

Deliverable 6.1

SOP for RASim-guided training of physicians

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Version Control			
Version	Date	Author (Name, Institution)	Comments
1.0	27.01.2016	<i>Chris Burns - UCC; Alex Greindl UKA-CTCA</i>	<i>Initial version</i>
2.0	10.02.2016	<i>Thomas Deserno – UKA-IMI</i>	<i>Final version</i>

1.X = 1st version circulating between the members / 2.X = 2nd version following comments of members / 3.X = 3rd final version




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List of Abbreviations and Definition of Terms

Abbreviation/Term	Definition
DoW	Description of Work
FEM	Finite Element Method
GUI	Graphical user interface
HFSC	Haptic Feedback Software Components
HIP	Haptic Interface Point
PD	Proportional-Derivative
RA	Regional Anaesthesia
RASim	Regional Anaesthesia Simulator
RASimAs	Regional Anaesthesia Simulator and Assistant
SOFA	Simulation Open Framework Architecture
TTIM	Tool-Tissue Interaction Module
US	Ultra sound
VR	Virtual Reality
FNB	Femoral Nerve Block

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1 Abstract

The RASimAs Simulator component is intended to be used as a component in a set of teaching aids and materials with interactive and multimedia components. Clinical trainees will receive initial conventional classroom-based instruction on the clinical theory, pharmacology, and practise of the femoral nerve block (FNB) procedure prior to exposure to the simulator itself. During subsequent use of the simulator, a step-by-step simulated procedure of a femoral nerve block (FNB) will be conducted, using on-screen tooltips, text-based descriptions of critical steps, and video/animated demonstrations which may be accessed as required throughout the exercise. These "help" functions include animations and video on identifying external anatomical features prior to ultrasound scanning, optimisation of the ultrasound image, identification of critical internal anatomical structures, as well as more "mundane" help topics such as logging-in to and use of the simulator system itself.




2 Introduction

2.1 Context

The RASim device is developed as a standalone platform for self-directed virtual training of peripheral nerve block techniques including hand-eye coordination by operating a haptic feedback system. The target group are medical students or physicians without experience in performing loco-regional anaesthesia. The aim of the prototype developers was to create an extensive and detailed GUI that supports and guides the trainee to a maximum to introduce and apply the system.

The RASim system is self-explaining and due to the GUI very easy to use for the end user.

The trainee will be confronted with a multi-dimensional system providing haptics for the needle and the US scanner as well as virtual ultrasonic images of haptic directed anatomical structures. After login phase and choice of the application mode (guided or free mode) operating the device for correct needle placement is triggered by activation of the haptics. The user's decisions for correct identification of anatomical structures and needle placement is only done by screen based control.

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2.2 Objectives

2.2.1 Deliverable description

As stated in the Description of Work, the deliverable D6.1 is described as follows:

D6.1) SOP for RASim-Guided Training of Physicians: The evaluation of the RA simulator and RA Assistant will form the basis for the framework and development of an SOP RASim-Guided training tool for residents in the field of anaesthesia. This SOP will contain a detailed description and structured report following an RCT and several walkthroughs to meet the requirements of residents to safely learn and practise different RA techniques.

Each step of this work package will be examined and re-evaluated with respect to quality, content and timely data distribution to all participating partners.

2.2.2 Video tutorials

A written SOP document would not be suitable to transfer all the work mechanisms and ranges to introduce the application of the graphical user interface of RASim. Therefore, different video tutorials are created to show the defined operating procedure of RASim and which are available at the RASimAs website (http://www.rasimas.eu/output_videos.php).

- RASim User Interface-Login and overview:
http://www.rasimas.eu/documents_output/videos/LoginAndOverview.mp4
- Guided mode-user interface and functionality:
http://www.rasimas.eu/documents_output/videos/GuidedMode-UserInterfaceAndFunctionality.mp4
- US window: ultrasound and control panel:
http://www.rasimas.eu/documents_output/videos/USWindow.mp4
- Voice recognition system:
http://www.rasimas.eu/documents_output/videos/VoiceRecognitionSystem.mp4

3 Deviations/Problems

Not applicable.

4 Further work

The trainers who introduce the application of the simulator to the trainees will be instructed to provide each video to the trainee prior to the start of the simulator session. This will be recorded for each individual trainee and filed in the Investigator Site File.