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Quality Management of Software and Systems (WS19/20)

Problem Set 6

Due: in exercise, 05.02.2020

Problem 1: Quality Function Deployment Basics

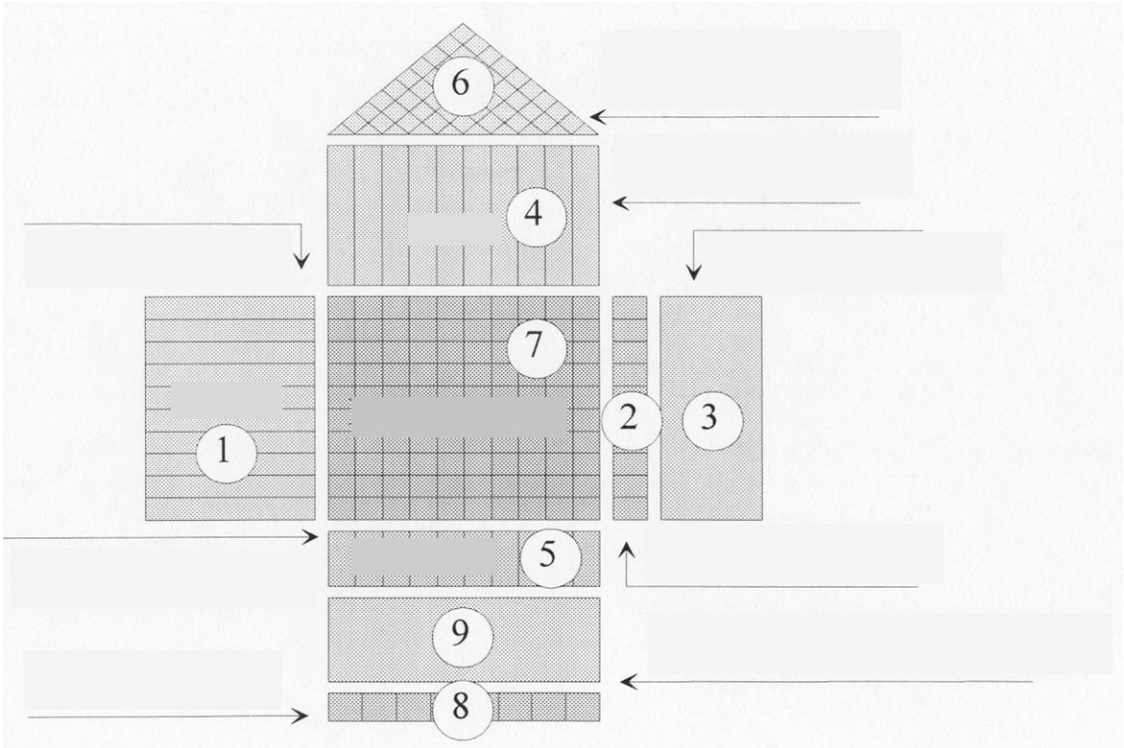
a) What is the fundamental idea of QFD?
b) What are the goals of QFD?
c) What is the procedure followed to apply QFD?

Problem 2: Quality Function Deployment Process

How is QFD applied in the requirement analysis phase? (Please support your explanation by drawing a graph) What are the different activities and products obtained? Please give a short description of each one.

Problem 3: The house of quality

a) What is the goal of the house of quality?
b) Complete and explain the steps of the house of quality by using the following graph:



Problem 4: QFD Case Study Navigation System

A car company would like to improve the navigation system currently installed in its cars. For this purpose, they hired the car navigation system producer company "Nagivation2000". The customer segments to be considered when developing the new system are:

- Car test drivers
- People in the quality assurance department
- System integrators
- Manager

Your task will be to help "Navigation2000" to analyze the requirements by applying QFD. In particular, you will have to determine:

I. The importance of each customer segment (determination of target groups)
II. The importance of customer requirements

In order to do this, the following information is given to you (see Appendix):

- Important criteria for the company: "criteria priorities" table
- Incomplete version of the "transfer of criteria priorities" table
- Customer voice table (with the initial requirements)
- Customer context tables

To determine the importance of each customer segment, you will have to perform the following activities:

a) Normalize the "criteria priorities" table
b) Complete the transfer of criteria priorities table: Calculate the segment priority

To determine the importance of customer requirements you will have to perform the following activities:

c) Create an affinity diagram for the customer voice table
d) Create a hierarchy diagram by using the customer context table and the affinity diagram
e) Create a "customer segments – customer requirements" table based on the hierarchy diagram and the customer segments priority

Appendix

1. Information about the scale to be used to set priorities:

   - unimportant = 0
   - minor important = 1
   - mean = 3
   - strong = 5
   - very strong = 7
   - extremely strong = 9

2. Criteria priorities table:

	saleable number	**buying decision ability**	**multiplier effect**
saleable number	1	0,2	0,33
buying decision ability	5	1	3
multiplier effect	3	0,33	1
	∑ 9	∑ 1,53	∑ 4,33

3. Transfer of criteria priorities table:

	Car test driver	**Quality Assurer**	**System Integrator**	**Manager**	
saleable number **priority:**	sale: 7000 local: global:	sale: 2000 local: global:	sale: 1000 local: global:	sale: 500 local: global:	∑ 10500 ∑ 1 ∑
buying decision ability **priority:**	1 local: global:	3 local: global:	3 local: global:	5 local: global:	∑ 12 ∑ 1 ∑
multiplier effect **priority:**	1 local: global:	3 local: global:	3 local: global:	5 local: global:	∑ 12 ∑ 1 ∑
Segment priority	∑	∑	∑		

4. Customer voice table

Customer Requirement	Technical Restrictions	Costs
Touchscreen	Only resistive touchscreen supported	Low
Automatic updating of maps and routes		
Traffic jam reporter	Integration with ADAC reporter system	Very High
Deviation assistant		
Switching to night navigation mode		
Points of interest search function (POI)		
Registering of favorite addresses/places		
Calculation of the shortest route		
Calculation of the fastest route		

5. Customer context tables:

	Who?	When?	Where?	Why?	What?	How?
is	Car Test Driver	Working time	Street	Testing of all functionality	Route from Munich to Ingolstadt approx. 80 km.	Driving mode
is not						
event.		Weekends and evenings				

	Who?	When?	Where?	Why?	What?	How?
is	Quality Assurer	Working time	Car company track	Progress and quality control	Points of interest near by	Trial mode
is not						
event.						

	Who?	When?	Where?	Why?	What?	How?
is	System Integrator	Working time	Car company garage	Test integration with car console	Route calculation	Trial mode
is not						
event.		Evenings				

	Who?	When?	Where?	Why?	What?	How?
is	Manager	Evenings	Street and car company track	Testing of all functionality	Switching to night navigation mode	Driving mode
is not						
event.		Weekends				