

# Human Evaluation on DALLE

This form is intended to evaluate the quality of the results produced by DALLE, an LLM-based assistant designed to extract microservice-based architecture designs from textual input.

## Overview of the Evaluation

You will be asked to evaluate *4 different projects*. Each project includes:

- A *brief description* of the system to be generated
- A set of *user stories* related to the system

These inputs are provided to the DALLE system, which then produces an architectural design. Among others outputs, DALLE identifies:

- The **list of microservices**
- The **microservice and communication patterns** (based on the reference [book](#))

## Evaluation Process

For each project, you will be presented with:

- The original *system description* and *user stories*;
- A visual representation of the architecture generated by DALLE, including microservice patterns.

You are asked to evaluate whether the identified **data and communication style patterns** are appropriate and consistent with the project requirements.

Each evaluation question uses a **Likert scale from 1 to 7**, where:

- 1 = Strongly Disagree
- 7 = Strongly Agree

You may also provide **additional comments or observations** for each project in the dedicated Observation section.

## Reference Patterns

The evaluation is based on the following architecture design patterns (as defined in the reference [book](#)):

Communication Style Patterns:

- Shared Database
- Database per Service

Data Style Patterns:

- API Composition
- CQRS
- Saga
- Aggregate
- Event Sourcing
- Domain Event

### Final Questions

At the end of the form, you will find a few general questions about the perceived utility and effectiveness of DALLE as a tool for architectural design support.

*\* Indicates required question*

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1. Rate your confidence in designing systems based on microservices architectures: \*

1	2	3	4	5
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☆	☆	☆	☆	☆
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2. How many years of experience do you have? \*

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3. What is your age? \*

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4. In what gender do you identify yourself? \*

*Mark only one oval.*

- ☐ Male
- ☐ Female
- ☐ Prefer not to say

5. Have you ever evaluated systems' architectures? \*

*Mark only one oval.*

☐ Yes

☐ No

6. Describe your role in the SE field \*

*Mark only one oval.*

☐ Practitioner

☐ Academic

# OneSport

## SYSTEM DESCRIPTION:

OneSport is dedicated to offering up-to-date and pertinent information on a wide range of sports and athletic events.

Our primary aim is to keep fans and enthusiasts well-informed and engaged.

The project strives to serve as a one-stop destination for comprehensive sports news, event updates, and a convenient platform for purchasing tickets to various sporting events.

## USER STORIES:

- 1) As a User, I want to be able to signup in order to have an account
- 2) As a User, I want to be able to login
- 3) As a User, I want to logout from the account by clicking on the Navbar
- 4) As a User, I want to be able to have access to my profile settings
- 5) As a User, I want to be able to delete my account by clicking on a button from the profile settings page
- 6) As a User, I want to be able to modify my email and password in order to change my credentials
- 7) As a User, I want to see all recent news
- 8) As a User, I want to filter Italian news by selecting from the menu of available countries
- 9) As a User, I want to add to my favorite news all the news I'm interested in, in order to read them later
- 10) As a User, I want to delete from my favorite news all the news that I'm no longer interested
- 11) As a User, I want to see available tickets for upcoming sporting events
- 12) As a User, I want to filter Italian tickets by selecting from the menu of available countries
- 13) As a User, I want to add to my collection all the tickets I'm interested in, in order to purchase them later
- 14) As a User, I want to delete from my collection all the tickets that I'm no longer interested
- 15) As a User, I want to be able to delete all the news and tickets in my favorite list
- 16) As a User, I want to send a friend request to another user, in order to add him to my friend list
- 17) As a User, I want to check if someone has sent me a friend request, in order to accept or delete it
- 18) As a User, I want to delete a friend from my friend list
- 19) As a User, I want to find another user by email, in order to see his details
- 20) As a User, I want to see my collection of saved news
- 21) As a User, I want to see my collection of saved tickets
- 22) As a User, I want to see my friend list, in order to see their details
- 23) As a User, I want to be able to accept a friend request, in order to add the sender as a friend
- 24) As a User, I want to be able to delete a friend request, in order to refuse the friend request

## Microservices

name	description
User Management Service	Handles user account operations including signup, login, logout, profile settings, credential updates, and account deletion.
News Service	Manages sports news including fetching recent news, filtering by country, and managing user's favorite news items.
Ticket Service	Manages ticket information for sporting events including viewing available tickets, filtering by country, and managing user's ticket collection.
Friendship Service	Manages social interactions between users including sending, receiving, accepting, deleting friend requests, and managing friend lists.

