Document release

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|  | ***Name and Surname***  ***Role - Entity*** | ***Signature*** | ***Date*** |
| ***Written by*** | Ing. XXXXXX Product specialist - KIRANET srl. |  |  |
| ***Reviewed by*** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Product Specialist - KIRANET srl. |  |  |
| ***Approved by*** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Quality Assurance - KIRANET srl. |  |  |

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Versions History

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| --- | --- | --- | --- |
| ***Version*** | ***Date*** | ***Description*** | ***Author*** |
| 00 | 12-23-2021 | First issue   * Subdivision into User Stories starting from the reference document: *K01588.UCR.06*.   No changes have been made to the analysis already done. | XXXXXX |
| 01 | 01-19-2022 | Second issue   * The following user stories have been removed:   + US0: Configuration;   + US3: Scheduling of a discovery request. * The following mockups have been removed: 001, 002, 003, 004, 005, 006, 007, and 008. * The following use cases have been removed:   + US1.002: Add vital sign values to a hospital medical record. * The following use cases have been changed:   + US1.001: Access vital signs;   + US2.003: Access a patient's alert details.   + CPM:US2.001–Access alerting configuration. | XXXXX |

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# Introduction

## Purpose

This document is intended to describe the use cases of the FIDCPM project created by KIRANET s.r.l. (often for simplicity, also just "KIRANET").

## Description

Clinical Parameter Manager (CPM) allows the management of vitals, which can take place in the home environment. In particular, it will be possible:

* Display the list of values carried out for each vital;
* Add a measurement;
* add or modify the alerting parameters for a patient;
* Display the graphic trend of vitals' values.

Regarding the home environment, the vitals measurement takes the name of "Telemonitoring." In this case, we will have the following:

* Devices that make up the KIT assigned to the patient.
* An Android App called Fidcare.
* A Fidcare module called CPM.

This document only describes the use cases related to the CPM module.

The devices that make up the different KITs assigned to the patient are the following:

* Sphygmomanometer for detecting maximum and minimum blood pressure and heart rate.
* Pulse oximeter for detecting blood oxygenation and heart rate.
* ECG for monitoring the heart's electrical activity and rate through heart tracing.
* Balance for measuring weight.

Upon first use, it is necessary to detect the QR code of the KIT supplied to the client through the Fidcare app to associate the patient with the KIT. Following this association, it is possible to associate each device with the app via Bluetooth. In this way, sending the data detected by the app to the FIDCARE platform is possible after the device has been detected.

In the patient's medical record, in the 'Vitals' tab are the following sections: 'Measurements' and 'Alerting parameters.' The 'Measurements' section shows the list of measurements for each parameter, both those added manually or sent by the app. It is also possible to view their graphical trend. In the 'Alerting parameters' section, the minimum and (or) maximum thresholds are added from which an alert is generated, or the previously configured ones can be modified. Furthermore, when an alert is activated, an alert notification is sent to the doctor, patient, and (or) caregiver.

## Definitions, Acronyms and Abbreviations

Below are all the definitions, acronyms, and abbreviations required to interpret the document correctly.

| **Definitions** | |
| --- | --- |
|  |  |

| **Acronyms** | |
| --- | --- |
| **CPM** | Clinical Parameter Manager |

## Reference Documents

Internal documents:

* K01719.UCR.00
* K01719.SDD.02

External documents:

* IEEE/ANSI 830-1993 “IEEE Recommended Practice for Software Requirements Specifications”
* FDIS 12207, Systems and software engineering - Software life cycle processes
* Using a Single Business Pattern with the Rational Unified Process (RUP), IBM Redbooks Paper
* From Waterfall to Iterative Development – A Challenging Transition for Project Managers
* IBM Rational Unified Process, <http://www-128.ibm.com/developerworks/rational>
* Applying Requirements Management with Use Cases, IBM Rational

# Preliminary assumptions

The following Component Diagram shows the interactions between the CPM microservice and the other microservices in the system.

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Diagram 1: Component Diagram

# Actors

This section describes the actors in the use case model and how they are involved. In particular, users of the system are to be considered the actors assigned to a group of:

* **Nurses** who carry out the vitals measurements.
* **Social health operators/caregivers** who carry out the vitals measurements (only in the context of the home records);
* **Patients** who carry out the vitals measurements (only in the context of the home records);
* **Doctors** who carry out the vitals measurements and customize the alerts for patients. The professional figure includes family doctors.

