

# DEMONSTRATION OF A NEURAL MACHINE TRANSLATION SYSTEM WITH ONLINE LEARNING FOR TRANSLATORS

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## INTRODUCTION

- Translation industry needs to produce high quality translations in short periods of time.
- Machine translation can help them to achieve this goal.
- In stead of translating from scratch, correcting (**post-editing**) an automatic translation has become a common process.
- Inherently to this process, new bilingual data is generated.
- This new data can be profited to enrich the translation systems in an online learning environment.

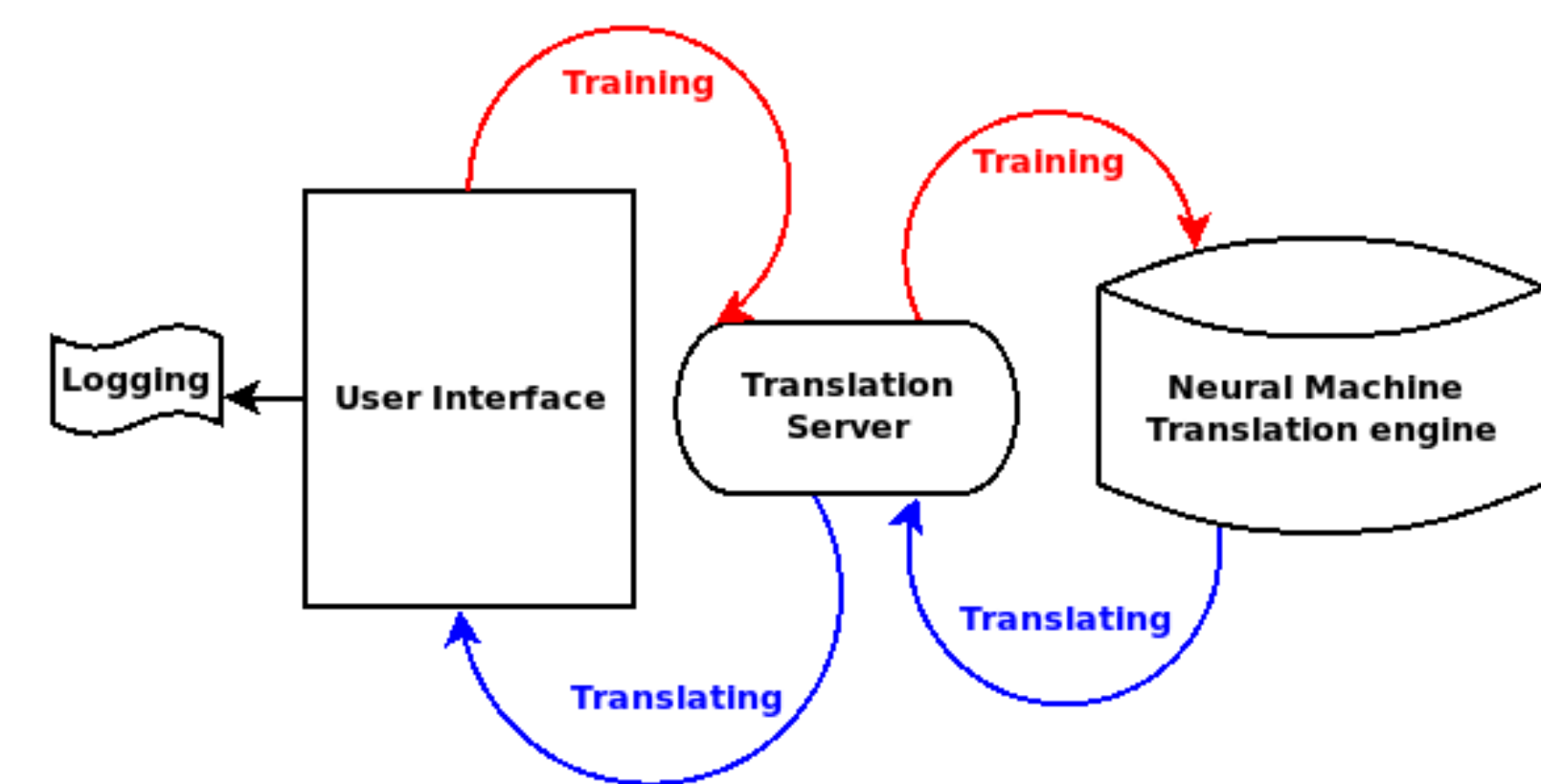
## ONLINE LEARNING ADAPTATION

- In order to benefit from user post-edits, we adapt the system *on-the-fly*.
- When the human post-editor validates a sentence, we update the NMT models.
- We take a parallel training pair composed of the source sentence and the user post-edit.
- We follow gradient descent, the regular training methods for neural networks.