## Patterns

group_name	implementation_pattern	involved_microservices	explanation
Data per Service Pattern	database per service	User Management Service,News Service,Ticket Service,Friendship Service	Each service should have its own database to ensure loose coupling and independent scalability.
Saga Pattern	saga	User Management Service,Friendship Service	Appropriate for managing distributed transactions that span multiple services.
API Composition Pattern	api composition	User Management Service,News Service,Ticket Service,Friendship Service	For queries that require aggregating data from multiple services.
CQRS Pattern	cqrs	News Service,Ticket Service	Optimizing read operations and maintaining read-optimized replicas of data.

## 7-point likert scale

1. Strongly disagree
2. Disagree
3. Somehow disagree
4. Neither agree nor disagree
5. Somehow agree
6. Agree
7. Strongly agree

7. Is the division in microservice correct with respect to the context and the user stories? \*

1	2	3	4	5	6	7
☆	☆	☆	☆	☆	☆	☆

8. Is **Database per Service Pattern** correctly applied? \*

1	2	3	4	5	6	7
☆	☆	☆	☆	☆	☆	☆

9. Is **API Composition Pattern** correctly applied? \*

1	2	3	4	5	6	7
☆	☆	☆	☆	☆	☆	☆

10. Is **Saga Pattern** correctly applied? \*

1	2	3	4	5	6	7
☆	☆	☆	☆	☆	☆	☆

11. Is **CQRS Pattern** correctly applied? \*

1	2	3	4	5	6	7
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☆	☆	☆	☆	☆	☆	☆
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12. Observations

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## NFFH

### SYSTEM DESCRIPTION:

Not Far(m) From Home is a platform that allows a direct interaction between local farmers and consumers, with the main purpose of being "km 0".

The Farmers will be able to post their fresh produce in the site, and the consumers to reserve the produce and select a day for the pickup at the Agricultural Company.

### USER STORIES:

- 1) As a Client , I want to Register in the site so that I can use the site
- 2) As a Client , I want to login in the site so that I can use the site
- 3) As a Client , I want to not put my Credentials in the site every time a reload the site, so that I can use the site
- 4) As a Client , I want to logout, so that no one else use my account
- 5) As a Client , I want to see my personal information
- 6) As a Client , I want to See Hot products, so that i can discover the product in the season
- 7) As a Client , I want to See Agricultural companies in my area, so that i can choose where to buy products
- 8) As a Client , I want to See products for each Agricultural company, so that I can buy From them
- 9) As a Client , I want to Add products to my cart, so that i can buy them
- 10) As a Client, I want to Remove products from my cart, so that i can decide what to buy
- 11) As a Client , I want to see the products in my cart, so that i can see want I am going to buy
- 12) As a Client , I want to Complete an order, so that I can choose a date to go and pick up the products
- 13) As a Client , I want to Open in google Maps the Location of the Agricultural company, so that i can find directions to it easily
- 14) As an Agricultural Company, I want to Add products in inventory, so that I can show my clients the new produce
- 15) As an Agricultural Company, I want to Remove products in inventory, so that My clients don't try to buy an item that I don't have anymore
- 16) As an Agricultural Company, I want to Modify products in inventory, so that I can change price and quantities on an item
- 17) As an Agricultural Company, I want to Register in the site, so that i can be visible and start doing business in the site
- 18) As an Agricultural Company, I want to Login, so that i can work on the site
- 19) As an Agricultural Company, I want to not put my Credentials in the site every time a reload the site, so that I can use the site easily
- 20) As an Agricultural Company, I want to logout from the site
- 21) As an Agricultural Company, I want to see my personal information
- 22) As the Administrator of the site, I want to login in the site
- 23) As the Administrator of the site, I want to not put my Credentials in the site every time a reload the site
- 24) As the Administrator of the site, I want to logout from the site
- 25) As the Administrator of the site, I want to delete malevolous user
- 26) As the Administrator of the site, I want to see all orders, so that I can better analyze how the platform is doing
- 27) As the Administrator of the site, I want to see all users, so that I can better analyze how



the platform is doing

28) As the Administrator of the site, I want to get user details, so that I can have some clear view over the user

29) As the Administrator of the site, I want to modify users, so that I can do site maintenance

30) As the Administrator of the site, I want to see all areas, so that I can do site maintenance

31) As the Administrator of the site, I want to get all Agricultural company by areas, so that I can analyze how they are distributed

