Building universal understanding
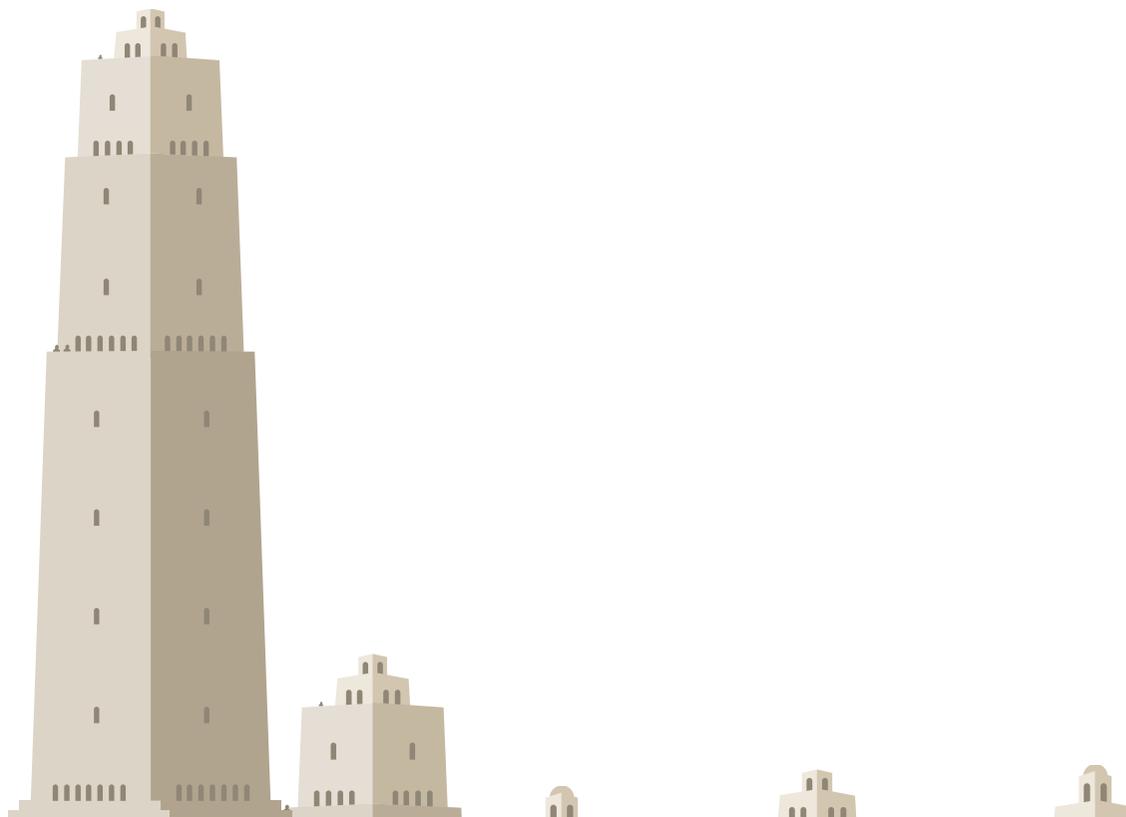
Combining Crowd and AI
to scale professional-quality translation

