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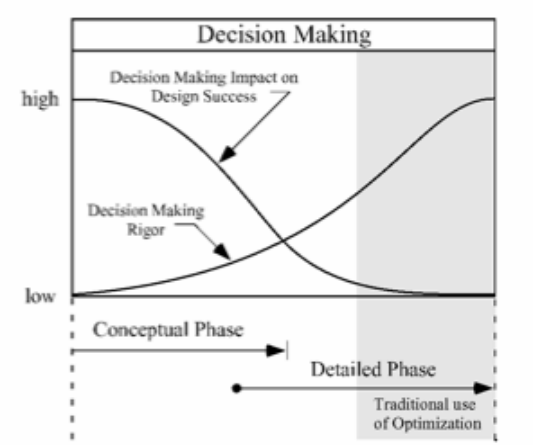
Intangibles in design of PSS value propositions

Massimo Panarotto[1] | Åsa Ericson[2] | Tobias Larsson[1]
massimo.panarotto@bth.se

[1]Blekinge Institute of Technology
[2]Luleå University of Technology

Introduction

- Initial problem statement in collaboration with a Swedish car manufacturer and its supply chain of some 30 companies
- Research approach: an extensive literature review, workshops with students and company partners
- What is the problem: Intangible value consideration in early conceptual design of PSS
- Results: conceptual definition of a framework for Intangible value assessment, to be developed in the coming months
- Presentation of the approach by examples



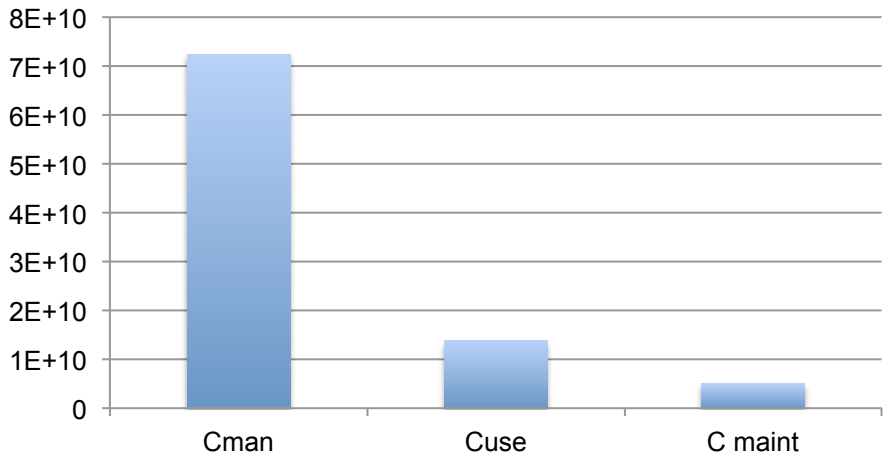
What-how to design now?

Moving from PD to PSS development: costs

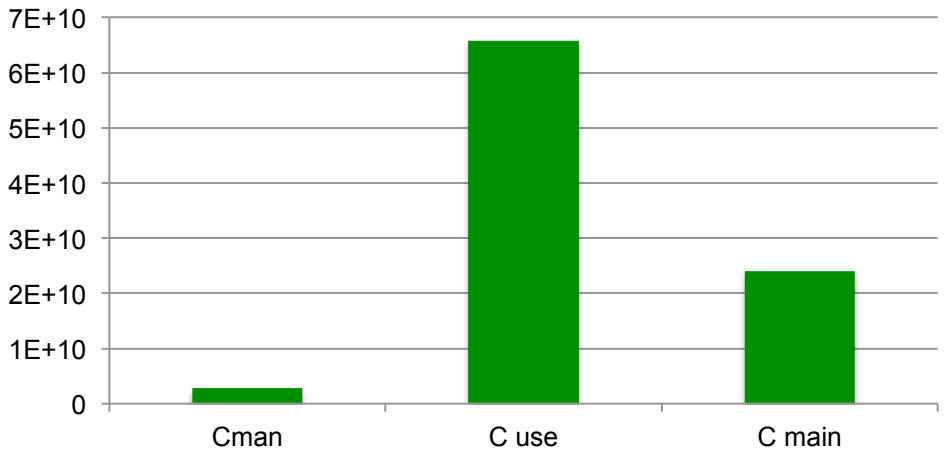
Weight (kg)	1805
Km/car	20000
Cars/year	788000
Price car (euro)	15000
years	8

Weight (kg)	1805
Km/car	300000
Cars (man.1 year)	250000
Price/km (euro/km)	0.34
years	8

Taditional car model



Product-Service System



Intangible values in PSS

- The same happens when considering the value proposition of a PSS, and especially regarding Intangible Values.