32) As the Administrator of the site, I want to get all Agricultural company details, so that I can do platform maintenance

33) As the Administrator of the site, I want to get product by seller, so that I can do site maintenance

34) As the Administrator of the site, I want to get product by id, so that I can do site maintenance

35) As the Administrator of the site, I want to add an area, so that if there is some request for that area to be added, I can

36) As the Administrator of the site, I want to add product, so that I can do site maintenance

37) As the Administrator of the site, I want to modify product, so that I can do site maintenance

38) As the Administrator of the site, I want to delete product, so that I can do site maintenance

39) As the Administrator of the site, I want to delete an area, so that I can do site maintenance

40) As a client, i want to see all my orders

41) As a farmer, i want to see all my orders

## Microservices

name	description
Authentication Service	Handles user registration, login, logout, and session persistence for Clients, Agricultural Companies, and Administrators.
User Profile Service	Manages personal information viewing and modification for Clients, Agricultural Companies, and Administrators.
Product Catalog Service	Manages product listings including adding, removing, modifying products by Agricultural Companies and Administrators, and provides product browsing features for Clients.
Agricultural Company Service	Manages Agricultural Company registration, login, product inventory, and provides information about Agricultural Companies by area.
Cart and Order Service	Handles shopping cart operations and order completion including product addition/removal in cart and order pickup scheduling.
Location Service	Provides location data and integration with Google Maps for Agricultural Companies to help Clients find directions.
Administration Service	Allows Administrators to manage users, orders, areas, and perform site maintenance tasks such as adding/deleting/modifying users, products, and areas.

Patterns

group_name	implementation_pattern	involved_microservices	explanation
Authentication and Authorization	API Gateway	Authentication Service	Centralizing authentication and authorization for all services.
User Data Management	Database per Service	User Profile Service,Product Catalog Service,Agricultural Company Service,Cart and Order Service,Location Service,Administration Service	Keeping data private and encapsulated for each service.
Complex Transactions	Saga	Agricultural Company Service,Cart and Order Service,Administration Service	Managing distributed transactions and ensuring eventual consistency.

7-point likert scale

- 1. Strongly disagree
- 2. Disagree
- 3. Somehow disagree
- 4. Neither agree nor disagree
- 5. Somehow agree
- 6. Agree
- 7. Strongly agree

13. Is the division in microservice correct with respect to the context and the user stories?

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14. Is **SAGA Pattern** correctly applied? \*

1	2	3	4	5	6	7
☆	☆	☆	☆	☆	☆	☆

15. Is **API Gateway Pattern** correctly applied? \*

1	2	3	4	5	6	7
☆	☆	☆	☆	☆	☆	☆

16. Is **Database per Service Pattern** correctly applied? \*

1	2	3	4	5	6	7
☆	☆	☆	☆	☆	☆	☆

17. Observations

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## EFarmers

### SYSTEM DESCRIPTION:

E-Farmers is an e-commerce website that aims to connect local farmers with customers who are interested in buying fresh and locally sourced products. Our platform allows farmers to showcase their products by publishing insertions, while customers can easily browse and purchase these goods. Whether you are a farmer looking to sell your products or a customer seeking high-quality "farm-to-table" items, E-Farmers has something for everyone. Moreover, if you cannot reach the farmer's warehouse yourself, you can rely on riders who can ship the products to your home.

### USER STORIES:

- 1) As a visitor, I want to register to the website with an email
- 2) As a user, I want to logout from my account
- 3) As a user, I want to reach a login page so that I can login into my account
- 4) As a farmer, I want to publish a new insertion
- 5) As a user, I want to access the home page
- 6) As a user, I want to access my personal page, so that I can see my information
- 7) As a customer, I can check on calendar all seasonal foodstuff
- 8) As a user or visitor, I can search for farmer's insertions
- 9) As the owner of an insertion, I want to delete one of my insertions
- 10) As a farmer, I want to modify my insertions
- 11) As a user, I want to see the expiring boxes
- 12) As a customer, I want to update my status to Farmer
- 13) As a user, I want to access a farmer page, so I can see his information
- 14) As a customer, I want to add a product in my cart, so that I buy this product
- 15) As a customer, I want to delete the boxes added to the shopping cart
- 16) As a customer, I want to generate an order which contains items from my shopping cart
- 17) As a customer, I want to be able to checkout and pay for my order using a secure payment gateway.
- 18) As a customer, I want to book a product from the calendar
- 19) As a customer, I can subscribe to a farmer, so I will be notified for his every new insertion
- 20) As a customer, I want to have a list of the farmers that I am subscribed to
- 21) As a farmer, I want to accept or decline incoming requests for booked boxes
- 22) As a customer, I want to check my order history, so I can remember past purchases
- 23) As a user that bought a box, I want to leave a comment to the farmer
- 24) As a customer, I want to update my status to Rider, so that I can deliver stuffs.
- 25) As a rider, I want to have a personal delivery page
- 26) As a rider, I want to change my availability status to available so that I can receive delivery requests
- 27) As a customer, I want to select a delivery option, so that I can receive the products at home
- 28) As a farmer, I want to earn badges so that my achievements are showcased on my profile page

