Comet Patient Monitor

Use Case Model

Team Members:
Patrick Haring
Christian Bürgi

Client:
Prof. Dr. Olivier Biberstein

Revision: 101

May 11, 2012

https://svn.bfh.ch/repos/projects/patmon1/trunk/doc/src/use_case_model.tex?p=101

Contents

1 Actors

1.1 List of actors

Actor	Type	Description
Doctor	primary	*Doctor*s are employees of the hospital. They are specialists in their domain but not as computer users. *Doctor*s use the system as a tool in daily work for monitoring *patient*s.
Administrator	primary	The *administrator* is an employee of the hospital as well. He is responsible for the hospital's IT systems to work. He configures the system for the *doctor*s to work with. He is not a *doctor*.
OT-Logger	supporting	The *OT-Logger*s are devices which are used to monitor *patient*'s temperatures over a period of time. They can be remotely polled by the system. A device can only be reused after appliance on a *patient* if the device was reset.
Patient	off-stage	*Patient*s have the monitoring device attached for a period from a few days to a few weeks.
Email-Server	supporting	The *email-server* will send the activation code for the first authentication of the *doctor* against the server.

1.2 Primary actor goals

Doctor:

A *doctor* uses the system to assign a device to a *patient* for an observation period. During the period and after it has ended, he consults the system to inspect the recorded data. After the observation period has completed he wants to reset the devices and prepare them thereby for reuse.

Administrator:

The *administrator* wants to create and delete accounts for the *doctor*s.

2 Use cases (brief)

2.1 Doctor

Assign device: In order to start a monitoring period, the *doctor* has to assign a monitoring device to the *patient* in the system. The *doctor* looks up the *patient*'s profile. He chooses the option to assign a device to this *patient*. He enters the device's data. The system checks, if the device is ready for assignment (i.e. that it is not assigned yet). Then he enters the monitoring period's parameters. The system configures the device and saves the configuration internally.

Consult monitoring data: As soon as the monitoring device reports data to the system, the *doctor* is able to see a report of the data, which has been recorded so far. After the monitoring period has ended, he can consult a detailed report of the period.

Reset device: When a *patient* returns his monitoring device, the *doctor* has to reset the device. He enters the device's number and chooses it to be reset. This procedure is even possible if the monitoring period has not ended yet.

Register patient: For registering a *patient* in the system the *doctor* enters the *patient*'s social security number. The system checks, if the *patient* is already registered. If the *patient* is not already in the system, the *doctor* enters all the necessary data about the *patient* and the system stores it internally.

Authenticate against system: The *doctor* authenticates against the system by entering his email address and password. If his account is decativated, he has to enter the activation code he received by email. This procedure is necessary to verify the *doctor*'s email address.

2.2 Administrator

Create account: A new *doctor* has to be registered in the system. The *administrator* enters the *doctor*'s name and mail address. The system presents the entered information. The *administrator* verifies it and confirms that to the system. The system creates an account with a random initial password and presents after successful creation the full account data to the *administrator*. He records the initial password which he has to give to the *doctor* in person. There is also an email sent to the entered account email by using the *email-server*. It contains an activation code, which is used by the *doctor* for his first login.

Delete account: A *doctor* has to be deleted from the system. The account can only be deleted if it was disabled (and not enabled again) for a given period. The *administrator* archives the data of the *patient*s, which are referenced to this account

and deletes the *doctor*'s account. By deleting a *doctor*'s account the system also deletes all corresponding *patient* data (in the system).

Disable account: An account of a *doctor* has to be disabled. The *administrator* disables the login of the *doctor*. Thereby the account is also deactivated (when enabled again, the *doctor* needs to reactivate the account). The system notifies the *doctor* by means of an email via the *email-server*.

Enable account: A disabled account of a *doctor* has to be enabled again. The System generates a new activation code and sends it via the *email-server* to the *doctor*. If necessary, he also resets the *doctor*'s password.

Reset password: A *doctor*'s password has to be changed. The *administrator* generates a new password and gives it to the *doctor* in person.

Authenticate against System: The *administrator* authenticates against the system by entering his email address and password.

3 Use cases (fully-dressed)

3.1 Use Case UC1: Assign device

Scope: Comet Patient Monitor

Level: user goal

Primary actor: *Doctor*

Preconditions: *Doctor* is authenticated against the system. *Patient* is registered in the System.

Postconditions: The monitoring device is assigned to the *patient*. The device will monitor the temperature during a given period.

Main success scenario:

1. *Doctor* enters the *patient*'s name and/or social security number into system.
2. System looks up matching *patient* profiles and displays them to the *doctor*.
3. *Doctor* selects the appropriate *patient* profile.
4. System displays detailed version of the selected profile.
5. *Doctor* enters the device identification number into the system.
6. System checks if the device is already assigned to a *patient*.
7. *Doctor* enters the beginning and the end of the observation period into the system.

8. System verifies that the entered data is a valid observation period.
9. *Doctor* enters the frequency by which the measures have to be performed.
10. System configures the device.
11. System saves assignment of the device to the *patient*.

Extensions:

*a. At any time, *doctor* cancels assignment operation.
    1. System discards all entered data.

2a. No profile is found.
    1. System signals error and reverts to step 1 in main scenario.

