There are three types of computer-aided translation systems:

1. Rule-based machine translation (RBMT)
2. Statistical machine translation (SMT)
3. Neural machine translation (NMT)

**Rule-Based Translation**

**Rule-based machine translation (RBMT)** is based on programmed information that dictates how a word or phrase in the source language should read in the target language.

For example, an English word is added and the RBMT system outputs the best German word based on morphological, syntactic, and semantic analysis of both the source and the target languages involved in a translation task.

Here’s what we mean by those three deciding factors:

* **Morphological:** What is the form or structure of the sentence?
* **Syntactic:** What are the language rules that apply?
* **Semantic:** What’s the basic meaning of the sentence?

RBMT requires a full vocabulary and language rules to function properly.

Since language is dynamic and evolves over time, the efficacy of RBMT is limited and it certainly lives up to its “machine” translation moniker based on a lack of on-the-fly adaptability.

## Neural Machine Translation

**Neural machine translation (NMT)** differs from its rule- and stat-based precursors in having an ability to learn from each translation task and improve upon each subsequent translation.

NMT can recognize patterns in the source material to determine a context-based interpretation that can predict the likelihood of a sequence of words.

## Statistical Machine Translation

**Statistical machine translation (SMT)** analyzes existing translations developed by humans (referred to as bilingual text corpora).

Whereas RBMT is a word-based approach, SMT systems are built on phrase-based systems. Instead of moving forward word by word, SMT can string them together into the likeliest phrase from bilingual text corpora.