1 Characterization of Participants

1. Where is the company located?

2. Business role in the company:

   ( ) Software Developer

   ( ) Software Architect

   ( ) Project Manager

   ( ) Coordinator

   ( ) Analyst

   ( ) Tester

   Other

3. Is the company organized by development area (interface, business, database, etc.) or business area (example: sales, accounting, finance, etc.) with multifunctional teams?

   ( ) Business Areas

   ( ) Development Areas

   Other

4. Before COVID-19 pandemic scenario, did the company have distributed teams (teams in different locations, for example, different cities, different buildings, etc.)?

   ( ) Yes

   ( ) No

5. Does the company use microservices?

   ( ) Yes

   ( ) No

2 Companies not using microservices

1. Do you have knowledge about the microservice architecture?

   ( ) Yes

   ( ) No

2. Which architecture is currently used in the company?

   ( ) Monolithic

   ( ) SOA

   Other

3. Considering the company you work, is the migration to microservice architecture feasible?

   ( ) Yes

   ( ) Perhaps

   ( ) No

3 Companies using microservices

1. How was the choice for using the microservice architecture?

   ( ) The company used another type of architecture and there was gradual migration.

   ( ) The company used another type of architecture and there was immediate migration.

   ( ) The company already used this architectural style.

   Other

2. To carry out the migration of monolithic architectures to microservice architectures, the literature proposes to perform it incrementally using structured processes. Some activities of a possible migration process are listed below. Which of these activities were used to carry out the migration process from legacy systems to microservices?

   [ ] Assessing the criteria/need that will lead to migration.

   [ ] Understanding the legacy system.

   [ ] Decomposing the legacy system/Identify microservices.

   [ ] Defining the microservic architecture base.

   [ ] Performing the modernization.

   [ ] Integrating microservices with the legacy system.

   [ ] Verifying and validating microservices.

   [ ] Monitoring microservices and infrastructure.

   Others

3. Which were the driving forces that motivated the modernization of your legacy systems with microservices?

   [ ] Optimized scalability.

   [ ] Independent and automated deploy.

   [ ] Easier maintenance and evolution.

   [ ] Independence of teams.

   [ ] Loosely coupled services.

   [ ] Cohesive services.

   [ ] Technology flexibility.

   [ ] Infrastructure facilities.

   [ ] Agility enabler.

   [ ] Simpler reuse.

   [ ] Reduced time to market.

   Others

4. How was the legacy system decomposed into microservices?

   [ ] Incremental, lifting one microservice at a time.

   [ ] By business capacity, thus defining the responsibility of the microservice.

   [ ] Based on the operations of the system and its data.

   [ ] Using tools to decompose the monolithic system in microservices, for example Service Cutter.

   [ ] Based on UML diagrams.

   Others

5. Which criteria are used in the decision to extract microservices?

   [ ] Requirements

   [ ] Database tables

   [ ] Cohesion

   [ ] Coupling

   [ ] Reusability

   [ ] Variability

   [ ] Scalability

   [ ] Network overhead

   Others

6. Does the company have a process for defining new microservices? For example, periodic assessment of the system performance. If so, please describe it.

7. Does the company define owners for each microservices? For example, when there is a problem with a specific microservice, developer X (owner) is primarily responsible for investigating and resolving the problem.

   ( ) Yes

   ( ) No

8. Which frameworks are used?

   [ ] KumuluzEE

   [ ] Spring Cloud and NetFlix OSS

   [ ] Seneca

   [ ] Spring Boot

   [ ] ASP.NET

   [ ] Eclipse

   Others

9. Which communication interfaces are used to integrate the microservices?

   ( ) APIs REST

   ( ) Simple HTTP (POST/GET)

   ( ) SOAP

   Other

10. Which continuous integration tools are used?

    [ ] TeamCity

    [ ] Jenkins

    [ ] Azure

    [ ] None

    Others

11. Which log control tools are used?

    [ ] Flume

    [ ] ELK

    [ ] Fluentd

    [ ] None

    Others

12. What are the concerns regarding the microservices granularity?

13. How does the company manage the network overhead?

14. How many programming languages are used when developing microservices?

15. Does the company use cloud infrastructure services?

    ( ) Yes

    ( ) No

16. If previous answer was yes, which cloud infrastructure service is used?

    ( ) The company's own infrastructure

    ( ) Amazon Web Services

    ( ) Microsoft Azure

    ( ) Google Cloud

    Other

17. Does the company use containerization, such as Docker, to manage microservices?

    ( ) Yes

    ( ) No

18. Was it ever necessary to reactivate or reuse some functionality of the legacy code already developed as a microservice due to problems in this microservice?

    ( ) Yes

    ( ) No

19. If the previous answer was yes, what was the reason for the reactivation of the functionality from the legacy system?

20. Which types of tests does the company use to evaluate/inspect the microservices?

    [ ] Unitary

    [ ] Integration

    [ ] Black box

    Others

21. Does the company use automatic mechanisms for monitoring systems? This includes checking how the most used microservices are performing and scaling, the level of coupling between different microservices the use of infrastructure resources, and so on.

    ( ) Yes

    ( ) No

22. If the previous answer was yes, which principles of microservice monitoring are used?

    [ ] Monitor containers and what runs inside them.

    [ ] Usage of orchestration systems.

    [ ] Prepare for elastic and multinational services.

    [ ] Monitor APIs.

    [ ] Map monitoring to the organizational structure.

23. If any or some of the principles mentioned in the previous question are used, please indicate the tools used by the company.

24. Are duplicate source codes handled in different microservices? For example, to allow the customization of some functionality or to perform similar operations in different microservices.

    ( ) Yes

    ( ) No

25. If the answer to the previous question was yes, how does the company deal with the duplicate code? For example, each duplicate piece of code can be handled independently, or there are code traceability to avoid problems related to the maintenance.

26. Are microservices migrated from the legacy system offered externally for use by third parties? For example, making APIs available for other companies to consult information in the system.

4 Databases in microservices

1. How is the structure of the used database?

   ( ) A database dedicated to each microservice.

   ( ) A centralized database that is accessed by all microservices.

   ( ) A distributed database.

   Other

2. Do microservices use connection pooling to establish the connection to the database?

   ( ) Yes

   ( ) No

3. Was the choice of microservices influenced by the transactions they execute in the database?

   ( ) No, the application does not manage transactions.

   ( ) No, transactions have not been evaluated.

   ( ) Yes, transactions were evaluated and, when necessary, were refactored to allow for separation into microservices.

   ( ) Yes, the transactions were evaluated but were not refactored, maintaining a smaller number of microservices.

   Other

4. What strategy of consistency guarantee is adopted in the microservice architecture?

   ( ) Atomic transactions in the database.

   ( ) Application controlled eventual consistency.

   Other

5. During the development or maintenance of the application, were there cases in which database structure changes to suit a microservice A affected the functionality of another microservice B?

   ( ) Yes

   ( ) No

6. Are there tables in the database that are handled by transactions of more than one microservice?

   ( ) Yes

   ( ) No

7. Do microservices share persistent business classes with each other?

   ( ) Yes

   ( ) No

8. If the previous answer was yes, what strategy was adopted to share classes of persistent entities that are used by more than one microservice?

9. The performance and scalability of the database were considered during the elaboration of the microservices architecture?

   ( ) Yes

   ( ) No

10. If the previous answer was yes, what strategy was adopted to scale the database in the face of a performance bottleneck?

11. If the company's architecture uses a centralized monolithic database (one shared among all microservices), what factors hindered the decision to partition the database to isolate the persistence of each microservice?