# Service Oriented Design 2023|24

VRIJE UNIVERSITEIT AMSTERDAM

## Assignment 2: Solution Space

This assignment refers to the case *"Fighting Malnutrition in a Changing Climate".* In this assignment you should document the design solution for the business services you have defined in Assignment 1. All SoaML diagrams should be drawn with a software modeling tool (e.g., *diagrams.net*). **Note that each section should carry the name of the individual group member responsible for its quality.**

This assignment document is organized as follows:

- **Change log**: include a table that summarizes the changes made to the contents of Assignment 1 due to, for instance, corrections or improvements following the feedback you have received. The revised version of the Assignment 1 document must be included. You can do so either by adding it as an Appendix, or by structuring the document in two parts: PART 1 (revised contents of Assignment 1) and PART 2 (contents of Assignment 2). As addressing the feedback is mandatory, we require to highlight in blue text the parts of Assignment 1 that you have changed to address your tutor's feedback.
- **Section 1: Software decomposition of business services** [see material Week 6]**:** illustrate your business services as a collection of software service candidates, and map software service candidates on service types (from the perspective of the business service provider).
- **Section 2: Participant service inventory identification** [see material Week 6]:
  identify the service inventories for each participant.
- **Section 3: Service contract identification** [see material Week 6]:
  identify the service contracts necessary for realizing the business services
- **Section 4: Business service network** [see material Week 6]:
  model the business service network in SoaML
- ~~**Section 5: Service interactions and behavior** [see material Week 6, (optional section)]: [1] define the contract-based interactions and model the services behavior with UML Sequence Diagrams.~~
- **Section 6: Design view** [see material Week 7]:
  provide one design view illustrating a key functionality of your design solution.

The following sections provide further details on what should be delivered for each of the items above.

**1. Software decomposition of business services**

Given your business services, you should identify a collection of software service candidates that realize those business services. To identify software service candidates, you need to identify clusters of functionality in one or more business service behaviors modeled by using activity diagrams in Assignment 1. The clusters of functionalities representing the business services should be shown by dashed boxes that group the elements of the activity diagrams (see output of Assignment 1).

In addition, you should map software service candidates to service types, i.e., task, entity, utility, or hybrid service. Note that in this mapping you should consider the perspective of the business service provider. Each business service should be defined as in Table 1. Describe the mapping of software service candidates on service types using a picture similar to the examples in the theory lecture (see lecture week 6).

[1] This part of the theory is not required in the assignment.

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**Table 1: Business Service Definition**

| Field | Description |
|---|---|
| ID | ID of this business service (as defined in your Assignment 1, e.g., bs-09-request-tax-refunding) |
| Name | Name of this business service (as defined in your Assignment 1, e.g., bs-CheckProgress) |
| Business Service Behavior | The activity diagram representing the business service behavior (as defined in your Assignment 1), together with the clusters of the functionality (see example in lecture week 6, step 1). |
| Software Service Candidates | The name and ID of each composing software service candidate, e.g., Notification (ss-03-notification) |
| Diagram | Graphical representation of mapping the software service candidates to service types (see example in lecture week 6, step 1) |

**2. Participant service inventory identification**

Given your candidate software services and the involved participants in the business services (as defined in Assignment 1), you should identify the service inventories for each of the participants. You should also map the services of each participant inventory to service types, considering the participant's perspective. Note that, because of the difference in the perspectives of your business service provider and other participants (e.g., municipality, cloud service provider), the types of software services that you have identified in Section 1 might change. Each service inventory should be documented by using Table 2.

**Table 2: Service Inventory Definition**

| Field | Description |
|---|---|
| ID | Give an ID to this service inventory, e.g., inv-02-SecurityServiceProvider |
| Name | Give a short name for this service inventory, e.g., Security Service Certifier |
| Participant | Name of the Participant |
| Constituent Software Service Candidates | Name and ID of each software service candidates, e.g., Authorization (ss-07-authorization) |
| Diagram | Graphical representation of mapping the inventory's software services to service types (see example in lecture week 6, step 2) |

**3. Service contract identification**

After identifying the service inventories of each participant, you should map all software services of each business service to participants. This way, the interactions across participants' services should be defined. Service contracts are defined by considering the interactions across participants. Describe the mapping of all software services to participants using a picture similar to the examples in the theory lecture (see example in lecture week 6, step 3). Here, you should specifically represent the cross-domain service interactions (see example in lecture week 6). Each service contract should be documented using Table 3. You should model each contract using the SoaML Service Contract diagram.

**Table 3: Service Contract Definition**

| Field | Description |
|---|---|
| ID | Give an ID to this service contract, e.g., cn-01-notification |
| Name | Give a short name for this service contract, e.g., notification |
| Involved Participants | List of participants |
| Service Structure diagram | Model the service contract using SoaML Service Contract diagram |

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**4. Business service network**

Given the participants of each business service and the service contracts among them, you should define the service network of each business service. The business service network should be modeled using a SoaML Services Architecture diagram.

~~**5. Service interactions and behavior (optional section)**~~

~~Given the Participants of each business service and the Service Contracts among them, you should define the Contract-based interactions for each service contract. The Contract-based interactions should be modeled using SoaML Services Choreography diagram (Step 5a-Lecture week 6). Furthermore, you need to model how each (realized) software service behaves using UML Sequence Diagram (Step 5b-Lecture week 6).~~

**6. Design view**

Illustrate a key aspect of your design solution in a software design view. This can focus on a concern, or a set of concerns, of your choice, these being technical or related to sustainability aspects. Provide an overlay text to introduce the view and help understanding how your design solution satisfies the illustrated concern(s).

**Deadline for submission in Canvas**

Friday October 27, 23:59
(grace period until Sunday October 29, 23:59)