer Loyalty	Status, planning and implementing targeted actions of customer loyalty. [47]
Customer Authorisation	Customer or Consumer Empowerment aims to strengthen the customer or ownership and participation by the customer (regarding decisions, codetermination, participation in the development- and value creation process). [48]
Customer Profitability	Customer profitability, based on selected customer segments and groups, sets the acquisition costs in relation to revenues. [49]
Customer Satisfaction	The difference between customer expectations and satisfaction of needs is evidence of improvement and product innovation. [50]
Mass Suitability	Property of a product that makes this attractive and desirable for a larger number of customers / clients. [51]
Employee Qualification	The mix of qualifications of the employees determines the team- and personal working capacity, which is composed of professional and social skills, and should be controlled through strategic human resource development. [52]
Mobility	A sustainable mobility offers customers and stakeholders the movement in physical, geographic, social or virtual spaces. [53]
Modularity	The modular design of complete systems, forms standardized individual components with defined interfaces. The modular product design allows a higher system complexity and promotes product innovation. [54]

(Kriegel / Auinger / Reckwitz / Schmitt-Rueth / Weißenberger / Tuttle-Weidinger, 2016, S. 137)

III.04 Relevant AAL SPMC – Customer Satisfaction

Examples from the DALIA Project (field test, n=57)

Elderly testers (n=30)

- > High satisfaction with AAL related communication features (70% positive)
- > Positive feedback for task supporting features (calendar, diary, ...)
- > Low satisfaction with the personal virtual assistant (37% positive)
- > Simple features get a more positive rating than complex features (torch, ...)
- > Smartphone is the preferred device – related App

(Informal) Carers (n=27)

- > Lower overall satisfaction caused by higher requirements and expectations
- > 37% see a positive effect regarding their care tasks

III.05 Relevant AAL Service Performance Measurement Criteria III

<i>Key Performance Criteria</i>	<i>Description</i>
Modularity	The modular design of complete systems, forms standardized individual components with defined interfaces. The modular product design allows a higher system complexity and promotes product innovation. [54]
New Media	New media describe current and time-related new media technologies (e.g. Internet, blog, social networks, word of mouth) for information transmission and communication current or potential customers / clients. [55]
User Rating	The benefit assessment is a subjective assessment by the customer, whereby the benefits of a product are assessed in relation to the resources that has to spend the customer. [56]
Terms of Use	In conjunction with the general terms and conditions (e.g. directive 93/13 / EEC) it is necessary to protect customers from unfair contract terms. [57]
Patents	The development of products and thus of proprietary claims offer the opportunity to differentiate themselves from competitors and represents an increase in the value of the innovation or the product . Therefore, the number of patent applications is growing at a fast pace. Companies unable to process the patent information, are losing competitiveness. [58]
Personnel Costs	Personnel expense includes the costs incurred through the use of workers in the development and production process. [59]
Privacy	Privacy is that non-public area and need where, a human being undisturbed by others, lives out his human right to free development of personality. [60]
Product Quality	The product quality is composed of the dimensions of structure, process and outcome. This can be considered neutral, which means the sum of all characteristics of a product, as well as subjectively, which means the goodness of all the properties of a product. [61]
Self-determination	Self-determination includes the degree, the ability and the cognitive ability of customers to act in accordance with their own will, and to decide on their actions, behavior, and their body freely. [62]
Security Potential	Assistance systems and activity monitoring for the elderly are gaining importance and create a sense of security. [63]
Simulation	Simulation includes the analysis of complex systems. By means of an abstraction of the simulated system, different scenarios of product development and –variation are passed through, concerning structure, function and behavior by using specific parameters. [64]
Strategic Orientation	Medium- to long term planned objectives and approach of a company in terms of innovation, market and use of resources also includes the control of implementation incl. performance measurement. [65]
Time-to-Market	The lead time includes the time from product development to product placement on the market. In this period costs for the product arise, but it still generates no revenue. [66]
Use Case Building	The development and description of applications is the collection of visions and expectations for the technology and the user context. [67]
Willingness to Pay	Monetary amount paid for a product which a buyers or customers is willing to pay out of their income. [68]

