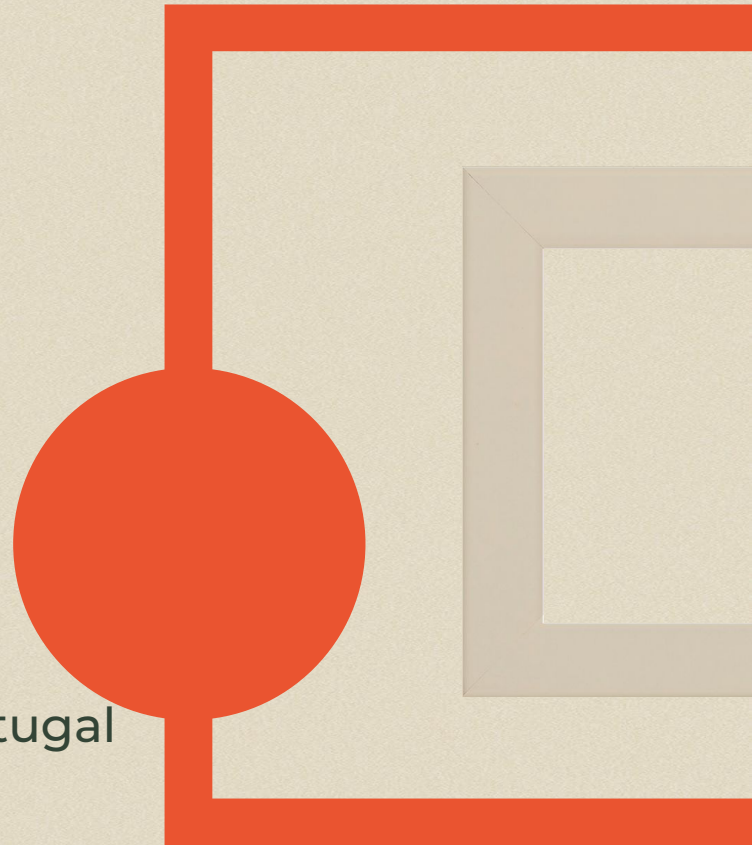# Visually-Assisted Decomposition of Monoliths to Microservices

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1

Monoliths

- User interface, business logic and database in a single deployment.
- Easier initial development but harder to maintain/update.
- Scaling is not cost-effective.

Microservices

- Each microservice is a self-contained unit of functionality.
- Initial development of applications harder but easier maintain/update.
- Scale cost-effectively for load.

Decomposition

- Complex and time-consuming.
- Expensive.
- Mostly manual work.
- When automation exists, it only focus on a single solution (requires exploratory work).
- Companies time to market means they can't stop and test all tools.
- JSON results. 😭😱

What if...

… we had a tool that aggregates multiple tools?

… that directed to multiple possible solutions?
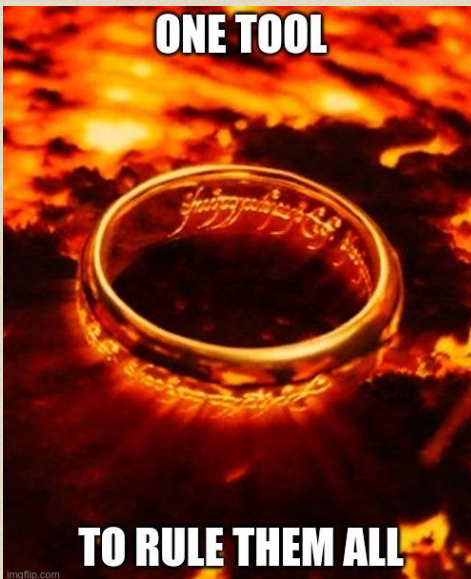
Solution - Tool Selection

Tools   Results   f44ddc36-7b3b-45b2-a2b2-6aa62b503680

In this area, you select the project you want to decompose into microservices.   ×