João Graça
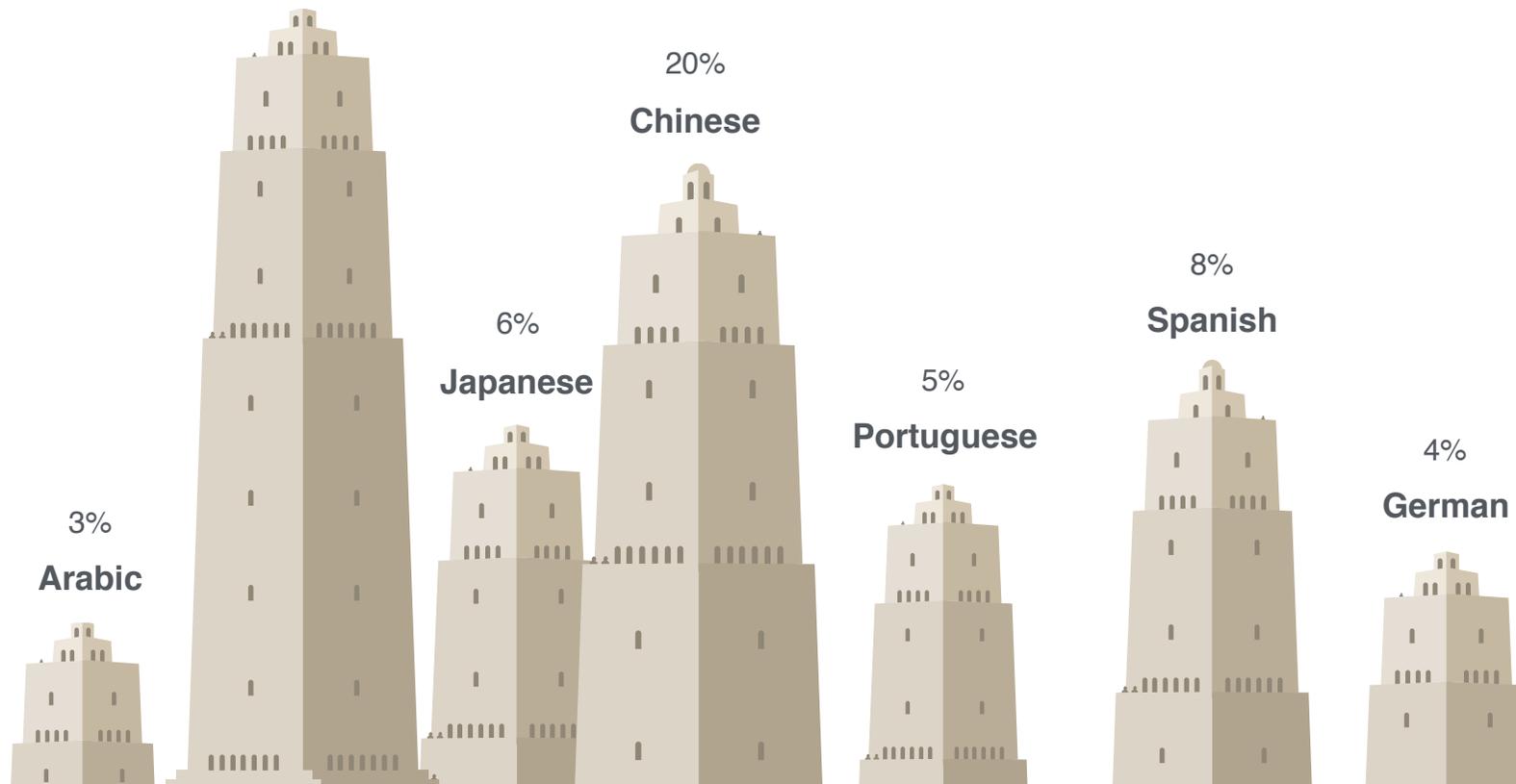**CTO**

Unbabel

The internet, 1997

80%
English

The internet, 2017

30%
English

20%
Chinese

6%
Japanese

8%
Spanish

5%
Portuguese

4%
German

3%
Arabic

Language barriers = trade barriers

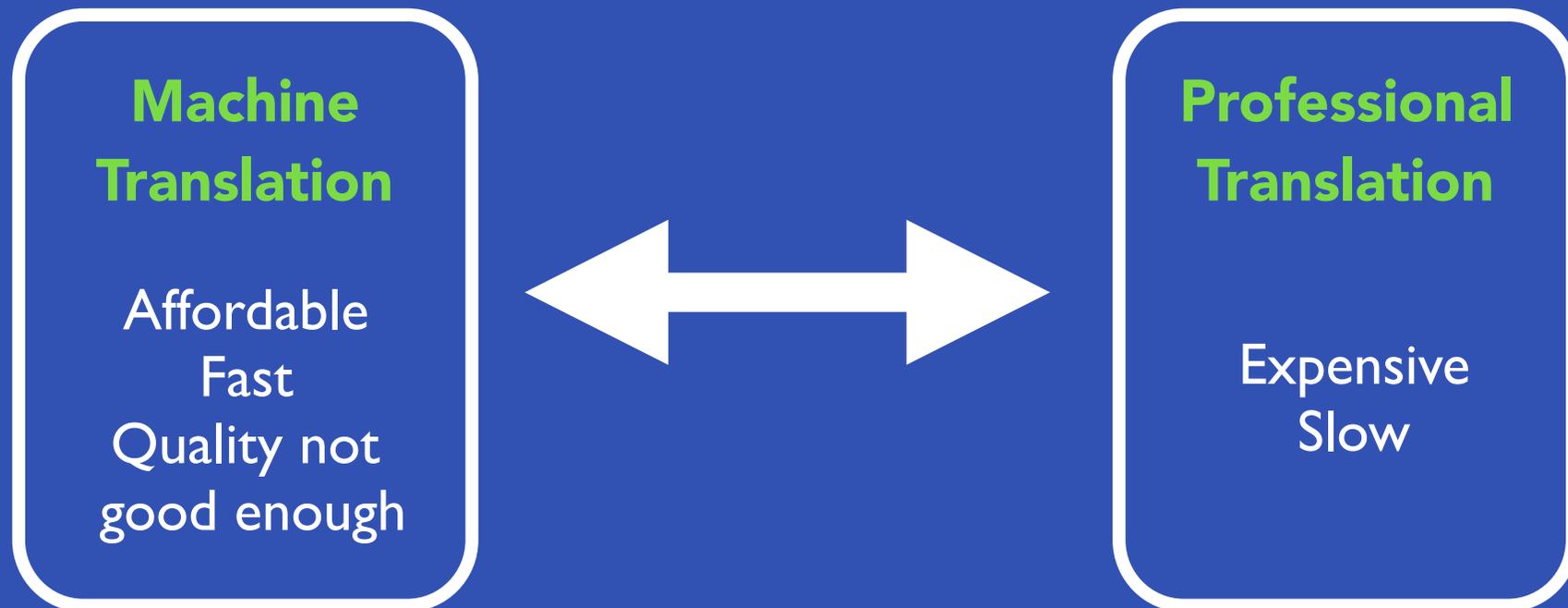*"Everyone speaks English"* costs the UK

£48B

3.5% UK GDP every year

Just 12%

of EU retailers **sell online** to other EU countries

Just 15%

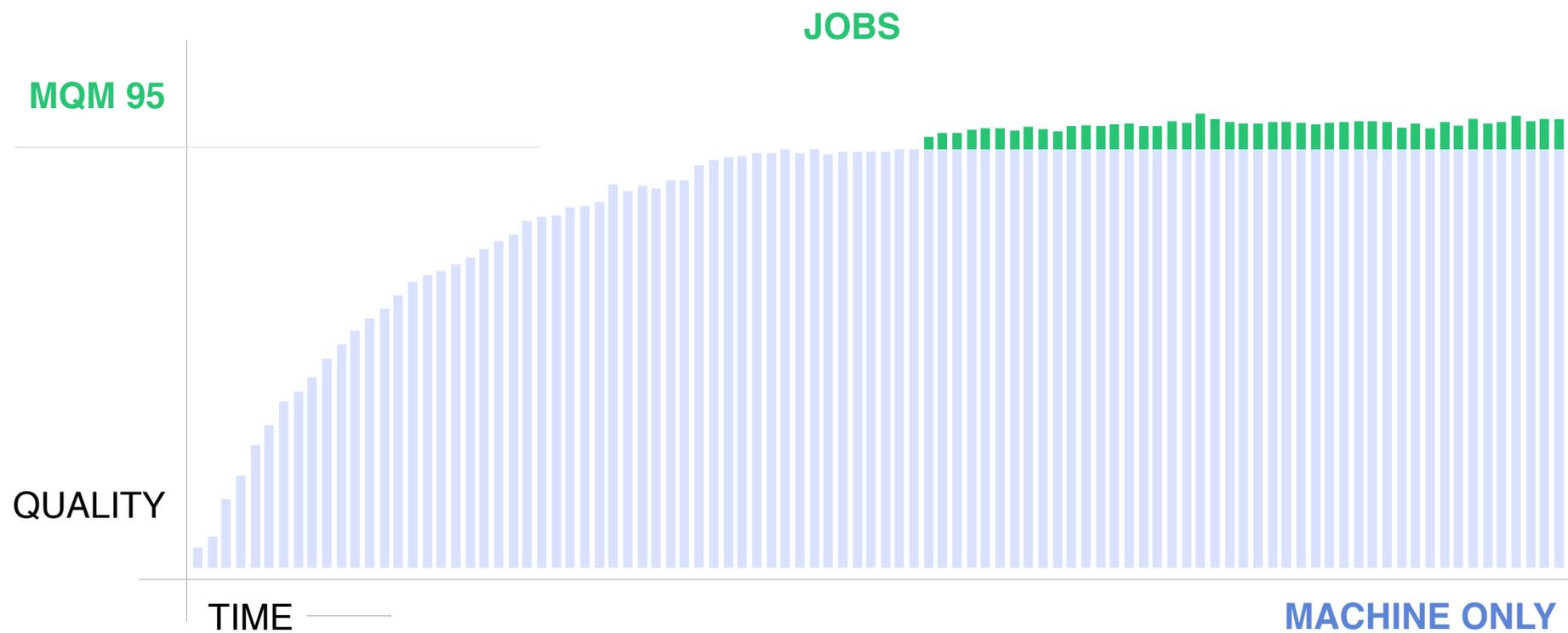of EU consumers **buy online** from other EU countries

Available Solutions

Lack of fast, affordable translation with human quality

Machine Translation

Affordable
Fast
Quality not
good enough
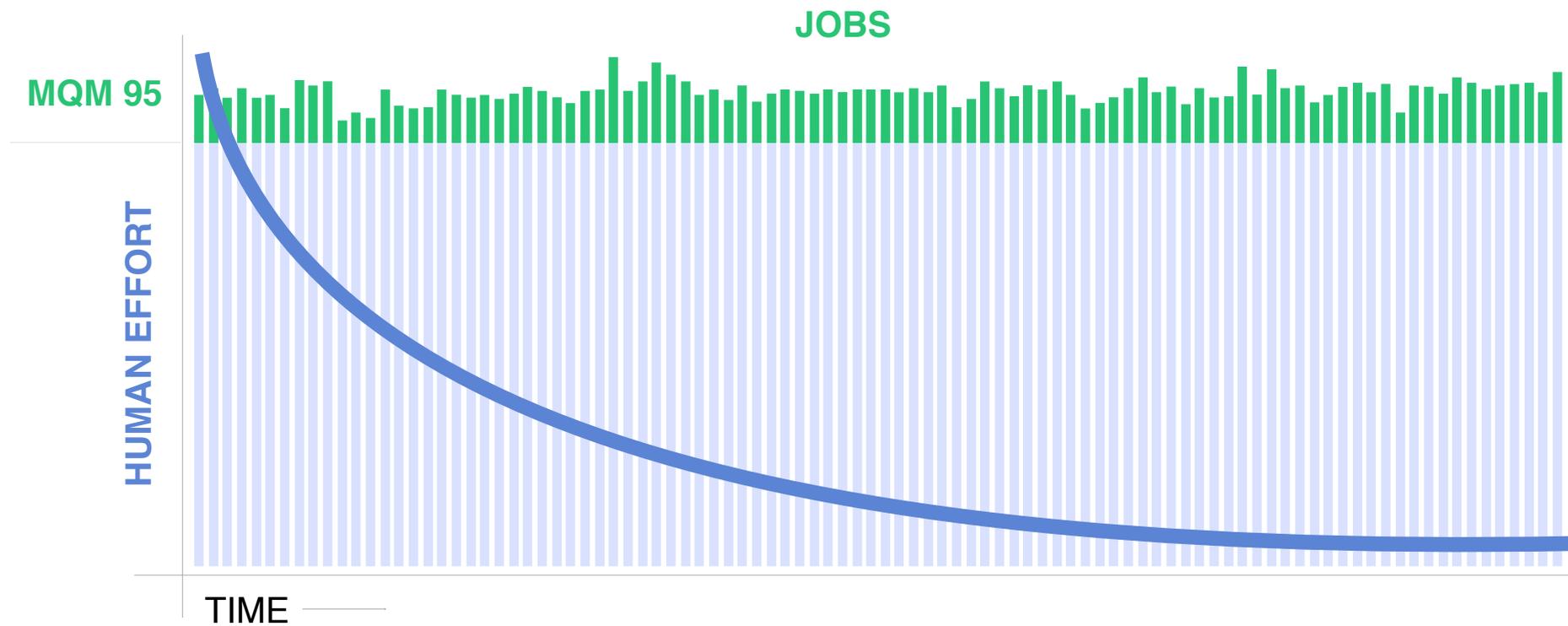
⟷

