

# ISO/IEC JTC 1 SC 42 Artificial Intelligence – Working Group 4

## Use Case Submission Form

The quality of use case submissions will be evaluated for inclusion in the Working Group’s Technical Report based the application area, relevant AI technologies, credible reference sources (see References section), and the following characteristics:

- Data Focus & Learning: Use cases for AI system which utilizes Machine Learning, and those that use a fixed *a priori* knowledge base.
- Level of Autonomy: Use cases demonstrating several degrees (dependent, autonomous, human/critic in the loop, etc.) of AI system autonomy.
- Verifiability & Transparency: Use cases demonstrating several types and levels of verifiability and transparency, including approaches for explainable AI, accountability, etc.
- Impact: Use cases demonstrating the impact of AI systems to society, environment, etc.
- Architecture: Use cases demonstrating several architectural paradigms for AI systems (e.g., cloud, distributed AI, crowdsourcing, swarm intelligence, etc.)

### 1. General

ID	(leave blank, for internal use)	
Use case name	AI solution to identify automatically false positives from a specific check for “untranslated target segments” from an automated quality assurance tool	
Application domain	Other (please specify) This will be relevant for content from across any domains	
Deployment model	Cloud services	
Status	PoC	
Scope <sup>1</sup>	The scope of this use case is limited to automated linguistic quality assurance tools, but the outcome of this use case could be applicable to other areas, such as for example: Machine Translation, automated post-editing, Computer Aided Translation Analysis and pre-translation, etc.	
Objective(s) <sup>2</sup>	To reduce the number of false positive issues for check for untranslated target segment for bilingual content with in-house automated quality assurance tool.	
Narrative	Short description (not more than 150 words)	In the future, we aim to build an AI solution that could automatically identify likely false positives issues from the results of the "check for untranslated target segments" following an approach where we could use machine learning based on already identified false positives by our users.
		The expected outcome would be to increase end user’s productivity when reviewing automated quality assurance findings and to change user behaviour to pay more

<sup>1</sup> The scope defines the intended area of applicability, limits, and audience.

<sup>2</sup> The intention of the system; what is to be accomplished?; who/what will benefit?.