# User stories to refine

## User Story 1: Vitals management

Vitals management is a Doctor's responsibility. It consists of accessing the user interface containing the vitals' measurements carried out, adding a new vital measurement to the patient's health dossier, and graphically displaying the trend of a vital sign measured over time.

The use case diagram for the first user story is as follows:

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Diagram 2 Use Case Diagram: User Story 1

### CPM:US1.001– View vitals measurements

|  |
| --- |
| CPM:US1.001– View vitals measurements |
| **Description:** The user selects the vitals measurements page, where: there is a list of measurements for each previously configured vital parameter, and accesses the alerting parameters for a patient. |
| **Actors:** Doctor, nurse, social and health workers (only for home records), Caregivers (only for home records), Patient (only for home records) |
| **Precondition** |
| **Main scenario:**   1. The user selects the 'View vitals measurements' tab for the given Patient. 2. The system searches for the measurements and displays the result list. 3. The actor browses the results. |
| **Alternative flows**  **Alternative flow no. 01**   1. If at step 3 of the main scenario, the actor selects the sub-option 'Add a measurement,' include the use case **CPM:US1.002– Add a measurement.**   **Alternative flow no. 02**   1. If at step 3 of the main scenario, the actor selects the ‘display trend,’ include the use case **CPM:US1.003– Display the graph of the measurements.** |
| **Exceptions** |
| **Reference tables:** Table 1 |
| **Reference diagrams** |
| **GUI:** Fig. 1 GUI001 |

Table 1 View vitals measurements

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Fig. 1 GUI001

### CPM:US1.002– Add a measurement

|  |
| --- |
| CPM:US1.002– Add a measurement |
| **Description:** The user adds a vital signs measurement to the patient's home medical record. |
| **Actors:** Doctor, nurse, patient, caregiver, social health operator |
| **Precondition** |
| **Main scenario**   1. The user clicks "New measurement". 2. The system displays a form in which it is possible to select the desired measuring instrument. 3. The user selects the desired measuring instrument. 4. The system searches for and lists the Vital Parameters with the specified measuring instrument ID. 5. The user fills in the fields. 6. The user presses the “Save” button. 7. The system saves the changes for the new Measurement to the list of measurements for the selected vital parameter. 8. The system displays the message "The measurement has been saved correctly". 9. The system displays the refreshed list of measurements with the new measurement. |
| **Alternative flows**  **Alternative flow no. 01**   1. At step 4 of the main scenario, the user presses the button “Cancel”. 2. The system closes the form. |
| **Exceptions** |
| **Reference table:** Table 2 |
| **References Diagrams** |
| **GUI:** Fig. 2 GUI002 |

Table 2 Add a measurement

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Fig. 2 GUI002

### CPM:US1.003– Display the graph of the measurements

|  |
| --- |
| CPM:US1.003– Display the graph of the measurements for a vital parameter |
| **Description:** The user views the graph for vital. |
| **Actors:** Doctor, nurse, Social health operator, caregiver, patient. |
| **Precondition** |
| **Main scenario:**   1. The user selects “Display measurement graph for vital” for the given parameter. 2. The system searches the Measurements for the given vital parameter and displays the related graph, having the measures on the ordinates, and the date-time on the abscissas. |
| **Alternative flows** |
| **Exceptions** |
| **Reference Tables:** Table 3 |
| **Reference Diagrams** |
| **GUI:** Fig. 3 GUI004 |

Table 3 Display the graph of the measurements for a vital parameter

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Fig. 3 GUI004

### CPM:US1.004– Add an automatic measurement

|  |
| --- |
| CPM:US1.004– Add an automatic measurement |
| **Description:** The user measures vitals using sensors. |
| **Actors:** Patient, Sensor Device, Mobile App |
| **Precondition** |
| **Main scenario:**   1. The user uses an instrument from the kit to measure a vital sign. 2. The Sensor Device sends the raw data to the Mobile. 3. The Mobile App requests the System to save the measurement data. 4. The system saves the measurement. 5. The system sends the Mobile App the envelope data of the operation. 6. The mobile App displays a message to the user to inform him (or her) that the data have been saved. |
| **Alternative flows** |
| **Exceptions** |
| **Reference Tables:** Table 4 |
| **Reference Diagrams** |
| **GUI:** Fig. 4 |

Table 4 Add an automatic measurement

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Fig. 4 GUI003.1

## User Story 2: Alert management

Alert management is the responsibility of the Doctor. It consists of listing all the configured alerts, adding a new alert, displaying the details, and editing or deleting an existing alert.

