Clark

smart CLinic Assistant Robot for CGA

Knowledge Collection

Version 2.1, June 2016

Date	Activity	Source	Main Outcome
13/01/2016	**Name:** Meeting with the Head of the Technological Innovation Section and of the Information Security of the Virgen del Rocio and the Macarena University Hospitals. **Purpose:** Establish deadlines, work plan and tasks of the project.	**Dr. Carlos Luis Parra Calderón**, Head of the Technological Innovation Section and of the Information Security of the Virgen del Rocío and Macarena University Hospitals (Seville).	We established the internal execution of deadlines, work plan and tasks of the project for the SAS team and the involved Hospital Units.
18/01/2016	**Name:** Meeting with the Head of the Plan of Accident and Director of the Rehabilitation Unit of the Virgen del Rocío University Hospital. **Purpose:** Presentation of the CLARC project and establishment of effective working bases.	**Dra. Carmen Echevarría de Vargas**, Director of the Rehabilitation Unit of the Virgen del Rocío University Hospital (Seville).	This meeting established the bases of collaboration between the medical professionals of the Rehabilitation Unit and the SAS researchers on the project. It was agreed that medical professionals will provide the patients for testing the CLARC proposal on Phase I.
27/01/2016	**Name:** Meeting with medical professionals of the Rehabilitation Unit of the Virgen del Rocío University Hospital.	**Dra. Begoña Ferrer González, Dra. Beatriz Rendón Fernández**, medical professionals of the Rehabilitation	We agreed that the doctors give patients contact to the clinical researchers. The clinical researchers talk with patients and offer

	Purpose: Presentation of the CLARC project and to establish effective working bases.	Unit of the Virgen del Rocío University Hospital (Seville).	them be recorded performing the test defined in the CLARC project. This help us later to improve the robot skills.
03/02/2016	**Name:** Meeting with patients of the Virgen del Rocío University Hospital to record clinical tests. **Purpose:** To record patient movements and answers that help us to define the patient-robot interaction within CLARC.	Patients of the Virgen del Rocío University Hospital (Seville).	This meeting represented a great support to collect more information about future patient-robot interaction. Furthermore, it allows us to appreciate that for motion-based tests, such as the Tinetti balance one, we probably need another Kinect sensor.
15/02/2016	**Name:** Meeting with the Head of the Technological Innovation Section and of the Information Security of the Virgen del Rocio and the Macarena University Hospitals (Seville). **Purpose:** Establish deadlines, work plan and tasks of the project.	**Dr. Carlos Luis Parra Calderón**, Head of the Technological Innovation Section and of The Information Security of the Virgen del Rocío and Macarena University Hospitals (Seville).	We established the internal execution of deadlines, work plan and tasks of the project for the SAS team and the involved Hospital Units.
02/03/2016	**Name:** Meeting with medical professionals/physiotherapists of the Rehabilitation Unit of the Macarena University Hospital in Seville. **Purpose:** Presentation of the CLARC project and acquiring information about the procedure for performing the required clinical tests, with the aim of improving the way the robot will perform the tests.	**Dr. Manuel Rodríguez Piñero Durán**, Director of the Rehabilitation Unit of the Macarena University Hospital (Seville), and **Dra. Patricia Herrera**, physiotherapist of the Macarena University Hospital (Seville).	This meeting gives us more information about the normal procedure of the medical professionals when they perform a Barthel, MMSE or Get up & go test. We found similarities in the way to perform the clinical test between the medical professionals from the Virgen del Rocío University Hospital and the ones from the Macarena University Hospital. This help us to

			adequate the interaction of the robot to the way the medical professionals perform the tests.
03/03/2016	**Name:** Meeting with patients of the Virgen del Rocío University Hospital (Seville). **Purpose:** To see what is the level of knowledge about technology, to see how the patients interact with a tablet and to note future problems when the robot will have to perform the test without human help.	Patients of the Virgen del Rocío University Hospital (Seville).	We appreciate that there are old patients with serial difficulties in the interaction with a tablet or a robotic solution, so the commanded instructions must be very clear. In addition, we detected which the most difficult command in each test are, in order to explain very well the action or answer that the patient can give. Tests were initially defined according to the suggestions of the patients.
16/03/2016	**Name:** Tests definition **Purpose:** To determine the exact versions of the Barthel, MMSE o Get up & go tests to be performed within CLARC	**Dr. César Valdés**, Hospital Sant Antoni Abat (Vilanova i la Geltrú, Barcelona)	Dr. César Valdés sent us the precise versions of the tests. With this information and the suggestions captured at previous meetings (March 2-3), we start to work on the exact definition of the tests for CLARC.
17/03/2016	**Name:** Meeting with relatives of the patients of the Virgen del Rocío University Hospital (Seville). **Purpose:** To see what is the level of knowledge about technology, to see how the relatives interact with a tablet and to note future problems when the robot have to perform the test without human help.	Relatives of patients of the Virgen del Rocío University Hospital (Seville).	The documents captured on March 16 are presented to the relatives of patients. We found a good acceptance and interaction with technology (better than patients). So, we found that for example, when performing the tests with relatives, the pauses between question/answer could be reduced.