INTANGIBLE VALUE DRIVERS

KNOWLEDGE	**related to the customer's perception of the company, its products and services**
EXPERIENCE	**can make a product unique and valuable for the customers**
EMOTION	**connected to the concepts of customer satisfaction and remembering**

Reference: Steiner & Halmon, 2008

Intangible values

- The same happens when considering the value proposition of a PSS, and especially regarding Intangible Values.

$$\text{Intangible Customer Value} = \frac{\text{Perceived Intangible Benefits}}{\text{Use of Customer Resources}}$$

Total expenditure= Time, Money, Effort

Adapted from: Lindstedt & Burenius, The value model, Nimba, 2003

MAIN FUNCTION: "the watch tells us the time"

Do we buy it only because of it?

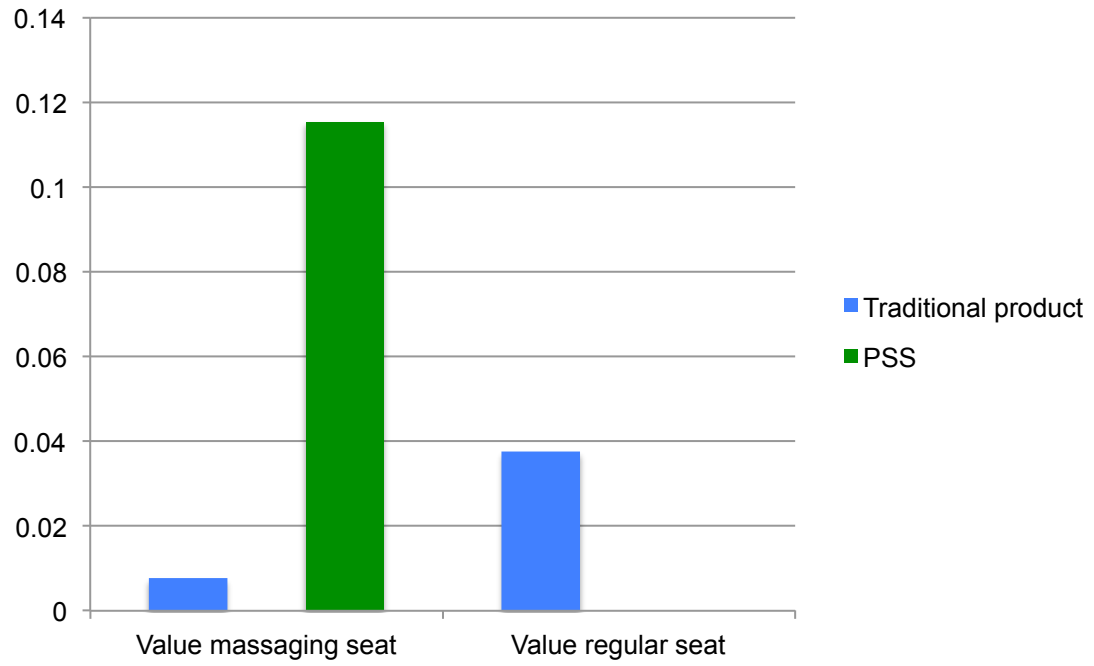
Intangible Values in PSS context: right strategies?

Intangible Values: what-how to design now?

Example

Traditional car	
Benefit massaging seat	10
Cost massaging seat (euro)	1300
Benefit regular seat	3
Cost regular seat (euro)	80

