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Short summary about use cases and their relationship with requirements

Steps when formulating use cases

- First step: name the use case
  - Use case name: ReportEmergency
- Second step: Find the actors
  - Generalize the concrete names (“Bob”) to participating actors (“Field officer”)
- Third step: Then concentrate on the flow of events, entry and exit conditions
  - Use informal natural language
- Fourth step, focus on exceptional cases and special requirements

How to specify a use case (summary)

- Name of Use Case
- Actors
  - Description of Actors involved in use case
- Entry condition
  - “When this use case starts the following condition is true…”
- Flow of Events
  - Free form, informal natural language
- Exit condition
  - “This use case terminates when the following condition holds…”
- Exceptions
  - Describe what happens if things go wrong
- Special Requirements
  - Nonfunctional Requirements, Constraints

Use cases to functional requirements

- Each use case may lead to one or more requirements
- Examples from ReportEmergency and AllocateResources
  - FRIEND shall support Field Officers in reporting an emergency
  - FRIEND must have a response time lower than 30 seconds when reacting to emergency-related requests
  - FRIEND shall support Dispatchers in allocating the resources to the incident
- The corresponding use cases will then describe in detail how the requirements are fulfilled

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Examples of scenarios and use cases

Scenario on scheduling appointments (1/2)

- Luigi , has just received a phone call from his boss informing him that a meeting has been planned for the following day, from 1 PM to 3 PM. His current schedule for that day is:
  - 8:00-13:00: Working on the project (FixedTimeEvent: Working Event) (held at home)
  - 13:30-14:30: Lunch time (FlexibleTimeEvent: Personal Event, minimum length: 30 min) (held anywhere)

Scenario on scheduling appointments (2/2)

- Luigi opens his mobile application, logs-in and inserts this new event from the homepage.
  - He selects the type of the event choosing working and then meeting from the list
  - He adds a brief description of the meeting (Meeting with Boss).
  - He then adds 13:00 as starting time and 15 as ending time, setting home as the starting location from which he will go to the meeting and Harrison street as location for the event.
- The system calculates the possible paths from home to Harrison street, shows them to the user and confirms that there is enough time to get to the meeting place on time
- Since lunch time overlaps with this new event the systems also throws a warning stating:
  - "Lunch time" overlaps with ”Meeting with Boss"

Use case Insert Fixed Time Event (1/2)

Name	Insert Fixed Time Event
Actor	User
Entry condition	The User knows everything about the meeting he wants to plan.
Event Flow	1. In the homepage, the User clicks on the "Insert Event" button entering in the event creation page. 2. The User selects the type of event, by choosing it in a tree-like structured list, deciding to select as a top level of hierarchy, a working, personal or customized event. 3. The User gives a brief description of what the event will be about. 4. The User inserts the starting time, up to minutes precision, from a list box in order to avoid time not in the interval [00:00 - 23:59]. 5. The User inserts the ending time with the same procedure as the previous one, leaving the "flexible option" unchecked since he wants to insert a fixed time event. 6. The User inserts the starting position by giving the address or sharing the current position with the system using GPS technology. 7. The User inserts the position in which the event will take place. 8. The User clicks on the "Confirm" button 9. The system calculates different travel paths according to the preferences of the user. 10. The system places the event in the calendar together with the information about how to reach it from the starting location

Use case Insert Fixed Time Event (2/2)

Exit condition	The event is in the User timetable. If there are overlaps with other events, they will be shown as warnings.
Exception	The system identifies an overlap with an event that is already in the calendar (in computing overlaps the system takes into account also the time needed to move from one location to the other) and shows them as warnings to the User offering the possibility to modify the schedule. User cannot find the event type he is looking for. In this case the User is able to insert a new type of event, exploiting the "Insert new type of event" functionality and than back to step one on the flow of event
Special Req	The daily timetable must be updated in less than 1 second.