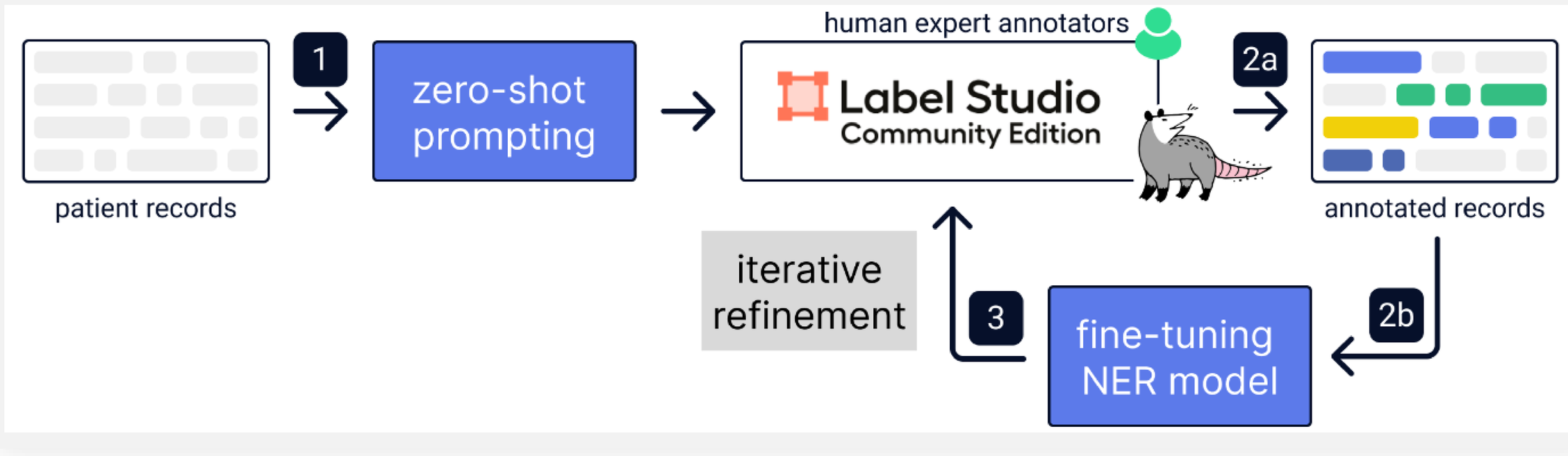
Iterative fine-tuning accelerates extraction and annotation of relevant information from free-text clinical notes.

An Iterative Annotation Pipeline for Building Clinical Datasets and Training Information Extraction Models: The PREPARE Project

Background: The **PREPARE** project aims to develop AI models for personalized rehabilitation using clinical data from electronic health records. While many data elements are stored in structured formats, important clinical details are often documented in free-text notes and must be extracted to create comprehensive datasets for AI model training.

Pipeline



Iteration	Training state of model	Number of annotated notes	Average time per note
1	Zero-shot prompting	50	2 min 43 s
2	Fine-tuned on 50 notes	50	1 min 4 s
3	Fine-tuned on 100 notes	100	50 s
4	Fine-tuned on 200 notes	143	**45 s**

Model	Exact F1	Relaxed F1	Overlap F1
gemma-3-12b-it	**0.7887**	**0.8183**	0.8972
gliner_large-v2.1	0.7776	0.7992	**0.9485**

Limitation: Despite good overall performance, the model sometimes struggles with **abbreviations** and **inconsistent clinical terminology**. Its performance also depends on the **quality** and **consistency** of human-annotated training data, meaning fully automatic extraction is not yet possible and a **human-in-the-loop approach** remains necessary.

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Funded by the European Union. UK participants in Horizon Europe Project PREPARE are supported by UKRI grant number 10086219 (Trilateral Research). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Health and Digital Executive Agency (HADEA) or UKRI. Neither the European Union nor the granting authority nor UKRI can be held responsible for them. Grant Agreement 101080288 PREPARE HORIZON-HLTH-2022-TOOL-12-01

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