(Kriegel / Auinger / Reckwitz / Schmitt-Rueth / Weißenberger / Tuttle-Weidinger, 2016, S. 137)

III.06 Relevant AAL SPMC – Willingness to pay

Elderly (n=30):

- 40% would pay between 6 and 15 €
- 20% would pay nothing

Carer (n=27):

- 33% would pay nothing
- 26% would pay between 16 and 20 €
- 13% would pay between 1 and 5 €

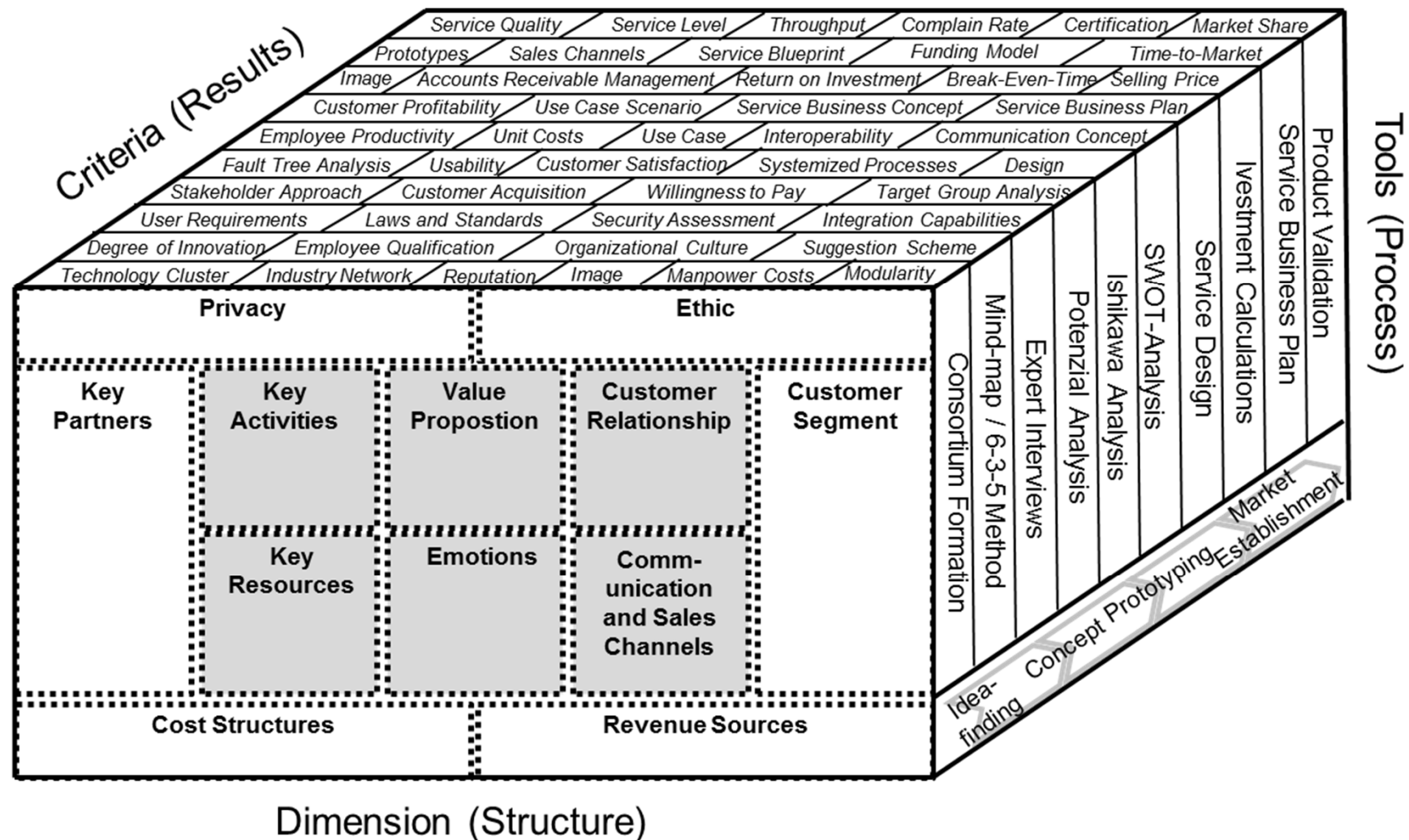
Interpretation:

