Demonstrator 5:

Development of novel and configurable workflow for processing preclinical images and extracting meaningful data

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Project Summary Demonstrator 5:
Development of novel and configurable workflow for processing preclinical images and extracting meaningful data

Preclinical research generates a variety of biomedical imagery with an increasing need of standard tools for managing image data. Our demonstrator aims at providing the scientific community with access to preclinical images and tools for easily extracting, importing, archiving medical image data from several imaging device manufacturers. Besides facilitating storage of raw image data, processing tools will be provided for automated image analysis and for storage of the resulted image-derived data.

The architecture is based on XNAT, a widely used open-source image informatics platform for archiving, accessing, and processing medical images. Despite its success, tools for importing preclinical images as well as pipelines for processing large, multimodal image datasets are not yet available in XNAT. To overcome these limitations, we have developed several tools in XNAT devoted to Preclinical Imaging Centers (XNAT-PIC).

XNAT-PIC consists of a set of tools built in Python and Matlab and based on the workflow in Fig. 1:

1. XNAT-PIC Uploader to import large, multimodal imaging studies in DICOM standard to XNAT

2. XNAT-PIC MRI2DICOM, a ParaVision® (Bruker-Biospin Inc. Billerica, MA) to DICOM standard converter

3. XNAT-PIC pipelines for image processing at large scale based on in-house Python and MATLAB scripts.
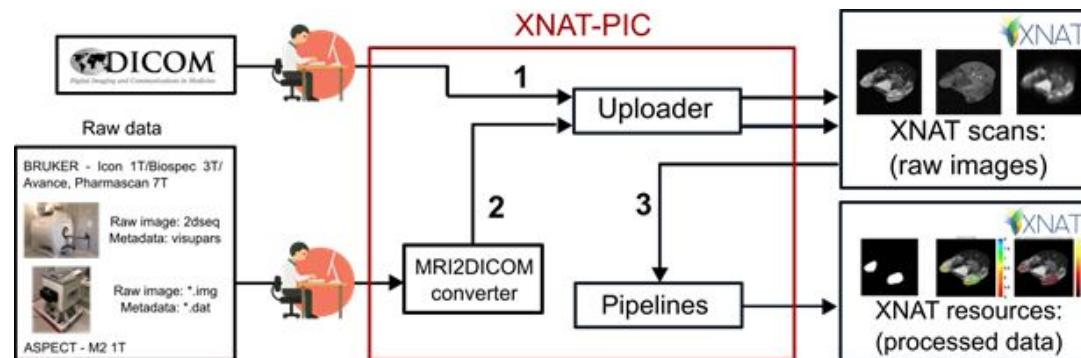
An open architecture will confer the easy implementation of tools for novel approaches of imaging-based features extraction. The herein developed platform for the proposed demonstrator on preclinical images will allow a simplified exchange and reuse of image datasets among preclinical imaging centers.

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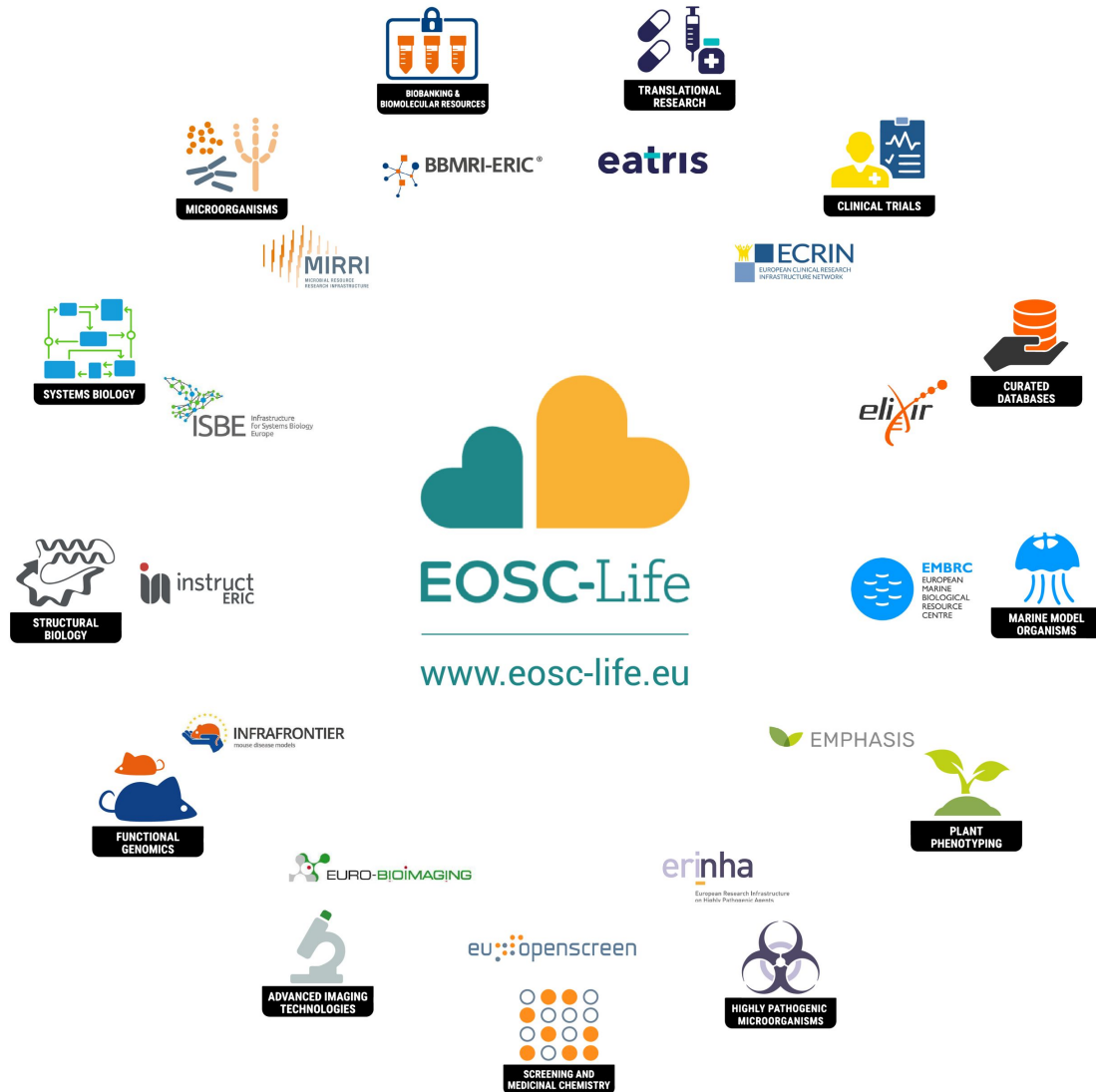
- Establish EOSC-Life by publishing FAIR life science data resources in EOSC

- Provide the policies, guidelines and processes for secure and ethical data reuse

- Populate an ecosystem of innovative life-science tools in EOSC

- Enable data-driven research in Europe by connecting life scientists to EOSC via open calls for participation

Open Call Contact

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