		<p>attention to this type of issues by reducing the number of false positives in 80%. In addition, we would like to reduce the amount of time, we spent on a yearly basis on refining this check manually based on users' feedback.</p>																																								
	<p>Complete description</p>	<p>Untranslated target segments contain characters, symbols, and words that remain the same in source and target language. These segments can contain, numbers, alphanumeric content, numbers, code, e-mail addresses, prices, proper nouns, etc. or any combination of those. On a yearly basis, this check produces over 1 Million potential issues across over 50 different languages.</p> <p>Refining this check manually based on annotated false positive data for each specific customer and product and for specific language pairs is very costly, and the coverage is never sufficient, as new content is constantly produced and there are always new opportunities for refining this check via code. In addition, because of the high proportion of false positives over (95.5%) our translators tend to ignore the output from this valuable check and in many cases, we suspect that valid relevant issues for situations when there are real forgotten translations are missed.</p> <p>There are typically three types of false positives for this type of check:</p> <p>1) Language specific false positives, for example for situations where source and target segment need to be the same as the words from these segments are "cognates" with the same meaning. For example:</p> <table border="1"> <thead> <tr> <th>Source Language</th> <th>Target Language</th> <th>Source Segment</th> <th>Target Segment</th> <th>Checker Message</th> </tr> </thead> <tbody> <tr> <td>en-us</td> <td>es-es</td> <td>beta</td> <td>beta</td> <td>1445 - Untranslated target segment.</td> </tr> <tr> <td>en-us</td> <td>fr-fr</td> <td>beta</td> <td>beta</td> <td>1445 - Untranslated target segment.</td> </tr> <tr> <td>en-us</td> <td>es-es</td> <td>Monitor</td> <td>Monitor</td> <td>1445 - Untranslated target segment.</td> </tr> </tbody> </table> <p>2) Customer profile specific false positives, for example situations where certain segments are to be left untranslated based on specific guidelines from the customer, for example for segments that jut consist of Company names, Product Names or specific words and segments that have been determined as not to be translated by our customer:</p> <table border="1"> <thead> <tr> <th>Source Language</th> <th>Target Language</th> <th>Source Segment</th> <th>Target Segment</th> <th>Checker M</th> </tr> </thead> <tbody> <tr> <td>en-us</td> <td>es-es</td> <td>Microsoft</td> <td>Microsoft</td> <td>1445 - Untr</td> </tr> <tr> <td>en-us</td> <td>es-es</td> <td>Microsoft Azure</td> <td>Microsoft Azure</td> <td>1445 - Untr</td> </tr> <tr> <td>en-us</td> <td>es-es</td> <td>- Outlook</td> <td>- Outlook</td> <td>1445 - Untr</td> </tr> </tbody> </table> <p>3) Segments that remain the same in source and target, because they act as special type of entities with some special meaning, for example:                      alphanumeric segments, for example part numbers, placeholders, code.</p>	Source Language	Target Language	Source Segment	Target Segment	Checker Message	en-us	es-es	beta	beta	1445 - Untranslated target segment.	en-us	fr-fr	beta	beta	1445 - Untranslated target segment.	en-us	es-es	Monitor	Monitor	1445 - Untranslated target segment.	Source Language	Target Language	Source Segment	Target Segment	Checker M	en-us	es-es	Microsoft	Microsoft	1445 - Untr	en-us	es-es	Microsoft Azure	Microsoft Azure	1445 - Untr	en-us	es-es	- Outlook	- Outlook	1445 - Untr
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	 <p>The idea is to create an AI solution that can automatically identify results from the "check for untranslated target segment" that are likely to be a False Positive. With this solution, we expect to reduce the number of potential issues presented by this check to our end users in 80%. This way our end users can focus their efforts on those potential issues that are more likely to be valid corrections because there could have been a forgotten translation. In addition, we will be able to increase the productivity of our end users when reviewing automated quality assurance potential issues from their bilingual content evaluation, and we will be able to save costs internally as we won't have to manually implement code changes in this check based on manual analysis of our data based on user's annotation.</p>			
Stakeholders <sup>3</sup>	Customers, Translation partners, end users of the translated content.			
Stakeholders' assets, values <sup>4</sup>	Customer's content			
System's threats & vulnerabilities <sup>5</sup>	Bias from changes in requirements on the customer's end or inappropriate training data.			
Key performance indicators (KPIs)	ID	Name	Description	Reference to mentioned use case objectives
	1	Coverage	Ratio of potential issues which are "of interest" for human evaluation. Ideal target is to reduce the current volume by 80%.	Improve accuracy
	2	Split	Proportion of the potential issues which are "more likely to be a valid issue" for our end users.	Improve efficiency

<sup>3</sup> Stakeholder are those that can affect or be affected by the AI system in the scenario; e.g., organizations, customers, 3rd parties, end users, community, environment, negative influencers, bad actors, etc.

<sup>4</sup> Stakeholders' assets and values that are at stake with potential risk of being compromised by the AI system deployment – e.g., competitiveness, reputation, trustworthiness, fair treatment, safety, privacy, stability, etc.

<sup>5</sup> Threats and vulnerabilities can compromise the assets and values above - e.g., different sources of bias, incorrect AI system use, new security threats, challenges to accountability, new privacy threats (hidden patterns), etc.

AI features	Task(s)	Recognition
	Method(s) <sup>6</sup>	Machine Learning
	Hardware <sup>7</sup>	
	Topology <sup>8</sup>	
	Terms and concepts used <sup>9</sup>	Machine Learning
Standardization opportunities/ requirements		
Challenges and issues	<p><b>Challenges:</b> Try to achieve eventually 80% of the accuracy of linguists when identifying false positives for untranslated target segments, preventing as much as possible false negatives.</p> <p><b>Issues:</b> segmentation of false positive data by Customer and Product profile could be challenging.</p>	
Societal Concerns <sup>10</sup>	Description	Not applicable
	SDGs <sup>11</sup> to be achieved	(Select from pull-down menu)

<sup>6</sup> AI method(s)/framework(s) used in development.