① Tools » ② File » ③ Uploading » ④ Results

UNDERLYING TOOL	LANGUAGES	
Miguel Brito		☐
Dongjin Yu		☐

Showing **1-5** of **2**   ‹ - | 1 | - ›

Next

Solution - Upload, Waiting

Solution - Results

Solution - Visualisation
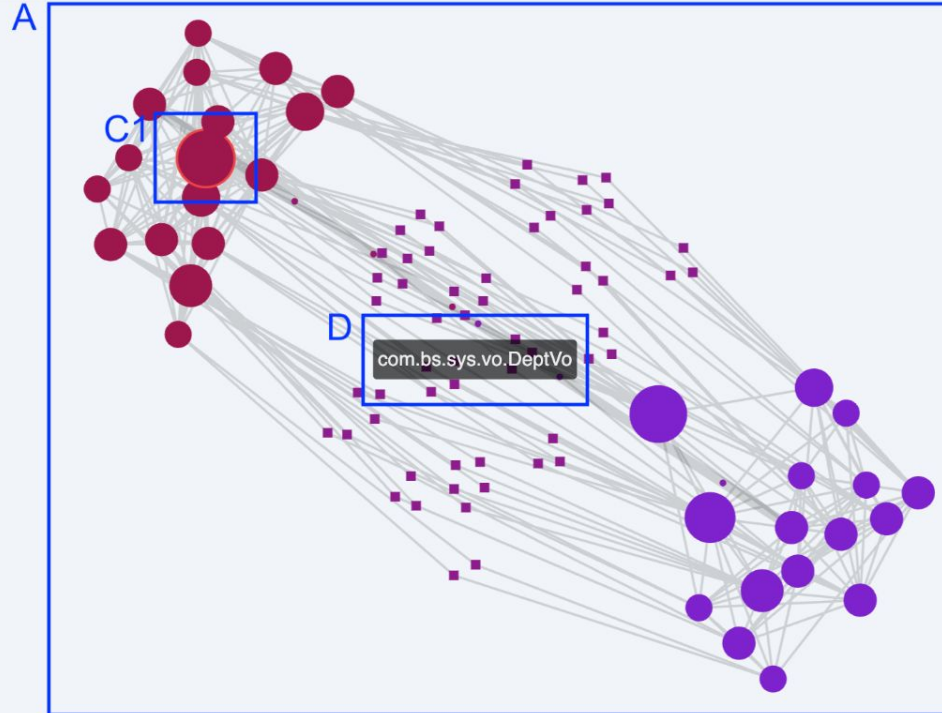
Evaluation

- 15 participants with different experiences in decompositions

- 2 monoliths to decompose into microservices
  - Group 1: Warehouse System, 79 classes.
  - Group 2: Petclinic System, 40 classes.

1 — **System Usability Scale**

- Effectiveness (can users successfully achieve their objectives).
- Efficiency (effort achieving those objectives).
- Satisfaction.

RAW-TLX — **2**

- Mental & Temporal Demand.
- Own Performance.
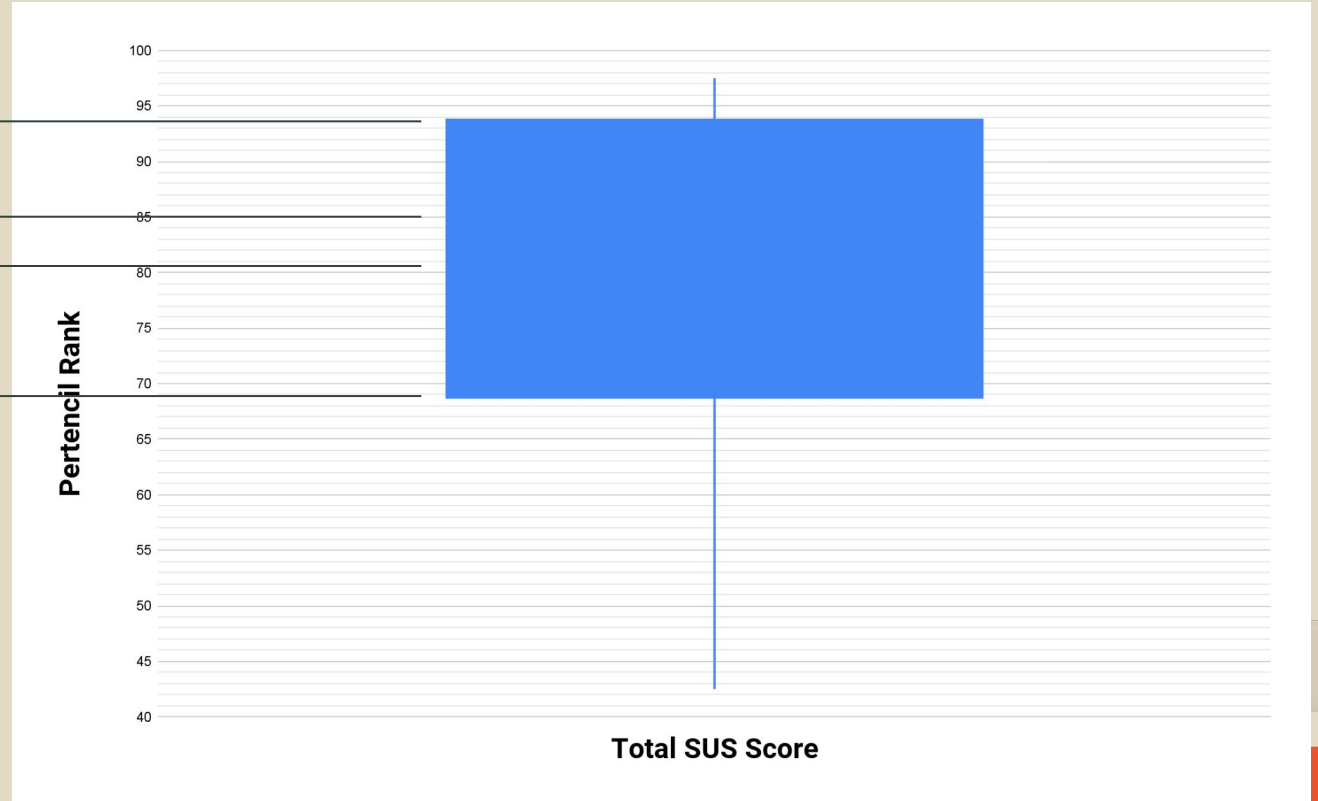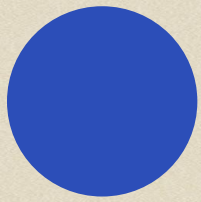- Effort.
- Frustration level.

