



# **Automated Indicator Sharing (AIS) Foreign Language Translation Process**

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## **Table of Contents**

<b>What is the AIS Foreign Language Translation Process?.....</b>	<b>3</b>
<b>Why Is It Important? .....</b>	<b>3</b>
<b>How Does the AIS Foreign Language Translation Process Work?.....</b>	<b>3</b>
<b>Appendix A - Acronyms .....</b>	<b>6</b>
<b>Appendix B – Supported Languages.....</b>	<b>7</b>

# WHAT IS THE AIS FOREIGN LANGUAGE TRANSLATION PROCESS?

The AIS Foreign Language Translation Process is a process that translates non-English AIS submissions (objects and properties) into English to broaden the usability of the cyber threat intelligence by AIS participants.

## WHY IS IT IMPORTANT?

As noted in the *AIS Submission Guide*, objects should be provided into AIS in English plain text where possible, unless the Cyber Threat Indicator (CTI) itself is in a foreign language (e.g., if the text of a phishing email is in a foreign language).<sup>1</sup> Where information is provided in a foreign language, by translating that information into English, AIS enables organizations to more fully leverage the shared cyber threat intelligence, which might otherwise be inaccessible, to proactively protect their networks from adversaries.

## HOW DOES THE AIS FOREIGN LANGUAGE TRANSLATION PROCESS WORK?

When AIS receives an object or property in a foreign language, the AIS Foreign Language Translation Process determines whether it is in one of the supported languages (refer to Appendix A for the full list of supported languages) and can be translated. If translation is deemed possible, the original version is sent to participants and a corresponding Structured Threat Information Expression (STIX) Language Content Meta Object is generated, with the English-translated information, and sent to participants.<sup>2</sup> In the event that personally Identifiable Information (PII) is detected in the translated version, CISA will not send out the original submission in the foreign language. Instead, CISA will create a new object, in the foreign language, that is based on the English translation of the original submission with PII removed.<sup>3,4</sup> The Language Content object consists of the properties listed in Table 1 as taken from the STIX Specification.<sup>5</sup>

**Table 1: STIX Language Content Meta Object Properties**

Property Name	Type	Description
<b>type (required)</b>	string	The <b>type</b> property identifies the type of object. The value of this property <b>MUST</b> be <code>language-content</code> .
<b>object_ref (required)</b>	identifier	The <b>object_ref</b> property identifies the <b>id</b> of the object that this Language Content applies to. It <b>MUST</b> be the identifier for a STIX Object.

<sup>1</sup> <https://www.cisa.gov/publication/automated-indicator-sharing-ais-documentation>

<sup>2</sup> [https://docs.oasis-open.org/cti/stix/v2.1/os/stix-v2.1-os.html#\\_z9r1cwtu8jja](https://docs.oasis-open.org/cti/stix/v2.1/os/stix-v2.1-os.html#_z9r1cwtu8jja)

<sup>3</sup> [https://www.cisa.gov/sites/default/files/publications/Non-Federal%20Entity%20Sharing%20Guidance%20under%20the%20Cybersecurity%20Information%20Sharing%20Act%20of%202015\\_1.pdf](https://www.cisa.gov/sites/default/files/publications/Non-Federal%20Entity%20Sharing%20Guidance%20under%20the%20Cybersecurity%20Information%20Sharing%20Act%20of%202015_1.pdf)

<sup>4</sup> [https://www.cisa.gov/sites/default/files/publications/Federal%20Government%20Sharing%20Guidance%20Under%20the%20Cybersecurity%20Information%20Sharing%20Act%20of%202015\\_1.pdf](https://www.cisa.gov/sites/default/files/publications/Federal%20Government%20Sharing%20Guidance%20Under%20the%20Cybersecurity%20Information%20Sharing%20Act%20of%202015_1.pdf)