- 29) As a visitor, I want to register to the website with OAuth
- 30) As a user, I want to be able to modify my information
- 31) As a the owner of an insertion, I want to be able to add boxes on my insertion
- 32) As a user, I want to see the status of my requests for booked boxes
- 33) As a user, I want to see my cart, so I can see all the products I am about to purchase
- 34) As a rider, I want to be able to update the status of an order that i have delivered
- 35) As a customer, I want to be able to unsubscribe from a farmer, so that I no longer receive notifications for his insertions
- 36) As a customer, I want to have a notification center, so I can read my notifications

## Microservices

name	description
User Management	Handles user registration, login, logout, profile management, and user status updates (e.g., customer to farmer or rider).
Insertion Management	Manages farmers' product insertions including publishing, modifying, deleting insertions, and adding boxes to insertions.
Browsing and Search	Allows users and visitors to browse the home page, search for farmer insertions, access farmer pages, and view seasonal foodstuff calendars.
Shopping Cart and Order Management	Manages shopping cart operations, order generation, checkout, payment processing, order history, and order status updates.
Booking and Request Management	Handles booking of products from the calendar, managing requests for booked boxes, and tracking the status of these requests.
Subscription and Notification	Manages customer subscriptions to farmers, notification delivery, notification center, and unsubscription.
Delivery Management	Supports riders with personal delivery pages, availability status updates, and delivery option selection for customers.
Comment and Feedback	Allows users who bought boxes to leave comments and feedback for farmers.
Badge and Achievement	Manages the awarding and display of badges and achievements for farmers.
Expiring Boxes Management	Allows users to view expiring boxes to encourage timely purchases.

Patterns

group_name	implementation_pattern	involved_microservices	explanation
User Management Patterns	Saga pattern	User Management	Managing distributed transactions such as status updates (e.g., customer to farmer or rider)
Insertion Management Patterns	Saga pattern	Insertion Management	Handling complex operations like publishing, modifying, deleting insertions, and adding boxes atomically
Browsing and Search Patterns	CQRS pattern	Browsing and Search	Maintaining read-optimized replicas for efficient search and browsing queries
Shopping Cart and Order Management Patterns	Saga pattern	Shopping Cart and Order Management	Managing complex, eventually consistent transactions across shopping cart, order generation, payment, and order status updates
Booking and Request Management Patterns	Saga pattern	Booking and Request Management	Coordinating booking requests and status updates across services
Subscription and Notification Patterns	Event sourcing	Subscription and Notification	Tracking subscription changes and notification events
Delivery Management Patterns	Saga pattern	Delivery Management	Managing delivery status updates and availability changes
Expiring Boxes Management Patterns	CQRS pattern	Expiring Boxes Management	Efficiently querying expiring boxes

7-point likert scale

- 1. Strongly disagree
- 2. Disagree
- 3. Somehow disagree
- 4. Neither agree nor disagree
- 5. Somehow agree
- 6. Agree
- 7. Strongly agree

18. Is the division in microservice correct with respect to the context and the user stories?

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19. Is **Saga Pattern** correctly applied? \*

1	2	3	4	5	6	7
☆	☆	☆	☆	☆	☆	☆

20. Is **CQRS Pattern** correctly applied? \*

1	2	3	4	5	6	7
☆	☆	☆	☆	☆	☆	☆

21. Is **Event Sourcing Pattern** correctly applied? \*

1	2	3	4	5	6	7
☆	☆	☆	☆	☆	☆	☆

22. Observations

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# CDC

## SYSTEM DESCRIPTION:

CDC shop is a distributed system that handles the management, the payment and the shipment of products: in particular for materials that you can usually find in an hardware store.