Professional Translation

Expensive
Slow

5

"All translation firms together are able to translate **far less than 1%** of relevant content produced everyday"

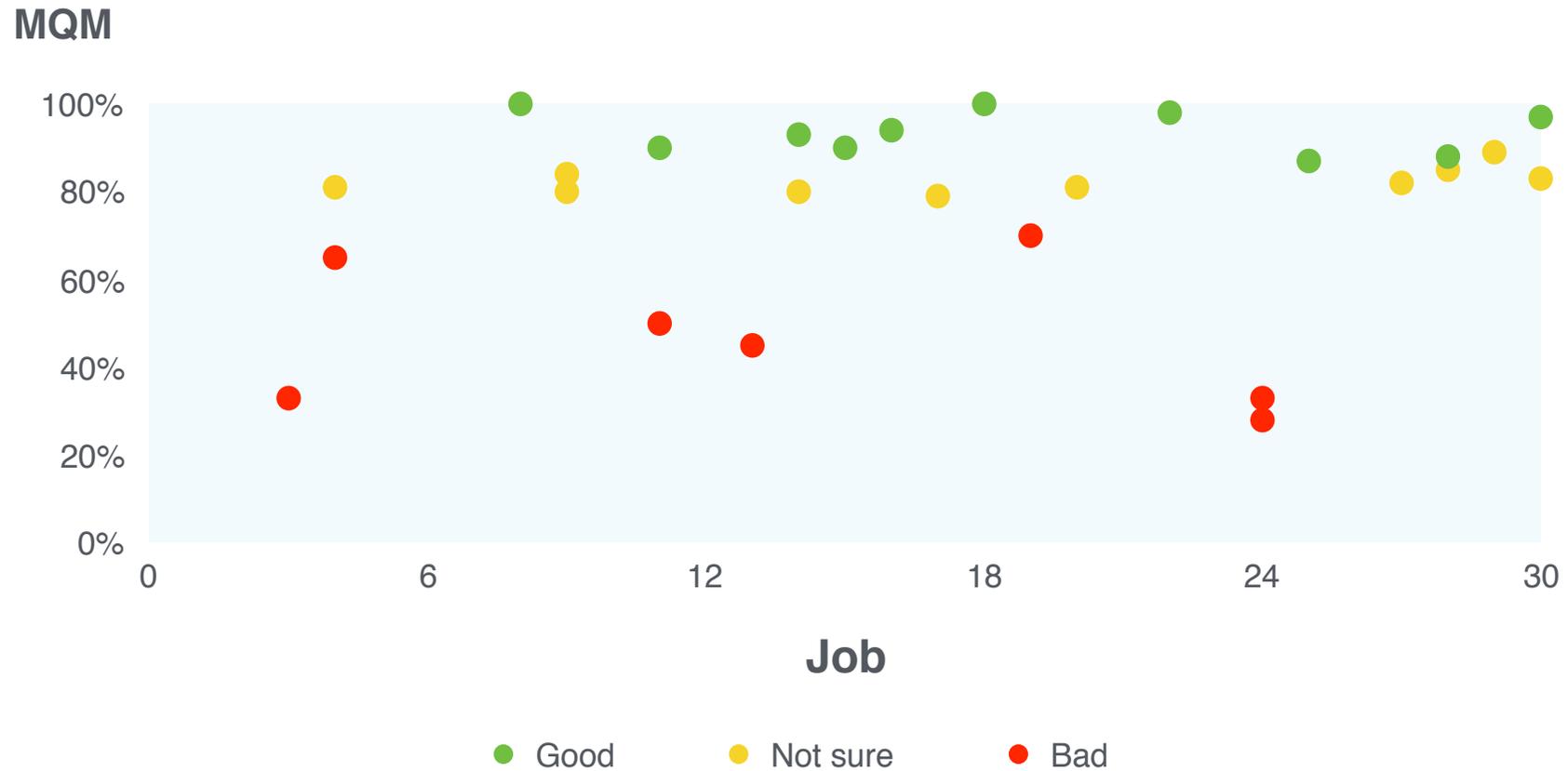**CSA – MT Is Unavoidable to Keep Up with Content Volumes**
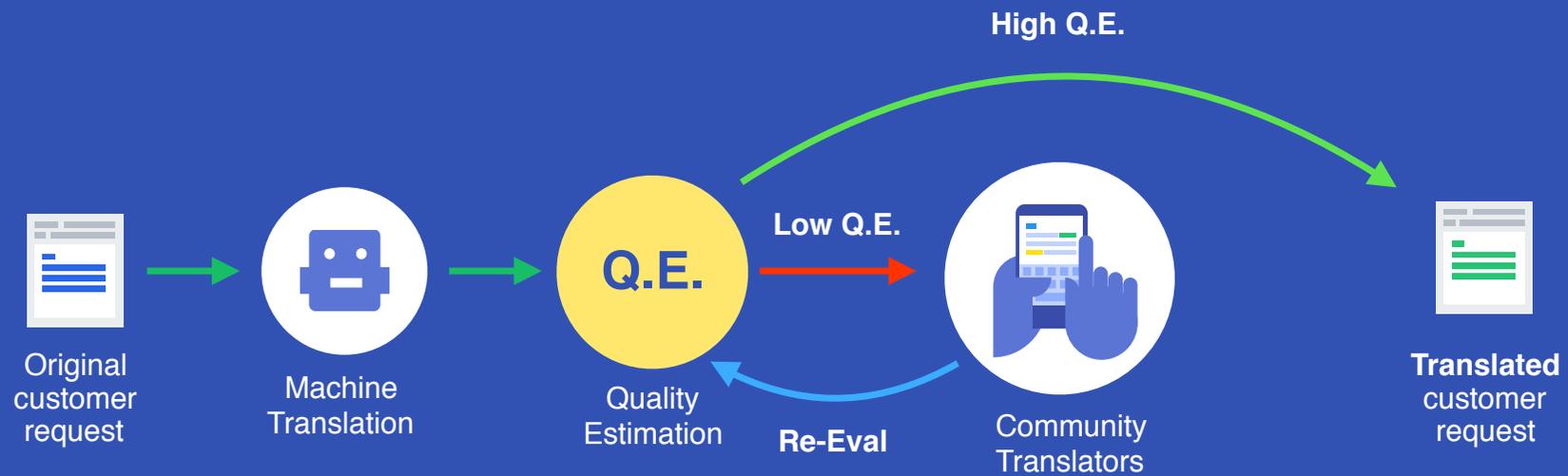
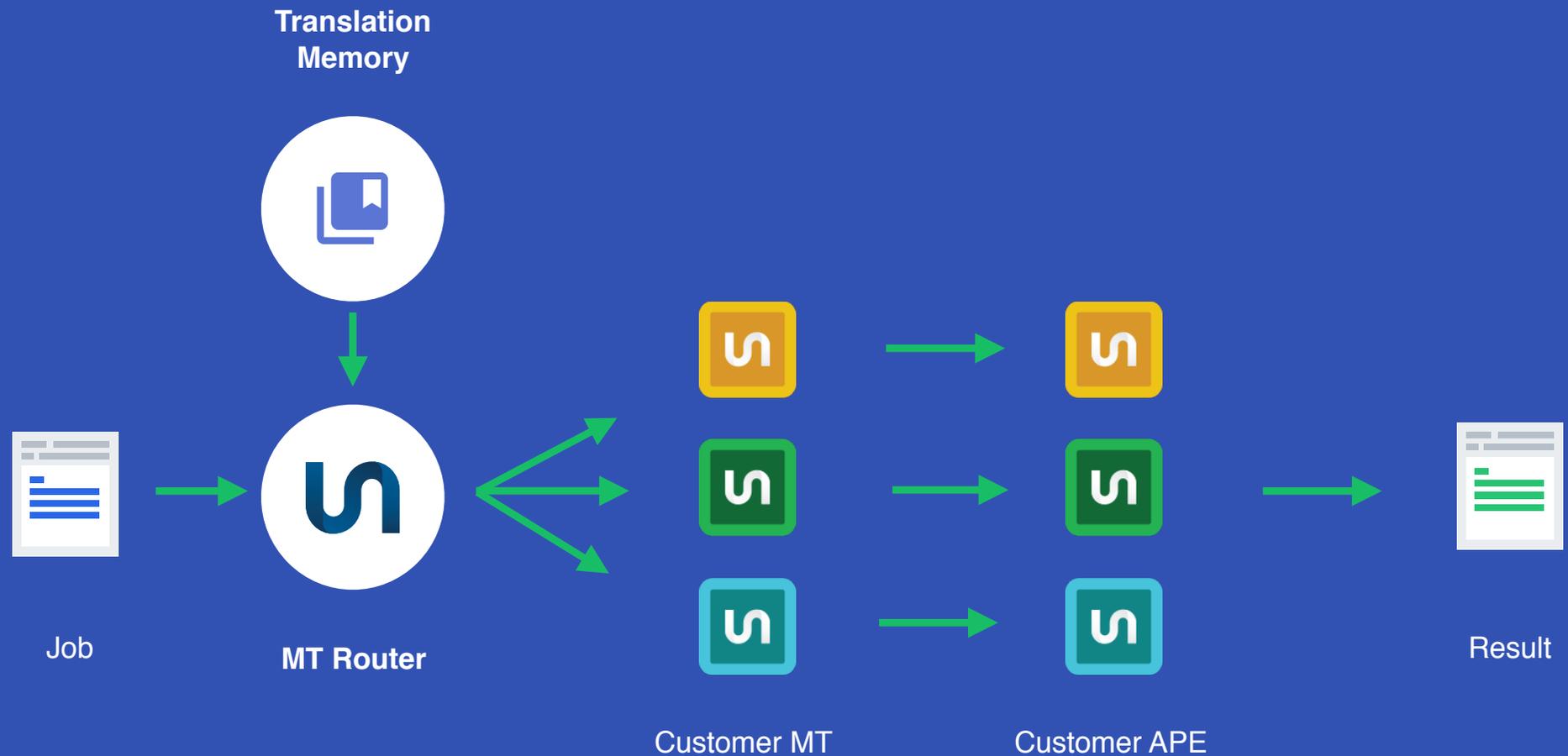# Will AI solve translation?

