

Requirements Analysis and Specification

Summer Semester 2004/2005

Assignment II

Deadline 06.04.2005

Freud 77 is a mobile phone that includes the following parts:

1. A speaker as display device for acoustic information. For instance, the remote user's voice and alert signals.
2. A keyboard that allows dialling numbers and composing messages. The keyboard is combined with a light mechanism for enlightening it. This light is turned on either when the user is interacting with the device or when there is an incoming signal (call, messages, etc.).
3. A microphone that serves as input device for acoustic information.
4. A vibrator that may be turned on or off. The vibrator is in exclusive relationship with the speaker. That is, information is sent either to the speaker or to the vibrator, not to both.
5. A SIM card reader for extracting data from submitted SIM cards. The SIM card may not only include some authentication data, but also some additional storage for user data.
6. An antenna for communicating with the telecommunication provider.
7. A fascia display where various information are presented to the customer.
8. A clock mechanism.
9. A battery for alimenting the whole mobile phone apparatus.

Freud 77 is supplied by a manufacturer and includes all control mechanisms and computing resources, but no software. The task is to analyze the requirements of a software system (the mobile phone control machine) for this mobile phone. The following basic features (that are clearly not complete) are given by your customer:

1. When the mobile phone is not in use, only the current time should be displayed.
2. A key combination must be provided for checking the status of the battery.
3. Whenever there is an incoming call, the number of the caller has to be displayed on the fascia display.
4. It should possible to forbid some outgoing calls (e.g. international calls) or incoming calls.
5. The address book must be stored on the SIM card.
6. SIM cards are protected by means of pin codes. The pin code of the user should not be visible on the fascia display while being entered.
7. Any information other than the pin code has to be displayed appropriately.
8. Any message sent from Freud 77 must include the sending date and time.

Questions

1. Construct the context diagram of the Freud 77 machine. At least 10 domains must be identified in this context diagram. The projection, connection domain, and containment concepts may be used to keep the parts of the context diagram within reasonable size.
2. Augment the context diagram of question 1 with at least 15 requirements. At least 5 requirements must be those identified in assignment 1 (question 4) as not suitable to be captured using use cases.
3. Decompose the above problem diagram into sub-problems that fit the problem frames (or their variants) presented in the lecture. In each case, describe exactly why each subproblem fits the chosen frame.
4. Add the concerns (machine specification, domain description, user requirements) to the subproblems of question 3.