

Mini-Project Zoo Management

The director of the Zoo wishes to implement a software system in order to assist the main processes taking place in the Zoo.

First of all the system is used by the cashier to sell tickets. Students, soldiers, retirees and groups larger than 10 persons benefit from reductions. The Zoo's top attractions are the reptilarium and the aquarium that need additional tickets. The system should allow the cashier to enter the details needed for the ticket, compute the total price and print the ticket. The visitors can pay either in cash or using a credit card.

Second the system should be used by the administrator to manage the park's assets. Animals live in paddocks of different sizes, grouped by their species and zone of origin. The system stores the status of each animal (age, default location), computes the daily running costs (water for aquariums, food) and can be easily updated if a change takes place (a new animal is born/bought, death of an animal, relocation to another paddock).

Third, the system should monitor the presence of the animals in their paddocks or cages. For this, little RFID tag-based devices attached to animals and a wireless networks of RFID readers installed for completely covering the paddock or cage, detect their presence and transmit identification information to a central server connected to the Zoo's wireless network at predefined time intervals.

Fourth, the system should present at midnight of the last day of each month a summary: how many tickets were sold, what types of tickets, total sum etc. For this the system must store all the information about the sold tickets. The system administrator can also query the system to show the location of an animal or a history of its movement in the last week. For this the system must store all the information about the animal movements.

This Zoo wants to enter a worldwide Zoo program in which resorts all over the world change information about their live stocks, allowing exchanges of animals and of best practices. For example, in case of mating rare animals, a Zoo can search potential mates in the affiliated Zoos.

Work Packages:

A. WP1-Systems Engineering Methodology:

- A1 Partition the current system according the processing and the processor views in a System Modeling Template
- A.2 Draw the Architecture Flow Context Diagram for the system

B. WP2-Structured Methodology:

- B.1. Define the environmental and behavioral model for the information system
- B.2. Starting from the level 3 DFD, propose a design model based on transformational and/or transactional flows.

C. WP3-Enterprise Wide Methodology:

- C.1. Draw the activity diagrams for the main business process
- C.2. Map the enterprise organigram and specify the business functions of each division.

D. WP4-Object-Oriented Methodology:

- D.1. Draw the domain model for the business.
- D.2. Draw the Business Use Case Diagram
- D.3. Interaction diagrams for the main business scenarios
- D.4. For the software use case of **TBD** write the use case description, system sequence diagram and describe an operation using an operation contract.
- D.5. Propose a software architecture for the system, arguing for the design decisions you have made.

D.6 Draw the statechart for a **TBD** object lifecycle.

TBD: The task will be assigned after the instructors examined your work package deliverable. Then, a complete version of the work package deliverable will be released .