SUS Analysis

Q3: 93.75

MED: 85

AVG: 80.3

Q1: 68.75

Higher is better
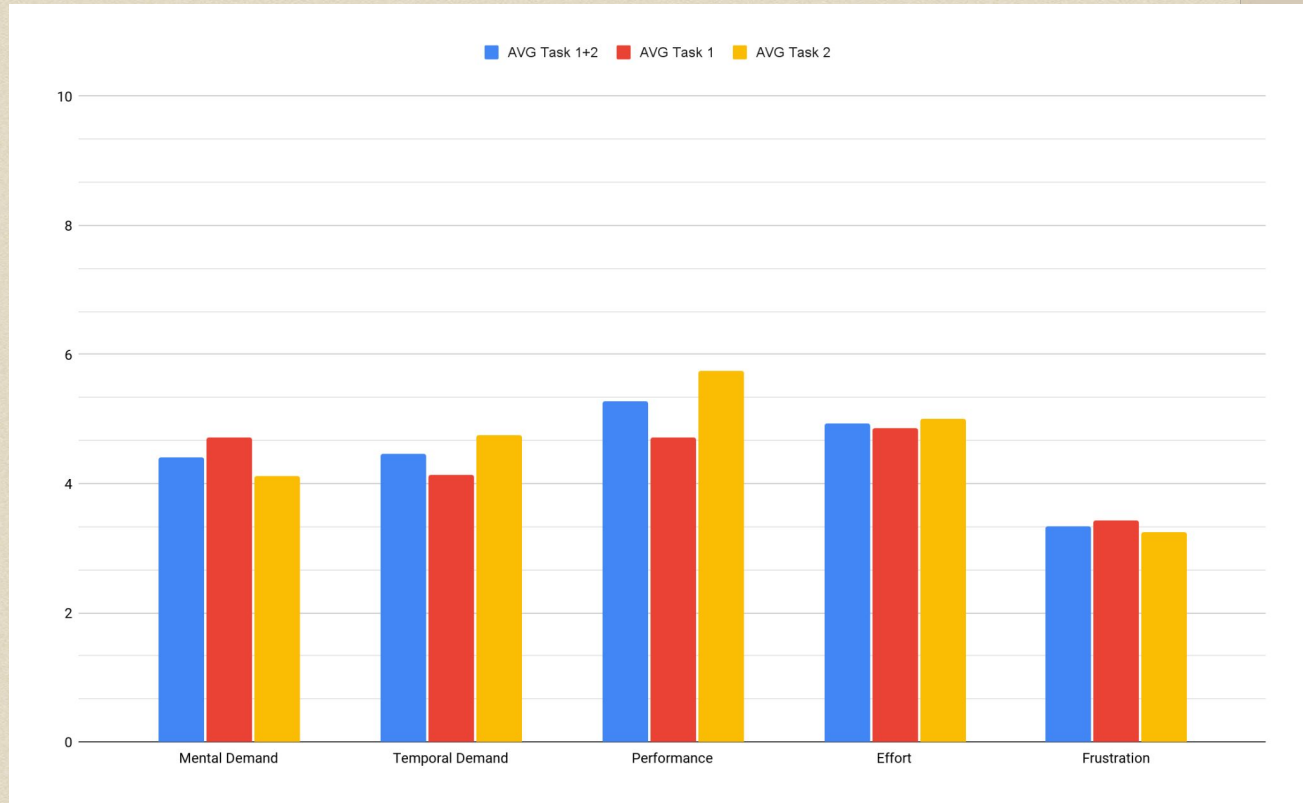
Pertencil Rank

Total SUS Score

RAW-TLX Analysis

Lower is better

AVG: 4.48/10
MED: 4/10

Conclusions

- We created a tool that can incorporate existing decomposition tools.

- Usability results are positive.

- Cognitive load could be lower.

- We plan to explore how to support the complete migration process.

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Try it!!

https://frontend-mesw.brenosalles.com

https://github.com/Guergeiro/mesw-breno-salles

https://www.youtube.com/watch?v=WQAAU9vQddA