## USER STORIES:

- 1) As a Customer, I want to be able to register in order to have an account
- 2) As a Customer, I want to be able to login
- 3) As a Customer, I want to be able to have access to my profile
- 4) As a Customer, I want to see my current shopping cart
- 5) As a Customer, I want to order the products for ascending/descending price
- 6) As a Customer, I want to retrieve a product by giving its name in a search bar
- 7) As a Customer, I want to pay for the current shopping cart
- 8) As a Customer, I want to logout from the profile by clicking on a button
- 9) As a Customer, I want to check my order to see information about my package
- 10) As a Customer, I want to access the About Us page
- 11) As a Customer, I want to see the list of products
- 12) As a Customer, I want to see the details of a product
- 13) As a Merchant, I want to logout from the profile by clicking on a button
- 14) As an Merchant, I want to be able to login to the Merchant page
- 15) As an Merchant, I want to change the price of a product
- 16) As an Merchant, I want to insert/remove products
- 17) As an Merchant, I want to order the products for ascending/descending price
- 18) As an Merchant, I want to retrieve a product by giving its name in a search bar
- 19) As an Merchant, I want to access to my profile
- 20) As an Merchant, I want to access the About Us page
- 21) As an Merchant, I want to see the list of products
- 22) As an Merchant, I want to see the details of a product
- 23) As a Customer, I want to contact the shop for any doubt
- 24) As a Customer, I want to be able to add a product on my cart
- 25) As a Customer, I want to be able to remove all the items in my cart

## Microservices

name	description
User Management Service	Handles user registration, login, logout, and profile management for both Customers and Merchants.
Product Catalog Service	Manages product listings, details, search, sorting, and product modifications by Merchants.
Shopping Cart Service	Manages the shopping cart operations including viewing, adding, and removing products.
Order and Shipment Service	Handles order placement, order tracking, and shipment information retrieval.
Payment Service	Manages payment processing for the shopping cart orders.
Information Service	Provides static information pages such as About Us and contact support.

## Patterns

group_name	implementation_pattern	involved_microservices	explanation
Data Management	Database per Service Pattern	User Management Service,Product Catalog Service,Shopping Cart Service,Order and Shipment Service,Payment Service,Information Service	Each microservice should have its own database to ensure loose coupling and independent data management.
Transaction Handling	Saga Pattern	Shopping Cart Service,Order and Shipment Service,Payment Service	To handle distributed transactions that span multiple services like placing an order.
Data Aggregation	API Composition Pattern	Product Catalog Service,User Management Service,Order and Shipment Service	For queries requiring data aggregation from multiple services.
Query Optimization	Command Query Responsibility Segregation (CQRS) Pattern	Product Catalog Service,Order and Shipment Service	For efficient querying, especially when data is scattered across services.

7-point likert scale

- 1. Strongly disagree
- 2. Disagree
- 3. Somehow disagree
- 4. Neither agree nor disagree
- 5. Somehow agree
- 6. Agree
- 7. Strongly agree

23. Is the division in microservice correct with respect to the context and the user stories? \*

1	2	3	4	5	6	7
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☆	☆	☆	☆	☆	☆	☆
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24. Is **API composition Pattern** correctly applied? \*

1	2	3	4	5	6	7
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25. Is **Database per Service Pattern** correctly applied? \*

1	2	3	4	5	6	7
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☆	☆	☆	☆	☆	☆	☆
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26. Is **CQRS Pattern** correctly applied? \*

1	2	3	4	5	6	7
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☆	☆	☆	☆	☆	☆	☆
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27. Is **Saga Pattern** correctly applied? \*

1	2	3	4	5	6	7
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☆	☆	☆	☆	☆	☆	☆
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28. Is **Database per Service Pattern** correctly applied? \*

1	2	3	4	5	6	7
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☆	☆	☆	☆	☆	☆	☆
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29. Observations

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## Utility of DALLE

Please answer the following questions related to the utility of the proposed approach. Look at the [demo](#) of the tool to understand how it works.

30. Would you consider using DALLE to help design system architectures? \*

*Mark only one oval.*

☐ Yes

☐ No

☐ Other: \_\_\_\_\_

31. Do you think DALLE could make your work easier or more efficient? \*

*Mark only one oval.*

☐ Yes

☐ No

☐ Other: \_\_\_\_\_

32. Would you use DALLE to check or validate your design ideas? \*

*Mark only one oval.*

☐ Yes

☐ No

☐ Other: \_\_\_\_\_

33. Do you find the suggestions provided by DALLE useful? \*

*Mark only one oval.*

☐ Yes

☐ No

☐ Other: \_\_\_\_\_

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**Google Forms**