2b. Correct *patient* profile is not found.
    1. *Doctor* verifies entered data.
        1a. *Patient* is not registered (violation of precondition!):
            1. *Doctor* cancels assignment operation and proceeds with UC4.
    2. *Doctor* proceeds with step 1 in main scenario.

4a. *Doctor* selected wrong *patient* profile.
    1. *Doctor* cancels assignment to selected profile.
    2. System reverts to step 2 in main scenario.

6a. Device is already assigned.
    1. System signals error.
    2. *Doctor* gets a different device.
    3. System reverts to step 5 in main scenario.

8a. Invalid observation period.
    1. System signals error and reverts to step 7 in main scenario.

10a. Error while configuring the device.
    1. System signals error.
    2. *Doctor* marks device as faulty and sends it to reparation.
    3. *Doctor* gets a different device.
    4. System reverts to step 5 in main scenario.

3.2 Use Case UC2: Consult monitoring data

Scope: Comet Patient Monitor

Level: user goal

Primary actor: *Doctor*

Preconditions: *Doctor* is authenticated against the system. *Patient* is registered. There is monitored data in the system.

Postconditions: *Doctor* has been presented a report over the monitored data.

Main success scenario:

1. *Doctor* enters the *patient*'s name and/or social security number into system.
2. System looks up matching *patient* profiles and displays them to the *doctor*.
3. *Doctor* selects the appropriate *patient* profile.
4. System displays detailed version of the selected profile and all monitoring periods which are assigned to the profile.
5. *Doctor* selects the monitoring period he's interested in.
6. System displays the data of the monitoring period.

Extensions:

*a. At any time, *doctor* cancels consult operation.
    1. System discards all entered data.

2a. No profile is found.
    1. System signals error and reverts to step 1 in main scenario.

2b. Correct *patient* profile is not found.
    1. *Doctor* verifies entered data.
        1a. *Patient* is not registered (violation of precondition!):
            1. *Doctor* cancels assignment operation and proceeds with UC4.
    2. *Doctor* proceeds with step 1 in main scenario.

4a. *Doctor* selected wrong *patient* profile.
    1. *Doctor* cancels assignment to selected profile.
    2. System reverts to step 2 in main scenario.

3.3 Use Case UC3: Reset device

Scope: Comet Patient Monitor

Level: user goal

Primary actor: *Doctor*

Preconditions: *Doctor* is authenticated against the system. *Patient* is registered. Monitoring device is assigned to the *patient*.

Postconditions: Monitoring device is reset to initial state and ready to be assigned to another *patient*.

Main success scenario:

1. *Doctor* enters the device identification number into the system.
2. System verifies that the device is in an assigned state.
3. System displays *patient*'s profile to which the device is assigned.
4. *Doctor* confirms the reset of the device.
5. System resets the device.
6. System saves the reset of the device.

Extensions:

1-3a. At any time, *doctor* cancels reset operation.

1. System discards all entered data.

2a. Device is not assigned.

1. System signals error and reverts to step 1 in main scenario.

3a. *Doctor* entered wrong device identification number.

1. *Doctor* cancels reset of the device.
2. System reverts to step 1 in main scenario.

5a. Error while resetting the device.

1. System signals error.
2. *Doctor* marks device as faulty and sends it to reparation.
3. System continues with step 6 in main scenario.

3.4 Use Case UC4: Register patient

Scope: Comet Patient Monitor

Level: subfunction

Primary actor: *Doctor*

Preconditions: The *doctor* is authenticated against the system.

Postconditions: The *patient* is registered in the system.

Main success scenario:

1. *Doctor* enters the social security number of the *patient*.
2. System verifies entered data.
3. *Doctor* enters additional *patient* data such as name, address and phone number.
4. System saves *patient*.

Extensions:

*a. At any time, *doctor* cancels registration.
    1. System discards all entered data.

2a. *Patient* with given social security number already registered.
    1. System signals error and rejects entry of additional *patient* data.
    2. *Doctor* responds to the error:
        2a. *Doctor* entered wrong social security number:
            1. *Doctor* corrects social security number.
            2. System proceeds with step 2 in main scenario.
        2b. *Patient* is already registered:
            1. *Doctor* cancels registration.

2b. Social security number is invalid.
    1. System signals error and reverts to step 1 in main scenario.

3.5 Use Case UC5: Authenticate against system

Scope: Comet Patient Monitor

Level: subfunction

Primary actor: *Doctor*

Preconditions: *Doctor* is registered in the system.

Postconditions: *Doctor* is authenticated against the system.

Main success scenario:

1. *Doctor* enters his credentials (email address and password).
2. System checks credentials.
3. System sets *doctor* authenticated for current session.

Extensions:

1a. *Doctor* aborts authentication:

    1. System terminates authentication operation.

2a. Credentials are not correct.

    1. System displays error message.
    2. System reverts to main scenario step 1.

2b. Account is disabled.

    1. System displays error message.
    2. System reverts to main scenario step 1.

2c. *Doctor* has not been activated yet (but credentials are correct and account is enabled!):

    1. System requests activation code.
    2. *Doctor* enters activation code he received by email.

        2a. *Doctor* aborts activation

            1. System proceeds with "*Doctor* aborts authentication"

    3. System checks code.

        3a. Activation code is wrong:

            1. System presents error message
            2. System reverts to step 2 (*doctor* enters activation code)

4. System activates the *doctor*'s account.
5. System continues with main scenario step 3.

4 Use case diagram