18/03/2016	**Name:** Meeting with some head of day centres in Seville. **Purpose:** To receive a feedback about the project in order to do some modifications to improve the clinical efficacy.	Heads of three day centres in Seville: Day Centre "Heliópolis", Day centre "Macarena" and Day centre "Triana".	All attendants perceive the project as interesting and provide suggestions for improving the interaction among users and robot. These suggestions were added to our prototype.
13/04/2016	**Name:** Meeting with medical professionals of the Rehabilitation Unit of the Virgen del Rocío University Hospital. **Purpose:** Presentation of the progress of the CLARC project (cases of use) in order to detect failures in the way we perform the clinical tests.	**Dra. Begoña Ferrer González**, **Dra. Beatriz Rendón Fernández**, medical professionals of the Rehabilitation Unit of the Virgen del Rocío University Hospital (Seville).	We agreed that we were in the correct way with the robot solution and format for the tests within CLARC. The doctors found that the use cases were adequate for geriatric patients.
15/05/2016	**Name:** Meeting with the Head of the Technological Innovation Section and of the Information Security of the Virgen del Rocio and the Macarena University Hospitals. **Purpose:** Presentation of the progress on the project in order to plan a test with real patients in the Hospital.	**Dr. Carlos Luis Parra Calderón**, Head of the Technological Innovation Section and of The Information Security of the Virgen del Rocío and Macarena University Hospitals (Seville).	We agreed that for June 20 we will perform tests with the robot in the Hospital in which real patients will participate.
08/06/2016	**Name:** Technical details of the Hospital Sant Antoni Abat in Vilanova i la Geltrú (Barcelona) **Purpose:** Defining the wifi connection at the Hospital Sant Antoni Abat in Vilanova i la Geltrú (Barcelona).	Phone conversation with **Dr. César Valdés**. E-mail conversation with **Gerard Delmás**, from the Informatics Department. Both of them from the Hospital Sant Antoni Abat in Vilanova i la Geltrú (Barcelona).	We capture the details of the wifi connectivity at the Hospital Sant Antoni Abat in Vilanova i la Geltrú (Barcelona). This is needed for unfolding the whole architecture of the CLARC project (CGAmed, robot).
16/06/2016	**Name:** Tests with elder people (not real patients) in the University of Málaga using the CLARC robot. **Purpose:** Perform real tests with	The test was performed on real patients and was conducted by **Dr. Álvaro Dueñas Ruiz**, physiotherapist of the	The acceptance of the robot by people was great. They underlined that the voice was quite human-like. We could see that the tests present too many examples

	elder people in the University of Málaga to get some feedback about their impressions of the robot. We want to do these tests before to perform any test with real patients in the Hospital.	Virgen del Rocío University Hospital. Technical support was provided by the researches of the University of Málaga, which were present on the tests.	(making them very tedious). We had to reduce them.
20/06/2016	**Name:** Tests with real patients in the Virgen del Rocío University Hospital using the CLARC robot. **Purpose:** Performing real tests with real patients for getting feedback, in order to improve the interaction between patients and robot.	Tests were performed on real patients under the supervision of **Dr. Álvaro Dueñas Ruiz**, physiotherapist of the Virgen del Rocío University Hospital. Technical support was provided by the researches of the University of Málaga, which were present on the tests.	We created a questionnaire that the patients filled up after the test in order to receive more information about the interaction with the robot. Furthermore, after tests, the physiotherapist maintained a conversation with patients to obtain their impressions about the CLARC robot. We can draw the following conclusions: - The robot must be more agile and less repetitive (there are still many examples) - The voice is good and human-like. - Clarification of some messages that were not clear. - In general we appreciate a good acceptance and interaction by patients.

Testing the CLARC prototype at Málaga (June 16, 2016)

Evaluation of the CLARC prototype at Seville (June 20, 2016)