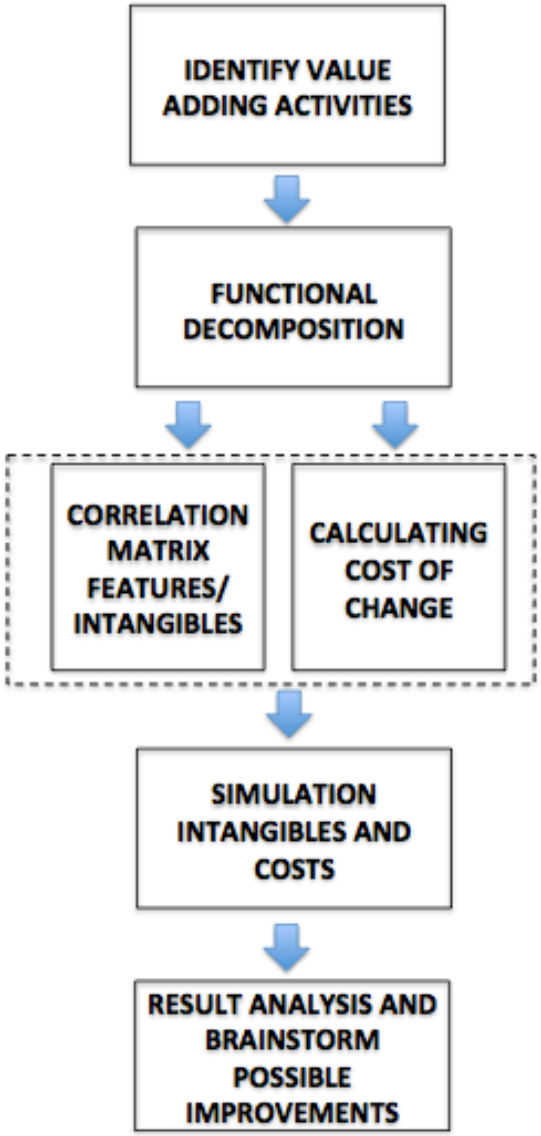
Car sharing	
Km car/year	300000
Km customer/year	20000
Benefit massaging seat	10
Cost massaging seat (euro)	86.67



What is needed

- Better understanding on how Intangible values are perceived in PSS context
- Need to understand their interaction with product and services, and compared them to customer expenditures
- Need to assess and evaluate also new design trade-offs that a design of PSS creates
- New easy-to-use tools and methods for the developer's desktop

The proposed framework



tools

- Scenario based design

- Customer journey mapping
- Creative workshops
- Design structure matrix

- Correlation matrix features/ intangibles
- Matrix features/costs

$$V = \frac{\sum_{1}^{N} P_i \cdot (K_i + Exp_i + Emo_i) + \sum_{1}^{N}\sum_{1}^{N} (K_{ij} + Exp_{ij} + Emo_{ij}) \cdot P_i P_j}{\sum_{1}^{N} P_i \cdot C_i + \sum_{1}^{N}\sum_{!}^{N} C_{ij} \cdot P_i P_j}$$

Correlation matrix intangibles-costs

Rating	Value weight	Description
1-2	Dangerous	The customer perceives the feature as dangerous or extremely awkward
3-4	Negative	The feature has negative impact on the perceived intangible value
5-6	Insignificant	The customer perceives the impact as indifferent
7-8	Good	The feature has good impact on the intangible value
9-10	High	The feature provide high intangible value to the customer

$$V = \frac{\sum_{1}^{N} P_i \cdot (K_i + Exp_i + Emo_i) + \sum_{1}^{N}\sum_{1}^{N} (K_{ij} + Exp_{ij} + Emo_{ij}) \cdot P_i P_j}{\sum_{1}^{N} P_i \cdot C_i + \sum_{1}^{N}\sum_{!}^{N} C_{ij} \cdot P_i P_j}$$

		Intangible Values		
		Knowledge	Experience	Emotions
Features	Web-site	7	7	5
	Application Smart phone	7	8	5
	Pay in advance	3	3	2
	Key	5	5	5
	Key-fob	6	6	7
	Tablet on car	8	9	8
	Internet	5	5	6
	Wi-fi	5	5	5
	pedals	5	5	5
	Drive by wire	8	7	4
	suggested soundtrack	7	6	8
	proximity key in phone/car	7	6	7
	hip-bump to unlock	8	7	9
	Task rabbit	7	9	7
	Pay at the end	7	9	7
	"old" click sound unlock	7	6	8
	1 Garage evey 200 m	6	8	7
	GPS	5	6	5
	Parking device	7	9	5
	perzonalized brand on keys-dashboard	6	8	9
	wipes - rain sensor	7	9	7
	automatically adjusted mirrors	7	8	5
	automatically adjusted seats	7	8	5
	windshield auto triats	7	9	7

Examples

"HIP HIP BUMP" TO UNLOCK

KNOWLEDGE	EMOTIONS	EXPERIENCE
8	7	9

	Engineering cost	Investment cost	Variable cost	Risk cost	Direct cost	Indirect cost	Total cost
INPUT ELEMENTS							
TASK TABBIT		2	3	3		3	11

TASK RABBIT

Conclusions

- Need to understand better how the perception of intangible values changes in PSS context
- New easy-to-use methods
- Avoid getting into a new “simulation box”
- An initial framework has been defined
- It allows to assess the value provided by higher cost features but that provide higher intangible value
- It allows to avoid to “push” high tech but more perceived awkward features
- The mathematical model has to be improved
- A more standardized method is needed

Thank you!

Massimo Panarotto | massimo.panarotto@bth.se

Product Development Research Lab