Will AI solve translation?

JOBS

MQM 95

HUMAN EFFORT

TIME

Quality per Job

Unbabel Pipeline

Original customer request → Machine Translation → Q.E. Quality Estimation

High Q.E.

Low Q.E.

Re-Eval

Community Translators

Translated customer request

Machine Translation Pipeline

Translation Memory

Job

MT Router

Customer MT

Customer APE

Result

Customer Adaptation

Customer Support Tickets

MQM
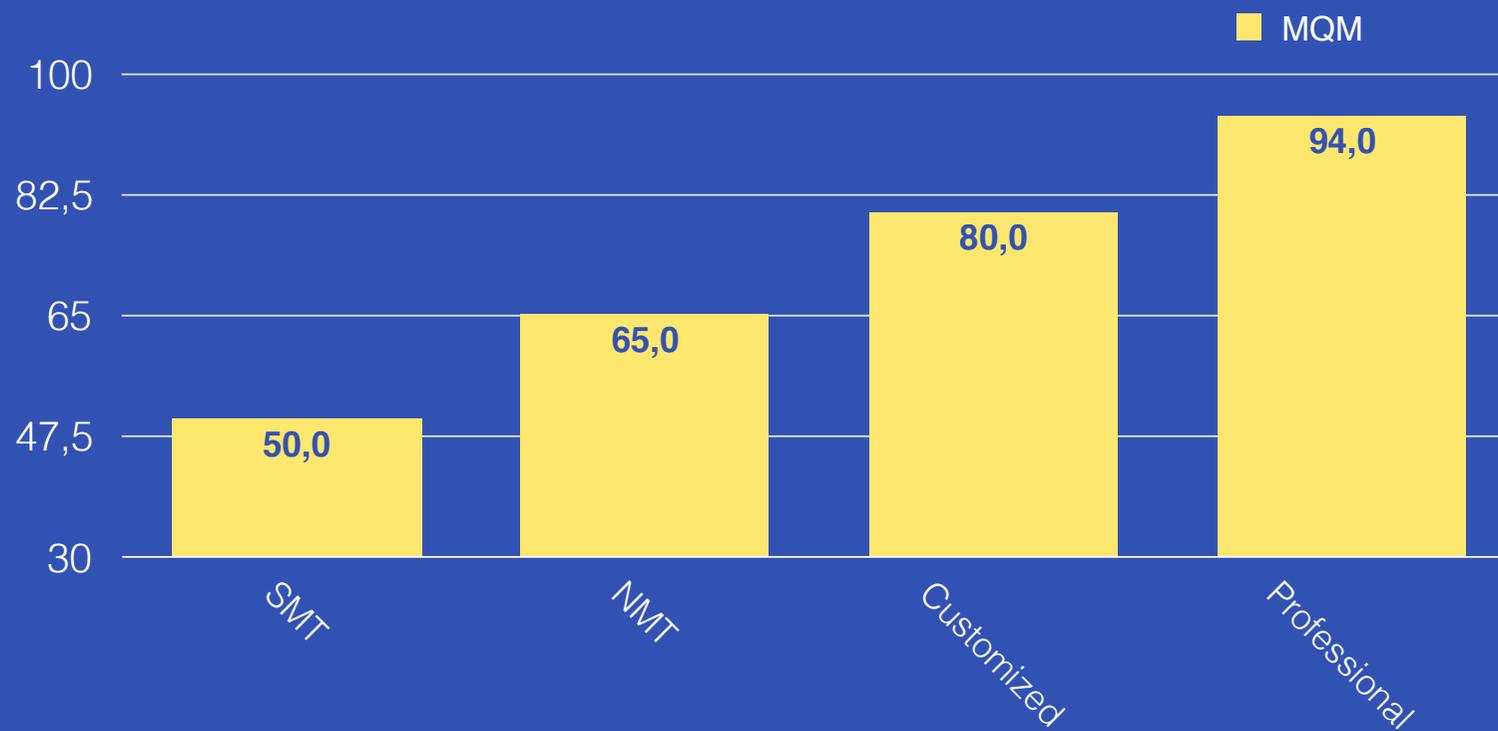
Quality Estimation

Word-Level QE
Which words are translated correctly/incorrectly?

Sentence-Level QE
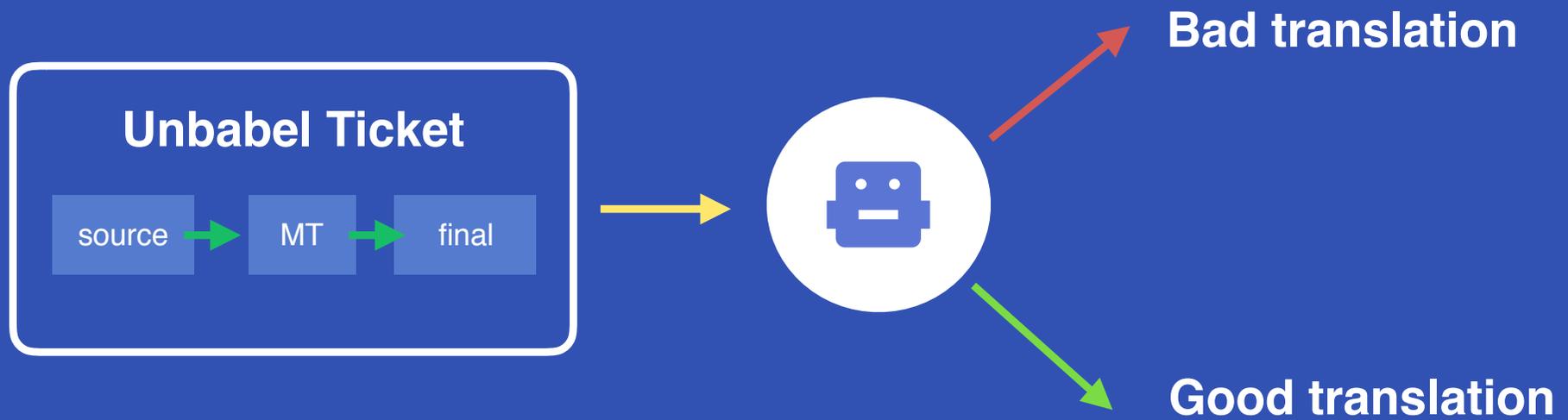How good is the entire translation?