- Gap between the carer and the elderly perspective
- Even user with mainly negative ratings would pay for the system if their concerns and bugs are eliminated

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III.07 AAL Service Performance Measurement Cube



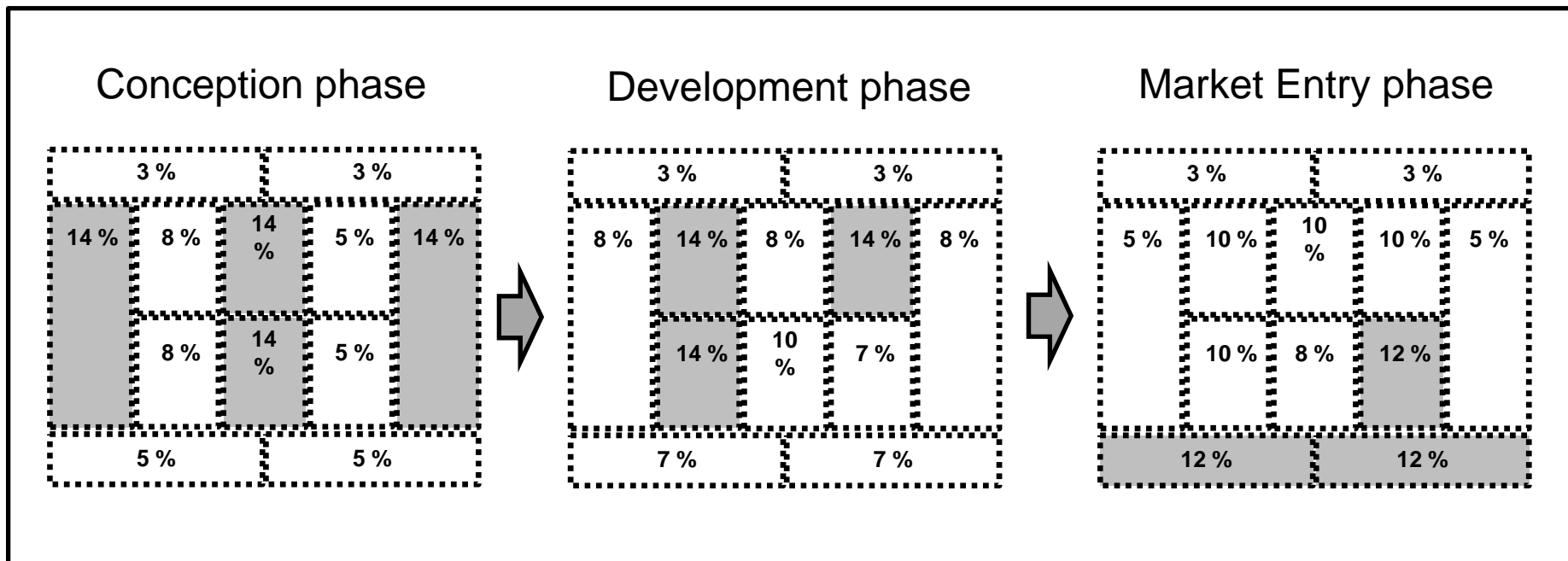
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IV.01 Development of an AAL Service Excellence Model

Dimensionen	Categorie	Conception phase	Development phase	Market Entry phase
Politics/Law/Ethics	Meta dimension (MD)	3 %	3 %	3 %
Costs and Financing	Essence dimension (ED)	14 %	14 %	10 %
Key Resources	Essence dimension (ED)	14 %	14 %	10 %
Key Activities	Essence dimension (ED)	14 %	14 %	10 %
Product/Service	Essence dimension (ED)	20 %	14 %	10 %
Key Partners	Adaptive dimension (AD)	10 %	10 %	10 %
Customers/Target Groups	Adaptive dimension (AD)	10 %	10 %	10 %
Customer Relationships	Complementary dimension (CD)	5 %	7 %	12 %
Marketing/Sales/PR	Complementary dimension (CD)	5 %	7 %	13 %
Revenues	Complementary dimension (CD)	5 %	7 %	12 %



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Thank you very much for your attention!