<sup>5</sup> <https://docs.oasis-open.org/cti/stix/v2.1/os/stix-v2.1-os.html>

Property Name	Type	Description
<b>object_modified</b> (optional)	timestamp	The <b>object_modified</b> property identifies the <b>modified</b> time of the object that this Language Content applies to. It <b>MUST</b> be an exact match for the <b>modified</b> time of the STIX Object being referenced.
<b>contents</b> (required)	dictionary	<p>The <b>contents</b> property contains the actual Language Content (translation).</p> <p>The keys in the dictionary <b>MUST</b> be RFC 5646 language codes for which language content is being provided [<a href="#">RFC5646</a>]. The values each consist of a dictionary that mirrors the properties in the target object (identified by <b>object_ref</b> and <b>object_modified</b>). For example, to provide a translation of the <b>name</b> property on the target object the key in the dictionary would be <b>name</b>.</p> <p>For each key in the nested dictionary:</p> <ul style="list-style-type: none"> <li>• If the original property is a string, the corresponding property in the language content object <b>MUST</b> contain a string with the content for that property in the language of the top-level key.</li> <li>• If the original property is a list, the corresponding property in the translation object must also be a list. Each item in this list recursively maps to the item at the same position in the list contained in the target object. The lists <b>MUST</b> have the same length.</li> <li>• In the event that translations are only provided for <i>some</i> list items, the untranslated list items <b>MUST</b> be represented by an empty string (""). This indicates to a consumer of the Language Content object that they should interpolate the translated list items in the Language Content object with the corresponding (untranslated) list items from the original object as indicated by the <b>object_ref</b> property.</li> <li>• If the original property is an object (including dictionaries), the corresponding location in the translation object must also be an object. Each key/value field in this object recursively maps to the object with the same key in the original.</li> </ul> <p>The translation object <b>MAY</b> contain only a subset of the translatable fields of the original. Keys that point to non-translatable properties in the target or to properties that do not exist in the target object <b>MUST</b> be ignored.</p>

The following figure provides an example of a STIX Email Message object in Spanish that is translated into English using the Language Content object created by the Cybersecurity and Infrastructure Security Agency (CISA).<sup>6</sup>

```
{
  "type": "email-message",
  "spec_version": "2.1",
  "id": "email-message--52b7698f-10c2-565a-a2a6-b4996a2f2266",
  "from_ref": "email-addr--8fd694c7-e6cc-4b6f-99b3-c2066e7667f7",
  "to_refs": ["email-addr--ea24703b-bade-4b8f-947f-f0bbefdf13bd"],
  "is_multipart": false,
  "date": "2021-07-21T15:55:06.000Z",
  "subject": "La Contraseña Expiró",
  "body": "Cambie su contraseña en https://bank0fspa1n.com/login.php."
}

{
  "type": "language-content",
  "id": "language-content--d2c75f26-108d-4856-ad27-b7cc0a0b78d8",
  "spec_version": "2.1",
  "created_by_ref": "identity--b3bca3c2-1f3d-4b54-b44f-dac42c3a8f01",
  "created": "2021-07-22T23:00:00.007Z",
  "modified": "2021-07-22T23:00:00.007Z",
  "object_ref": "email-message--52b7698f-10c2-565a-a2a6-b4996a2f2266",
  "object_marking_refs": ["marking-definition--f88d31f6-486f-44da-b317-01333bde0b82"],
  "contents": {
    "en": {
      "subject": "Password Expired",
      "body": "Change your password at https://bank0fspa1n.com/login.php."
    }
  }
}
```

**Figure 1: STIX Email Message Translation Example**

<sup>6</sup> [https://docs.oasis-open.org/cti/stix/v2.1/os/stix-v2.1-os.html#\\_grboc7sq5514](https://docs.oasis-open.org/cti/stix/v2.1/os/stix-v2.1-os.html#_grboc7sq5514)

## APPENDIX A - ACRONYMS

Acronym	Definition
AIS	Automated Indicator Sharing
CISA	Cybersecurity and Infrastructure Security Agency
CTI	Cyber Threat Indicator
PFTE	Public Facing Test Environment
PII	Personally Identifiable Information
RFC	Request For Comment
STIX	Structured Threat Information Expression
TAXII	Trusted Automated Exchange of Intelligence Information

## APPENDIX B – SUPPORTED LANGUAGES

The following is a list of supported languages for the AIS Foreign Language Translation Process:

Afrikaans	German	Polish
Albanian	Greek	Portuguese
Amharic	Gujarati	Romanian
Arabic	Haitian Creole	Russian
Armenian	Hausa	Serbian
Azerbaijani	Hebrew	Sinhala
Bengali	Hindi	Slovak
Bosnian	Hungarian	Slovenian
Bulgarian	Icelandic	Somali
Catalan	Indonesian	Spanish
Chinese (Simplified)	Italian	Spanish (Mexico)
Chinese (Traditional)	Japanese	Swahili
Croatian	Kannada	Swedish
Czech	Kazakh	Tagalog
Danish	Korean	Tamil
Dari	Latvian	Telugu
Dutch	Lithuanian	Thai
English	Macedonian	Turkish
Estonian	Malay	Ukrainian
Farsi (Persian)	Malayalam	Urdu
Filipino Tagalog	Maltese	Uzbek
Finnish	Mongolian	Vietnamese
French	Norwegian	Welsh
French (Canada)	Persian	
Georgian	Pashto	