## IN-HOUSE ONLINE LEARNING FRAMEWORK

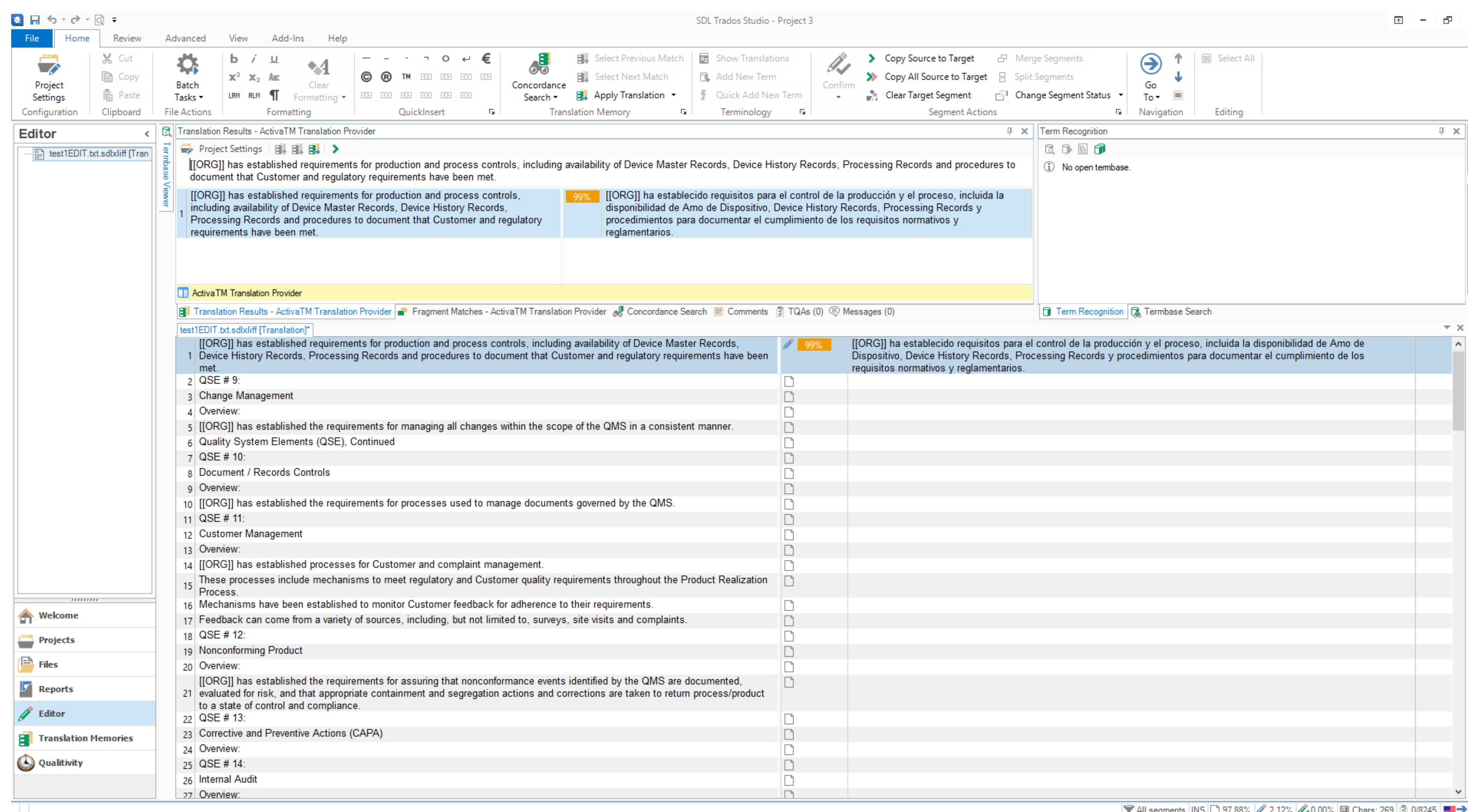
- Translation servers based on OpenNMT-py.
- Integrated with translators user-friendly interface SDL Trados Studio.
- Scheme set to measure productivity through Trados Studio.

## ARCHITECTURE



Translation server: <https://github.com/midobal/OpenNMT-py/tree/OnlineLearning>

## USER INTERFACE



## EXAMPLE OF LOGGING THE MEASURE PRODUCTIVITY

```
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<source>[[ORG]] has established requirements for production and process controls, including availability of Device Master Records, Device History Records, Processing Records and procedures to document that Customer and regulatory requirements have been met. </source>
<targetOriginal>[[ORG]] ha establecido requisitos para el control de la producción y el proceso, incluida la disponibilidad de Amo de Dispositivo, Device History Records, Processing Records y procedimientos para documentar el cumplimiento de los requisitos normativos y reglamentarios. </targetOriginal>
<targetUpdated>[[ORG]] ha establecido requisitos para los controles de producción y procesos, incluida la disponibilidad de un registro maestro de Dispositivo, Device History Records, Processing Records y procedimientos para documentar el cumplimiento de los requisitos normativos y reglamentarios. </targetUpdated>
</contentTexts>
<qualityMetrics/>
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</keyStrokes>

```

## PRELIMINARY EXPERIMENTS

Preliminary experiments in simulated and real environments with professional translators<sup>1</sup>:

- Significant improvements of translation quality (5.3 hTER and 7.8 hBLEU).
- Significant reduction of the post-editing time (7.5 second per sentence).

<sup>1</sup> Miguel Domingo, Mercedes García-Martínez, Álvaro Peris, Alexandre Helle, Amando Estela, Laurent Bié, Francisco Casacuberta, and Manuel Herranz. 2019. Incremental adaptation of NMT for professional post-editors: A user study. In Proceedings of the Machine Translation Summit. Under publication.

## ACKNOWLEDGEMENTS

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