Laboratório de Universalização de Acesso – ICEx – DCC - UFMG

Flux NMO-DBr: Storage and Management of Data from Neuromyelitis Optica Patients using a LIMS based on workflows

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Introduction

Neuromyelitis optica (NMO) is an idiopathic inflammatory demyelinating disease of the central nervous system. Individuals with NMO develop optic neuritis, which causes pain in the eye and vision loss, and transverse myelitis, which causes weakness, numbness, and sometimes paralysis of the arms and legs, along with sensory disturbances and loss of bladder and bowel control. Clinical, radiologic, and immunologic features distinguish neuromyelitis optica from other severe cases of multiple sclerosis and the amount of data from interviews with patients is increasing each day. All the information regarding these aspects have been so far kept at medical charts with no automatic system for patient follow ups, statistic analysis or data mining. In this work we propose the development of a workflow for the analysis of NMO patients data to be used in the Laboratory Information Management System (LIMS) Flux™.

Objectives

Development of a workflow for the analysis of NMO patients data to be used in the LIMS *Flux*

Methods

The NMO workflow was developed using *Together Workflow Editor v3.1-2*. A xpdl file of this workflow is used in the *Flux* system, a Java Servlet application. The *Flux* system runs on the *Apache Tomcat Server* and uses a MySQL database.

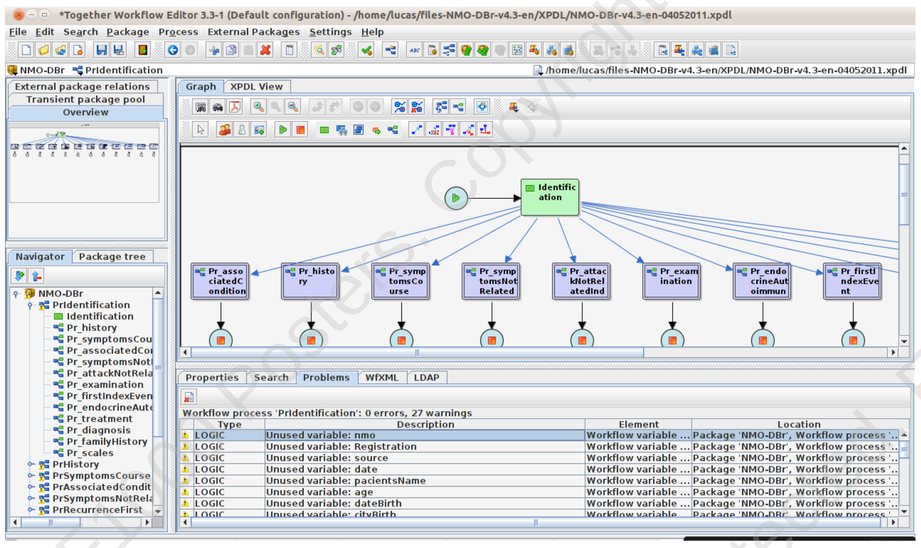

Figure 2. Construction of the Neuromyelitis Optica workflow on Together Workflow Editor v3.1-2

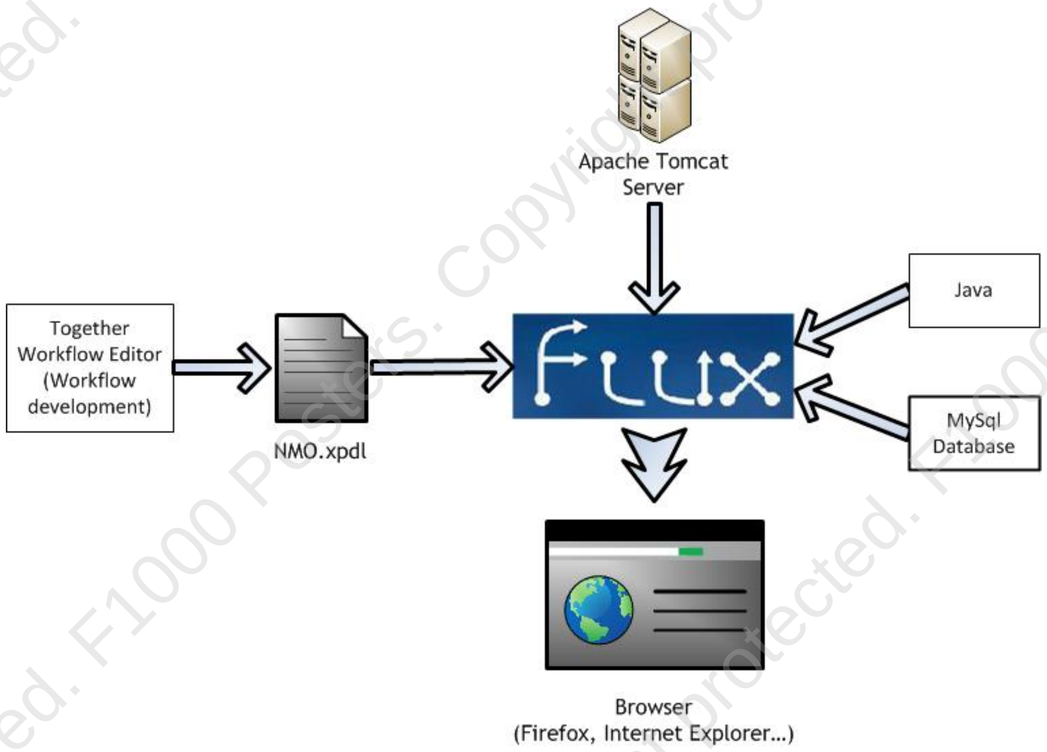

Figure 3. Main components of the FluxNMO.

