

## Assignment 1: Design Space

This assignment refers to the case “*Fighting Malnutrition in a Changing Climate*”. Your project report will be structured according to the sections described in this document and reporting the key characteristics of your design. All diagrams should be drawn by using a software modeling tool supporting UML, for instance [diagrams.net](https://diagrams.net).

**Note that each section should carry the name of the individual group member responsible for its quality (e.g., Section 1, Business Domain [Tom de Kat]).** Alternatively, you can choose to provide an overview of Group Responsibilities in the beginning or end of the document, e.g., as follows:

Section	Team member
Section 1: Business domain	Tom de Kat
Section 2: Functional Requirements	Jerry Mouse

**Selection of target usage scenario/s<sup>1</sup>:** Before you get started, choose the problem you want to focus on, defined in terms of your target participants and the usage scenario/s involving these participants. For the assignment, you must consider the *problem* you chose.

### Project report structure:

- **Section 1: Business domain:** [see material Week 1 and Week 2 (step 0)]  
Your business domain must be described through the following two parts:
  - Description of the ‘usage scenario’ that you will consider and that elaborates on the general functionality you chose. You are encouraged to include new ideas!
  - Identification of the ‘participants’ that interact to realize these scenarios. These participants should comply with the ones mentioned in the case description, and add (if applicable) new stakeholders and/or users. Participants should be visualized in a business domain model and be complemented with a table explaining each participant and their role in detail.
- **Section 2: Functional requirements:** [see material Week 1]  
Given the *problem* you chose, you should identify and describe the two<sup>2</sup> core functional requirements of your service-based application. Each functional requirement should be associated with a unique identifier and short name (e.g., FR1-CheckProgress).
- **Section 3: Quality requirements:** [see material Week 1 and Week 2]  
Identify and describe the two most important quality requirements (or service aspects) that are relevant for the *problem* you chose. Similar to functional requirements, associate each quality requirement with a unique identifier and short name (e.g., QR1-maintainability).

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<sup>1</sup> Depending on the chosen problem scope, you can select one or multiple scenarios.

<sup>2</sup> At least one per team member (i.e., at least 2 for teams of two students, 3 for teams of three, etc.)

- **Section 4: Business services:** [see material Week 2 (step 1+2)]  
After documenting your requirements, you should identify and explicitly document the core Business Services from your functional requirements. The description should follow the format reported in Table 1.

**Table 1: Business Service Description Template**

Field	Description
Unique ID	Give a unique ID for this business service
Short Name	Give a short name for this business service
Involved Participants	Specify the participants involved in this business service
Detailed Operational Description	Give a textual description of the business service
Service Behavior	UML activity diagram illustrating the behavior of the business service
Service Candidates Decomposition	UML use case diagram illustrating the decomposition of services into service operations
Data Model <sup>3</sup>	UML class diagram illustrating the identification/extension of service candidates managing data

- **Section 4 (cont.): Context:** [see material Week 2 (step 3)]  
Conclude this section with the context model for your service candidates. To this aim, use a UML use case diagram. If needed, update your business domain model (provided in section 1).
- **Section 5: Design space:** [see material Week 4]  
Given the business services you have identified in Section 4 and your selected service aspects, you should identify the one most important *design concern* you plan to address. This concern should be described according to the AK design-space modeling template (AK-SPAM<sup>4</sup>). This section should also include a visual representation of the concern with the QOC notation. Notice that, if more (or different) quality requirements are needed for the AK-SPAM, Section 3 should be updated to document them. Also, the QOC should always include at least three options. Note: How the accepted options are reflected in the project (e.g., in terms of additional services, stakeholders, etc.) should be reflected in the deliverable for consistency.
- **Section 6: Sustainability strategies:** [see material Week 5]  
Identify and describe a sustainability strategy that (if adopted) facilitates accomplishing a specific sustainability goal that is realized through, or concerning, service-based systems. The sustainability strategy should follow the format reported in Table 2. It should also be mapped to at least one QOC diagram and AK-SPAM from section 5, i.e., related elements in these two sections should reference each other.

<sup>3</sup> If not relevant for all business services, you can choose to illustrate the Data Model only once at the end of Section 4, or just for those business services where appropriate. In any case, the identified (entity) services should be included in the service candidates' decomposition.

<sup>4</sup> The AK-SPAM template is available on Canvas (Files > Templates > AK\_SPAM.xls).

**Table 2: Strategy Description Table**

Field	Description
Unique ID	Unique ID for this strategy
Short Name	Short name for this strategy
Description	Description of the strategy in terms of goals and actions
Type of Strategy	Specify the type of strategy (service awareness or people awareness)
Relevance for Business Domain	Give a justification of the relevance for your business domain
Diagram	Graphical representation of the strategy (as seen in the theory lecture)

**Deadline for submission at Canvas**

Friday October 6, 23:59  
(grace period until Sunday October 8, 23:59)