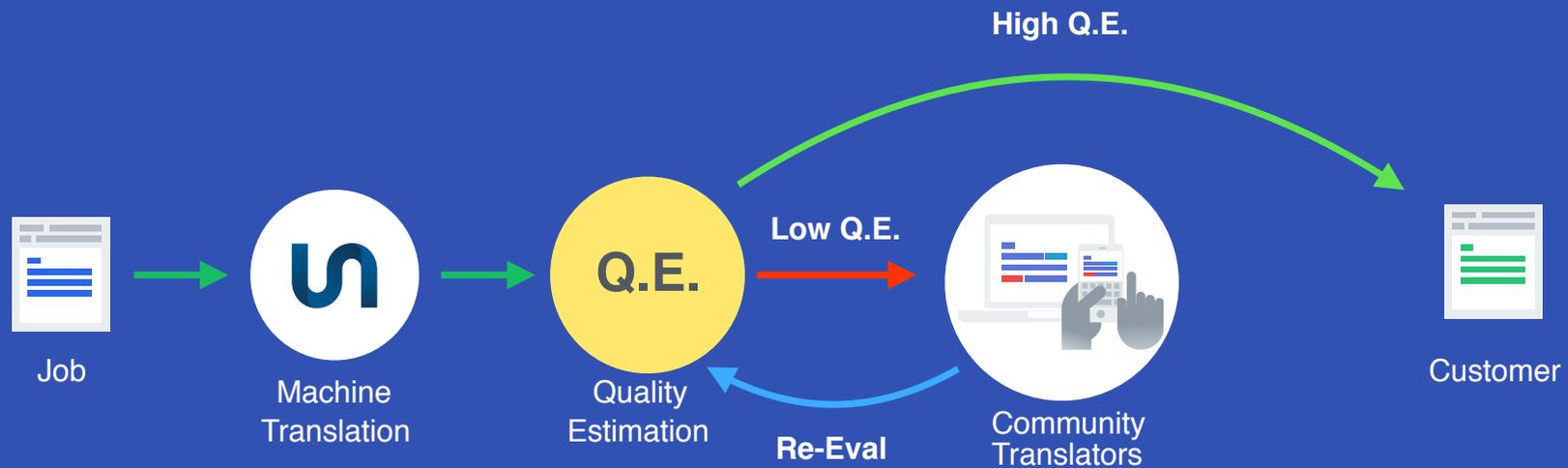# Quality Estimation

Word-level QE example
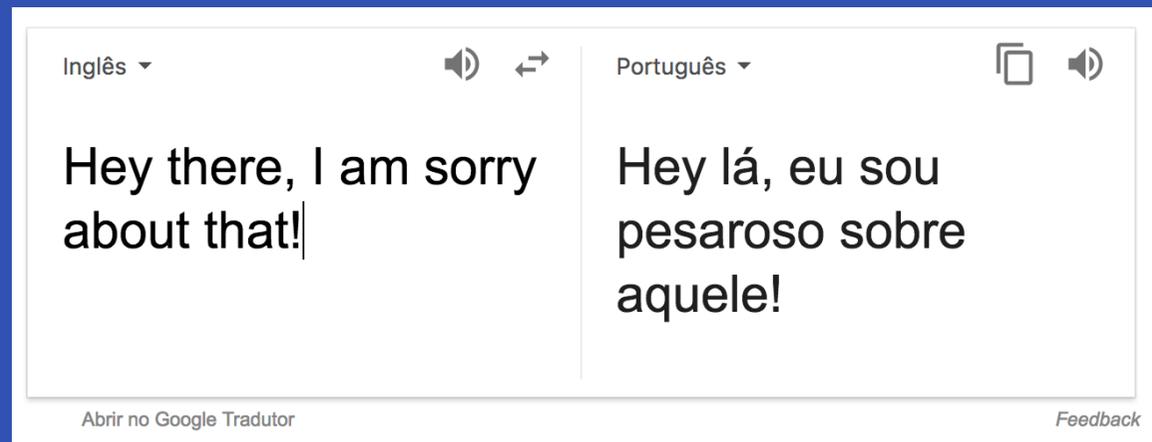
Hey lá , eu sou pesaroso sobre aquele !

BAD BAD OK BAD BAD BAD OK OK OK

QE Training

Unbabel Ticket

source → MT → final

Bad translation

Good translation

QE in the Pipeline

High Q.E.

Low Q.E.

Re-Eval

Job

Machine Translation

Q.E.

Quality Estimation

Community Translators

Customer

Document-Level QE
how good is the entire document?

Human QE
Can we evaluate post-edit output?

Data Generation Engine

Customer

Job → Machine Translation → Q.E. Quality Estimation → Community Translators → Q.E. Quality Estimation → Customer

Data Generation Engine

Before

After

Initial text

Initial text

NO DATA POINTS

With Data points:
**Mouse clicks
Key presses
Timestamps**

Submitted text

Submitted text
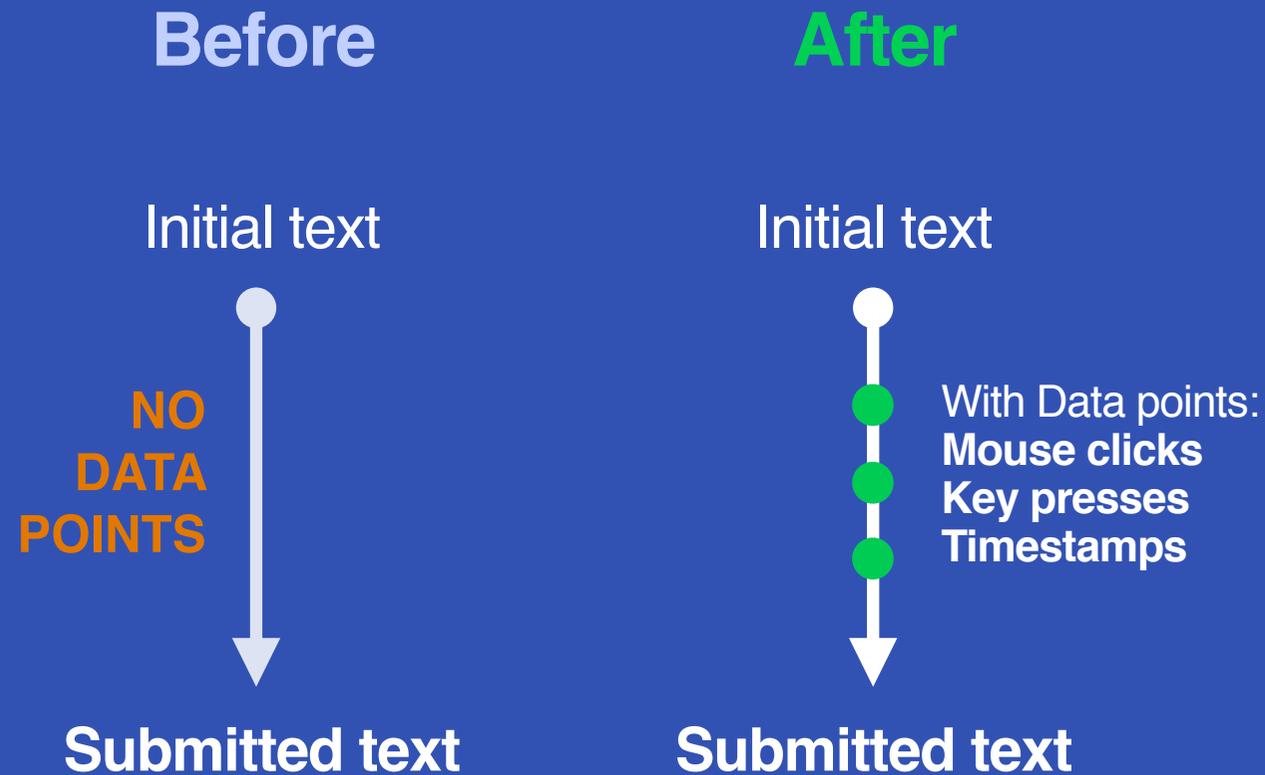
Keystroke Analysis

Raw data

At 18:03:30:
In nugget 3
mouseClick
Cursor at 16
Selected: 0
At 18:03:31:
In nugget 3
Pressed Backspace
Cursor at 16
Selected: 0
At 18:03:31:
In nugget 3
Pressed Backspace
Cursor at 15
Selected: 0
At 18:03:31:
In nugget 3
Pressed Backspace
Cursor at 14
Selected: 0

