About ICTUSnet

ICTUSnet is a project that wants to improve the health care and quality of life of people having a stroke. ICTUSnet has the mission to create a network of collaboration between different regions of southern Europe formed by patients and professionals from different areas related to stroke, covering an area of 20 million inhabitants. At the same time, ICTUSnet aims to create research infrastructures that incorporate innovative data analysis technologies to improve stroke care systems and subsequently reduce the impact of the disease on the population.

To obtain this, the partners have structured the tasks to be performed in 8 work packages:

- WP1: REGIONAL REGISTRIES AND INTEGRATED PLATFORM
- WP2: ARTIFICIAL INTELIGENCE TOOLS (TEXT & IMAGING)
- WP3: ANALYSIS & BENCHMARKING OF STROKE HEALTHCARE PATHWAYS
- WP4: KNOWLEDGE TRANSFER TO HEALTH POLICIES
- WP5: KNOWLEDGE EXCHANGE, COLLABORATION & MUTUAL LEARNING
- WP T1: PROJECT MANAGEMENT
- WP T2: COMMUNICATION
- WP T3: EVALUATION

ICTUSnet is planned for 3 years (April 2018 - March 2021)

What will be done in WP2: Artificial Intelligence Tools (Text and Imaging)

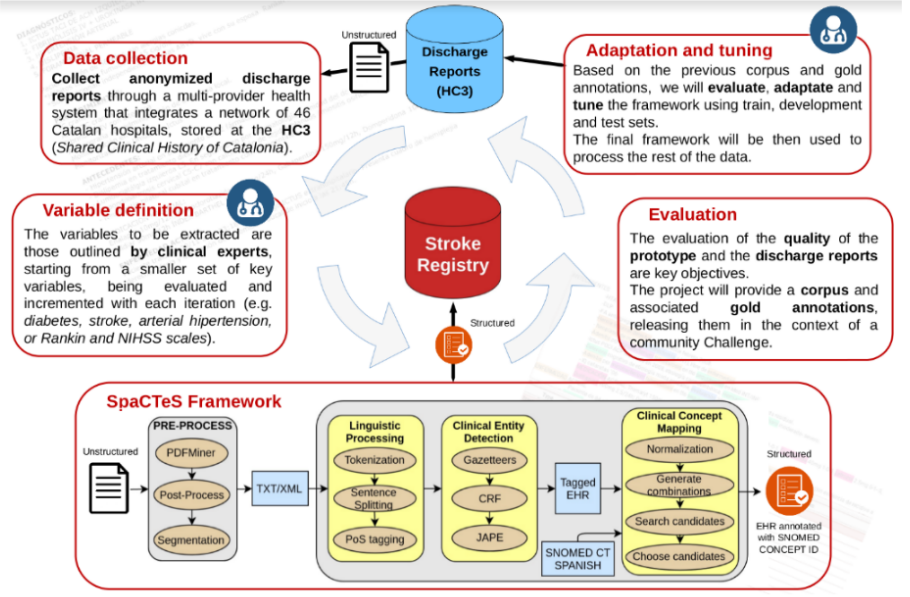
Objectives

Development of an interoperable text mining system for multilingual information extraction, using cognitive computing technologies in order to process the clinical reports of stroke generated in the network hospitals and thus be able to assist in the task of creating the stroke record of the project. The work will be implemented sequentially, so that in each cycle the subset of variables to be extracted will be defined and the corresponding evaluation, refinement and adaptation will be carried out. In order to guarantee the good functioning in a distributed and heterogeneous environment such as ICTUSnet, the system (i) will pay special attention to the design of the interoperability and communication protocols between the text mining components and the different clinical documents and (ii) will design and implement a document normalizer based on the multilingual segmentation of clinical texts (zoning).

The system will develop the supervised models of categorization, topic modelling and extraction of clinical information using cognitive computing techniques. To this end, it will define the standards and annotation guides necessary for the generation of training labeled data and will develop the corresponding multilingual annotation tools as previous and necessary steps to the text mining techniques.

Tasks

To achieve the specific objectives of WP2 we need to: 1) Select data samples (text and images) 2) Design the interoperability protocol between text mining components and clinical documents. 3) Develop a clinical document normaliser based on multilingual clinical text segmentation (zoning). 4) Develop supervised models of categorisations, topic modeling and extraction of clinical information via cognitive computing. 5) Define standards and annotation guidelines and development of multilingual annotation tools. 6) Develop an automated diagnostic system from the images. 7) Validate the algorithms.



Deliverables

- E2.1.1 - List of characteristics of the reports, images and samples
- E2.2.1 - Report on the interoperability protocol between text mining components and clinical documents
- E2.3.1 - Application for multilingual document normaliser
- E2.4.1 - Report and models
- E2.5.1 - Annotation guidelines of clinical texts used for ICTUSnet
- E2.6.1 - Deepstroke software
- E2.6.2 - Guidelines & Gold standards
- E2.7.1 - Validation report.

Products

The fundamental products of ICTUSnet WP2 are: 1) Algorithms and text mining applications for extracting information from clinical reports. 2) Algorithms and software for automated analysis from images.

The Interreg Sudoe Program supports the development of south-west Europe regions by financing transnational projects, such as the ICTUSnet project, through the European Regional Development Fund (ERDF)