The use case diagram for the second user story is as follows:

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Diagram 3 Use Case Diagram: User Story 2

### CPM:US2.001– List all alert parameters

|  |
| --- |
| CPM:US2.001– List all alert parameters |
| **Description:** The user selects the "Thresholds" tab, which contains the alerts associated with a desired vital parameter. |
| **Actors:** Doctor |
| **Precondition:**   1. The user selects the "Thresholds" in a patient's medical record. |
| **Main scenario**   1. The user selects the "List all vitals" button to view all vitals. 2. The system searches and displays the list of vitals. 3. The user selects the desired vital sign. 4. The system searches and displays the list of alerts related to the given vital parameter. The list is sortable by "Name". |
| **Alternative flows** |
| **Exceptions** |
| **Reference Tables:** Table 5 |
| **Reference Diagrams** |
| **GUI:** Fig. 5 GUI005 |

Table 5 List all parameter alerts

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Fig. 5 GUI005

### CPM:US2.002–Add a new alert

|  |
| --- |
| CPM:US2.002–Add a new alert |
| **Description:** The user adds a new alert for the given vital sign in the patient's medical record. |
| **Actors:** Doctor |
| **Precondition**   1. The main scenario of CPM:US2.001 has been executed successfully. |
| **Main scenario**   1. The user clicks “Add alert”. 2. The system shows a form to add a new alert. 3. The user fills in the alert fields. 4. The user presses “Save”. 5. The system saves the changes. 6. The system shows a confirmation message, stating “The new alert has been saved”. The system returns to the results list of configured alerts. |
| **Alternative flows**  **Alternative flow no. 01**   1. At step 4 of the main scenario, the user presses “Cancel”. |
| **Exceptions** |
| **Reference Tables:** Table 6 |
| **Reference Diagrams** |
| **GUI:** Fig. 6 GUI007 |

Table 6 Add a new alert

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Fig. 6 GUI007

### CPM:US2.003–View alert details

|  |
| --- |
| CPM:US2.003–View alert details |
| **Description:** The user views the details of an alert for a patient's medical record. |
| **Actors:** Doctor |
| **Preconditions**   1. The main scenario of CPM:US2.001 has been executed successfully. |
| **Main scenario**   1. The user clicks the "View alter details" button relating to the alert of his (or her) interest. 2. The system searched for the alert with the given ID. 3. The system shows a page with the alert details. |
| **Alternative flows** |
| **Exceptions** |
| **Reference Tables** |
| **Reference Diagrams** |
| **GUI:** Fig. 7 GUI008 |

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Fig. 7 GUI008

### CPM:US2.004–Edit Alert details

|  |
| --- |
| CPM:US2.004–Edit Alert details |
| **Description:** The user changes the details of a given alert. |
| **Actors:** Doctor |
| **Precondition**   1. The main scenario of CPM:US2.001 has been executed successfully |
| **Main scenario**   1. The user clicks the sub-option "Edit alter details". 2. The system displays a page with the alert fields. 3. The user fills in the alert fields. 4. The user presses the “Save” button. 5. The system saves the changes. 6. The system displays a message indicating that the operation was successful. |
| **Alternative flows**  **Alternative flow no. 01**   1. At step 3 of the main scenario, the user presses “Cancel”. 2. The system returns to the results list of configured alerts. |
| **Exceptions** |
| **Reference Tables:** Table 7 |
| **Reference Diagrams** |
| **GUI:** Fig. 7 GUI008 |

Table 7 Edit Alert details

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### CPM:US2.005–Remove alert

|  |
| --- |
| CPM:US2.005–Remove alert |
| **Description:** The user removes an alert from the list of configured alerts. |
| **Actors:** Doctor |
| **Precondition**   1. The main scenario of CPM:US2.001 has been executed successfully. |
| **Main scenario:**   1. The user clicks the "Delete alert" button relating to the alert of his (or her) interest. 2. The system displays a pop up window to confirm the operation. 3. The user confirms. 4. The system removes the given alert. 5. The system shows the confirmation message “Alert removed”. |
| **Alternative flows:**  **Alternative flow no. 01**   1. At step 4 of the main scenario, the user does not confirm. 2. The system closes the pop up window. |
| **Exceptions** |
| **Reference Tables** |
| **Reference Diagrams** |
| **GUI** |