At 18:03:35:
In nugget 3
Pressed Shift
Cursor at 25
Selected: 0
At 18:03:35:
In nugget 3
Pressed s
Cursor at 25
Selected: 0
At 18:03:35:
In nugget 3
Pressed i
Cursor at 26
Selected: 0
At 18:03:35:
In nugget 3
Pressed e
Cursor at 27
Selected: 0

At 18:03:30:
In nugget 3
mouseClick
Cursor at 16
Selected: 0
At 18:03:31:
In nugget 3
Pressed Backspace
Cursor at 16
Selected: 0
At 18:03:31:
In nugget 3
Pressed Backspace
Cursor at 15
Selected: 0
At 18:03:31:
In nugget 3
Pressed Backspace
Cursor at 14
Selected: 0

Processed information

Initial text
"Espero que esto es útil"

- Deleted word "es"
- Inserted word "sea"

Submitted text
"Espero que esto sea útil"

Profession translation

Cost

Speed
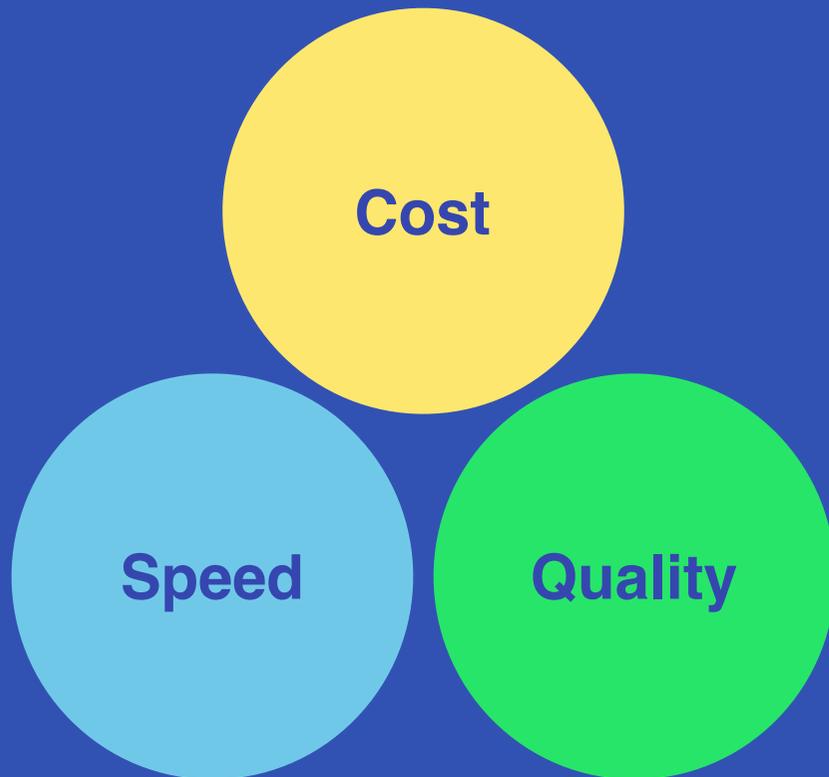
Quality

Unbabel pillars

- Editors Pool
- Initial Text (MT)
- Editor Assignment
- Custom Editing Interfaces
- Constant Quality Evaluation

Unbabel Community

50.000 Users

Editors Pool

4 More specialization layers will be created

3 **Only the best rated editors have access to customer tasks**

2 Editors get rated with training tasks

1 First tests right after signup

Expert Editor

Paid Work

Training Content

Testing Phase

Annotators

Evaluators

Evaluation Tool

Evaluation Language Pair: English to Spanish Tone: Formal Editor: joel.sosa76

No instructions available.

Source | Translation
Hi, Here is a support page with common credit card | Hola: Aquí hay una página de soporte con problemas

Document Level Human QE

Evaluation Report | Final score: 3

English to Spanish Linguist notes

There were no edits done to the text. This results in a forced sentence structure.

- "Hola" should be followed by a full stop.

- "Here is" does not necessarily mean "aquí hay", but rather "aquí tiene" or "le facilitamos".

Deep Annotations

Error Analysis

Critical Erros MT

Legend: ● Addition ● Agreement ● Diacritics ● Grammatical Register ● Lexical Selection ● MT Hallucination ● Number ● Other POS Omitted ● Overly Literal ● POS ● Shouldn't Have Been Translated ● Tense/Mood/Aspect ● Under-translation

Categories: en-de, en-es, en-es-latam, en-it, en-pt, en-ru, en-tr

Axis: 0, 8, 16, 24

QE for Annotation

Pre-fill with word level QE

Editors Profiling
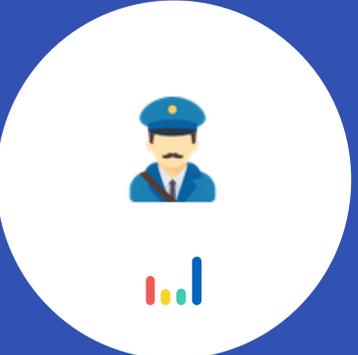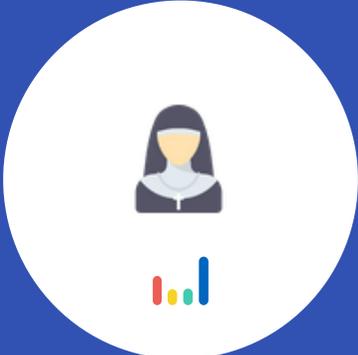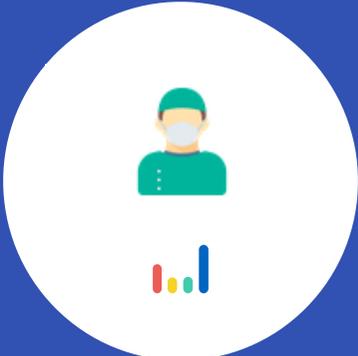
Editor Assignment

Queue	Topics	Priority	SLA	Tasks/time		Editors	Rating	Native	Topics
G		1000	6 H	2 m			4.2		
G		1100	30 m	6 m			3.8		
G		1000	2 D	10 m	Pull		4.3		
G		1000	6 D	12 m			4.8		
R		1100	20 m	18 m					
R		1100	40 m	45 m					

Editor Assignment

Regular distribution
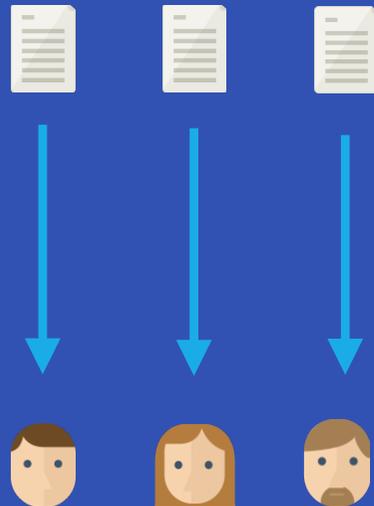
Smart distribution

★★★☆★ 3.8

old rating

★★★★★ 4.6

Improved rating

Post-Editing Interfaces

QE on Interfaces

Post-Editing Interfaces

Time Spent on Job

Translator 1   Translator 2

| MT | WAITING | ✏️ | WAITING | ✏️ | DELIVERY |
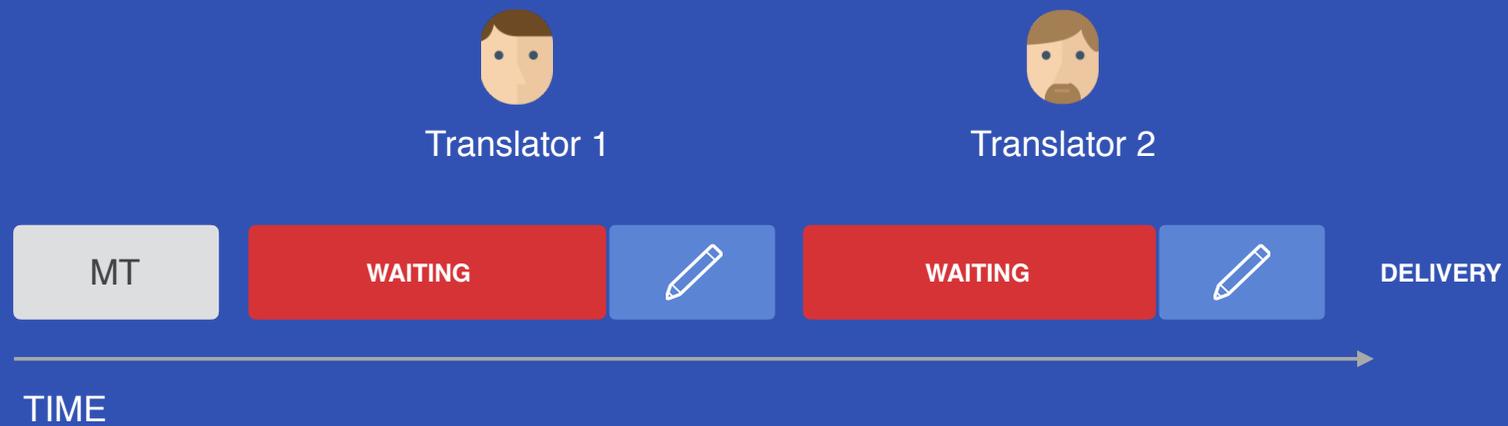
TIME