<sup>7</sup> Hardware system used in development and deployment.

<sup>8</sup> Topology of the deployment network architecture.

<sup>9</sup> Terms and concepts used here should be consistent with those defined by Working Group 1 (AWI 22989 and AWI 23053) or to be recommended for inclusion.

<sup>10</sup> To be inserted.

<sup>11</sup> The Sustainable Development Goals (SDGs), also known as the Global Goals, are a collection of 17 global goals set by the United Nations General Assembly. SDGs are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity.

URL: <http://www.undp.org/content/undp/en/home/sustainable-development-goals.html>

## Data (optional)

Data characteristics	
Description	Data from end user identification of false positives and valid corrections for the "untranslated target segment check" results of Moravia QA Tools.
Source <sup>12</sup>	RWS Moravia Analytics Portal ( <a href="https://analytics.moravia.com/Dashboard/459">https://analytics.moravia.com/Dashboard/459</a> )
Type <sup>13</sup>	Structured content in a table with additional metadata fields (source segment, target segment, source language, target language, valid correction, false positive, customer and product profile, frequency)
Volume (size)	(Data for last 18 months)
Velocity <sup>14</sup>	Every hour
Variety <sup>15</sup>	Data types will be the same but there would be different variables to be considered (source language, target language, customer and product profile)
Variability (rate of change) <sup>16</sup>	No changes
Quality <sup>17</sup>	End-user dependent

<sup>12</sup> Origin of data, which could be from customers, instruments, IoT, web, surveys, commercial activity, simulations, etc.

<sup>13</sup> Structured/unstructured text, images, voices, gene sequences, numbers, composite: time-series, graph-structures, etc.

<sup>14</sup> The rate of flow at which the data is created, stored, analysed, or visualized. Could be in real time.

<sup>15</sup> Domains and types of data employed including formats, logical models, timescales, and semantics. Could be from multiple databases.

<sup>16</sup> Changes in data rate, format/structure, semantics, and/or quality.

<sup>17</sup> Completeness and accuracy of the data with respect to semantic content as well as syntax of the data (such as presence of missing fields or incorrect values).

## Process scenario (optional)

Scenario conditions					
No.	Scenario name	Scenario description	Triggering event	Pre-condition <sup>18</sup>	Post-condition <sup>19</sup>

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<sup>18</sup> Describes which condition(s) should have been met before this scenario happens.

<sup>19</sup> Describes which condition(s) should prevail after this scenario happens. The post-condition may also define "success" or "failure" conditions

## Training (optional)

Scenario name	Training				
Step No.	Event <sup>20</sup>	Name of process/Activity <sup>21</sup>	Primary actor	Description of process/activity	Requirement

Specification of training data	
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<sup>20</sup> The event that triggers the step. This might be completion of the previous event.

<sup>21</sup> Action verbs should be used when naming activity.

## Evaluation (optional)

Scenario name	Evaluation				
Step No.	Event <sup>22</sup>	Name of process/Activity <sup>23</sup>	Primary actor	Description of process/activity	Requirement

Input of evaluation	
Output of evaluation	

<sup>22</sup> The event that triggers the step. This might be completion of the previous event.

<sup>23</sup> Action verbs should be used when naming activity.

## Execution (optional)

Scenario name	Execution				
Step No.	Event <sup>24</sup>	Name of process/Activity <sup>25</sup>	Primary actor	Description of process/activity	Requirement

Input of Execution	
Output of Execution	

<sup>24</sup> The event that triggers the step. This might be completion of the previous event.

<sup>25</sup> Action verbs should be used when naming activity.

## Retraining (optional)

Scenario name		Retraining			
Step No.	Event <sup>26</sup>	Name of process/Activity <sup>27</sup>	Primary actor	Description of process/activity	Requirement

Specification of retraining data	
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<sup>26</sup> The event that triggers the step. This might be completion of the previous event.

<sup>27</sup> Action verbs should be used when naming activity.