Figure 1: Different Magnetic Resource Imaging (MRI) of a NMO pacient. (A) Spine MRI of a pacient (B) The same pacient's MRI, 4 months later. (C) MRI that shows the optic nerve.

Results

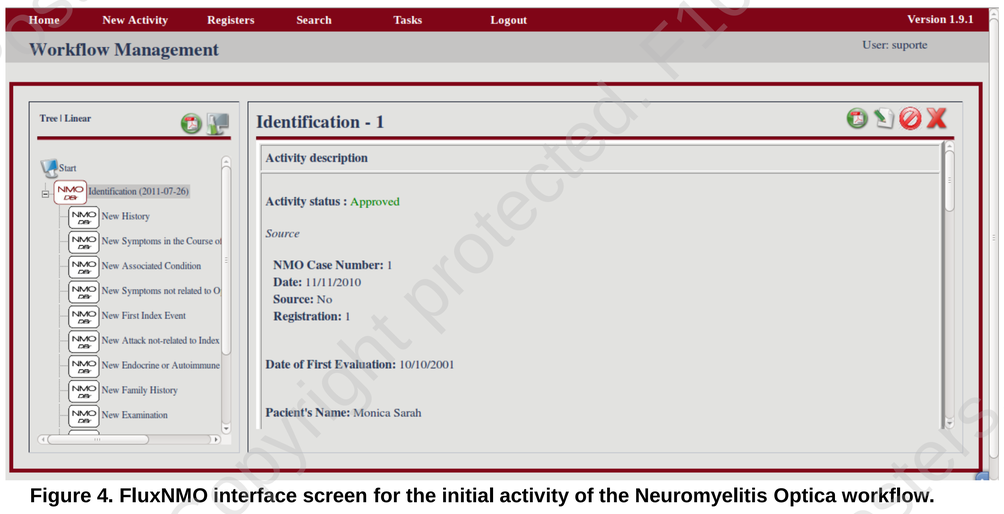

Figure 4. FluxNMO interface screen for the initial activity of the Neuromyelitis Optica workflow.

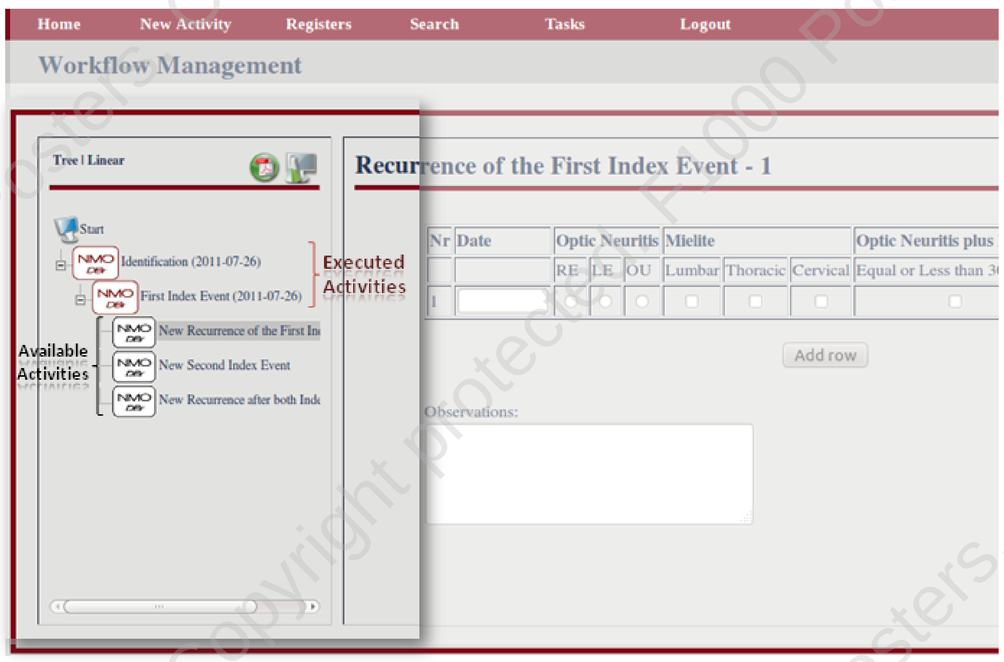

Figure 5. Neuromyelitis Optica patient data "tree" on the FluxNMO system.

Discussion and Conclusion

The use of a NMO workflow on a LIMS will enable a more efficient storage and retrieval of patient data, assisting the analysis performed by the physicians on NMO. Furthermore, our tool will enable mining the data pertaining to the disease, making it possible to identify patterns in the data and increase the accuracy of the diagnosis. This is particularly important for a disease such as NMO, because it is a rare disease that is often diagnosed incorrectly as multiple sclerosis.

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