Time Spent on Job: **Mobile**
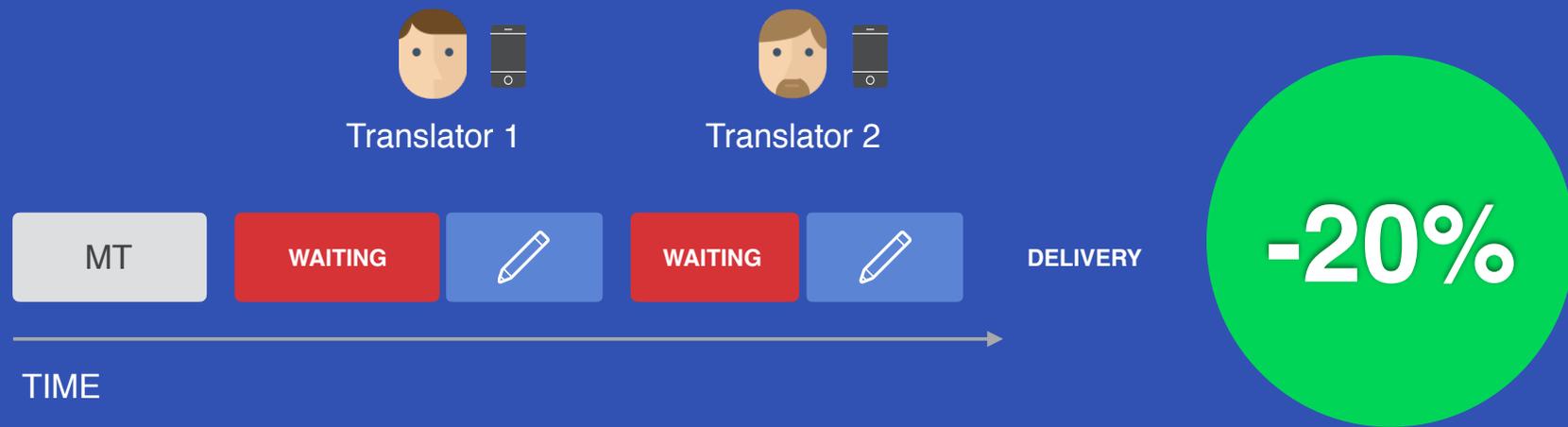
Smartcheck

Smartcheck (QE Version)

