

A Multi-Criteria Strategy for Redesigning Legacy Features as Microservices: An Industrial Case Study

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1 Introduction

In this document, we present additional information and results of the paper *A Multi-Criteria Strategy for Redesigning Legacy Features as Microservices: An Industrial Case Study*

2 Interview Questions

Our interview was divided into three phases. The first phase is related to the participant knowledge about the analyzed feature in the legacy system. Table 1 presents the questions of this phase. All the questions are in four points Likert scale : (i) I don't know, (ii) I know little, (iii) I know, and (iv) I know a lot.

After, in the second phase we aimed to discover the adoptability of microservices. Table 2 shows the questions that inquire developers about the microservices generated by `toMicroservices`. The identifier (1 to 4) assigned to each microservice is chosen in a random way. The five points Likert scale is: (i) I would not adopt strongly, (ii) I would not adopt, (iii) I would adopt partially, (iv) I would adopt, and (v) I would adopt strongly. The participant was instructed to adopt partially when modified the microservice with less than 20% of modification as a move methods from or to another microservice.

Finally, in the third phase we inquired the participants of the interview about their previous experience as shown in Table 3.

3 Interview Results

Regarding the knowledge about the features, all the median to the three features is 3 on our Likert scale, what means that the participants know the evaluated features. No developer replied that she doesn't know the feature.

Table 1: Measurement of the knowledge level about the feature under analysis

Question	Response Type
What is your level of knowledge related to the Authentication feature?	Four point Likert scale
What is your level of knowledge related to the Algorithm feature?	Four point Likert scale
What is your level of knowledge related to the Project feature?	Four point Likert scale

Table 4 presents the results for two scenarios: Scenario-5MS and Scenario-10MS with five and ten microservice candidates, respectively. Microservices whose grades were 3, 4 or 5 (last column of Table 4) were considered (partially or fully) adoptable.

Table 2: Adoptability questions

Question	Response Type
Would you adopt Microservice 1?	Five point Likert scale
Justify your answer about the adoption of Microservice 1 by pointing out the positive or negative points that you identified.	Open
Would you adopt Microservice 2?	Five point Likert scale
Justify your answer about the adoption of Microservice 2 by pointing out the positive or negative points that you identified.	Open
Would you adopt Microservice 3?	Five point Likert scale
Justify your answer about the adoption of Microservice 3 by pointing out the positive or negative points that you identified.	Open
Would you adopt Microservice 4?	Five point Likert scale
Justify your answer about the adoption of Microservice 4 by pointing out the positive or negative points that you identified.	Open
What other criteria could be observed during the process of identifying microservices for microservices architecture?	Open
What was your biggest difficulty when analyzing the proposed solutions?	Open

Table 3: Developers' background

Question	Response Type
What is your academic background?	Open
How long time have you been developing the software analyzed?	Years

Table 4: Results of the Qualitative Evaluation

Participant	Years of experience in the system	Recognizable features	New recognizable features	Microservice's grades
Scenario-5MS: Architectures with 5 microservices				
P1	0.5	5	2	3,2,4,5
P2	2	3	2	3,2,4,1
P3	2	4	1	2,4,2,4
P4	20	7	6	1,1,1,1
Scenario-10MS: Architectures with 10 microservices				
P5	13	6	4	5,3,2,1
P6	8	4	2	1,5,1,4
P7	1	5	3	3,3,2,4
P8	3	5	3	2,4,4,3