Customer Service

Conversational

zendesk

slack

Messenger

Bots

salesforce

MESSAGING API

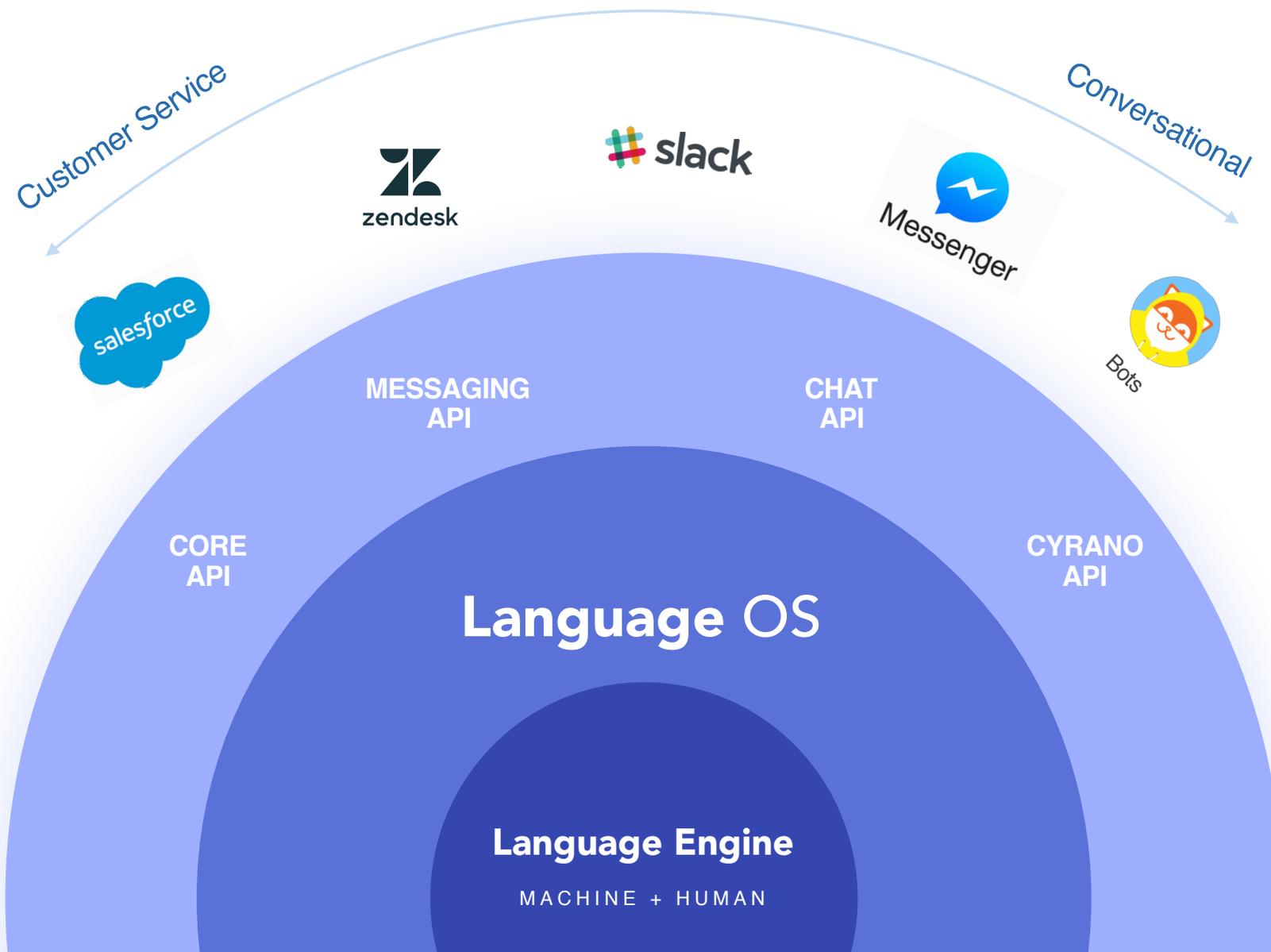**CHAT API**

CORE API

CYRANO API

Language OS

Language Engine

MACHINE + HUMAN
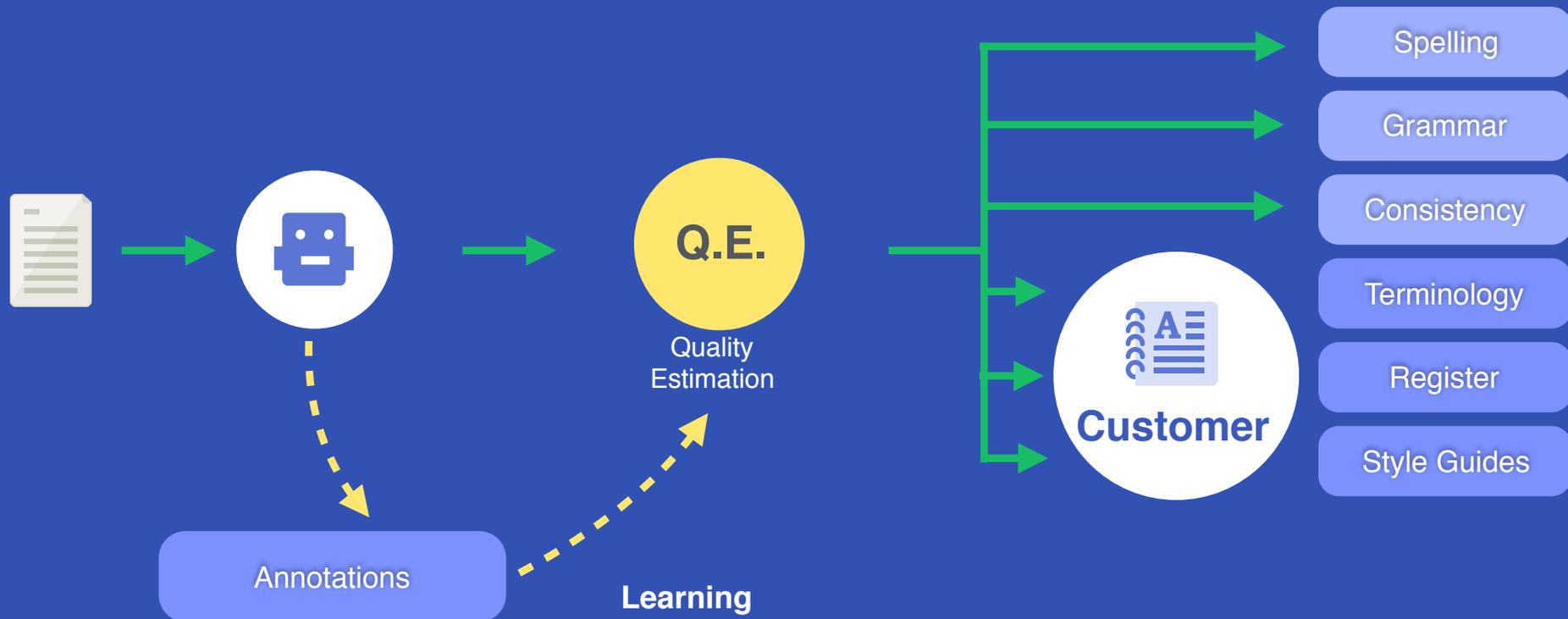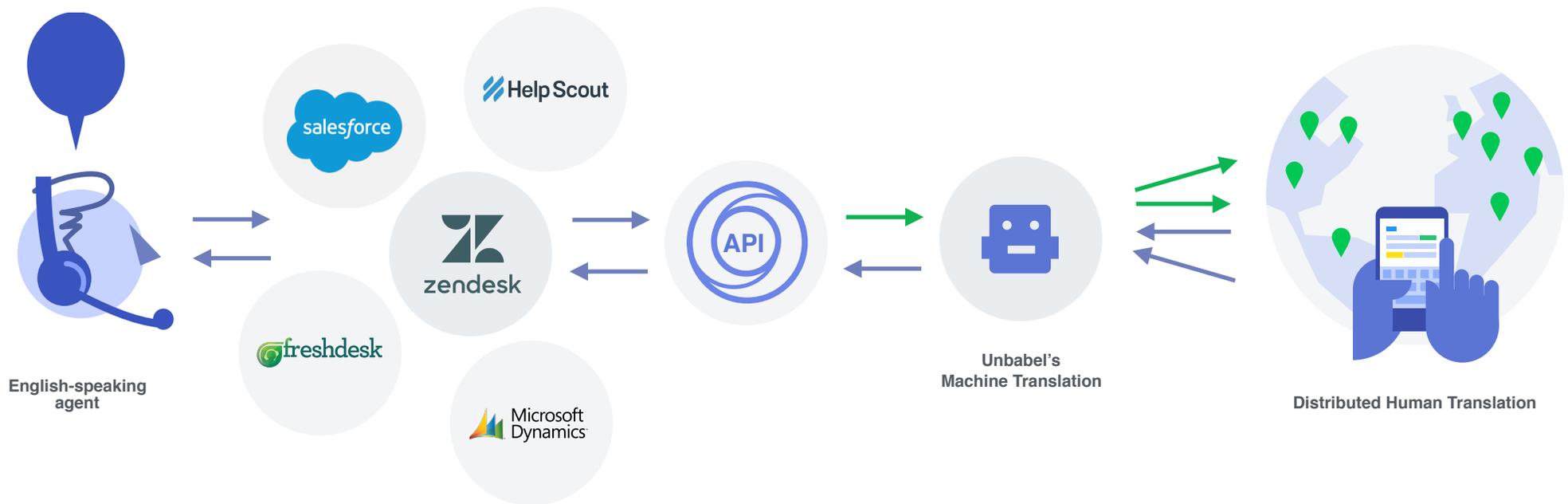
Unbabel for Customer Service

Unbabel adapts to any workflow

Customer Replies: **Speed & Quality**

20 minutes

94

Unbabel Chat

Native speaking
in multiple languages

Chat

Chat Translation Flow

Editors train the MT engine
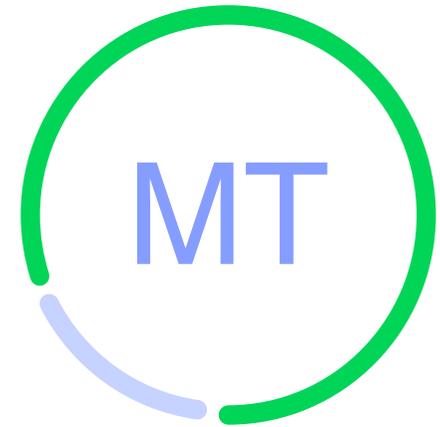
Skips Humans

Community of 100K+ translators
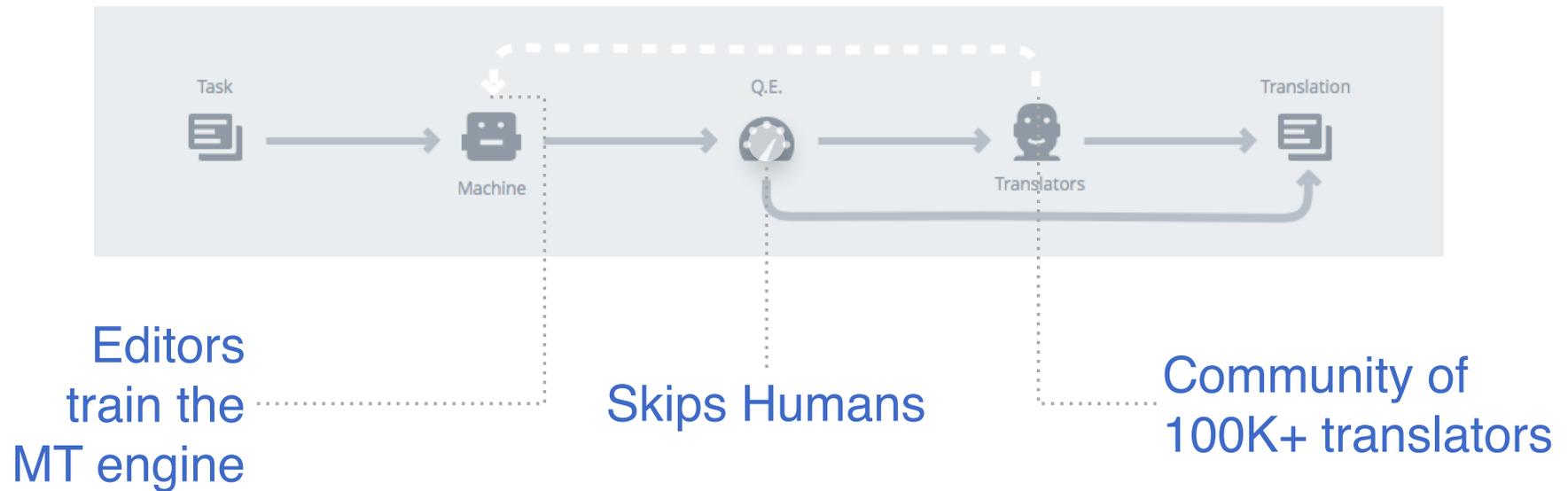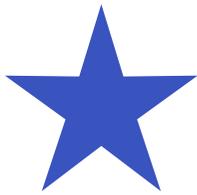
Chat Messages: **Speed & Quality**

2 minutes

90

MT
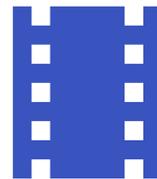
80%

Other Use Cases

Reviews

Video

Newsletters

Travel descriptions

SEO

We're Hiring

https://unbabel.com/careers/

Unbabel