

AN ONLINE PLATFORM FOR THE COLLECTION AND ANALYSIS OF DATA ON WEB-BASED COLLABORATIVE BUSINESS TRANSLATION

SIU Sai Cheong

School of Translation

Hang Seng Management College

Background

- Web-based collaborative translation has been playing an important role in business translation.
- There are tools that facilitate the operation of online translation teams.
- However, few of the tools are research-oriented, that is, allowing researchers to record and analyse data on the collaborative process.

Background

- To bridge the gap, this paper presents **TranXtudio**, a web-based platform under development.
- The system will bring together the **practice and research** of web-based collaborative business translation.
- It is hoped that this work will provide insights into the **study** of web-based business translation teams and the collaborative translation community at large.

Outline

- Web-based Collaborative Business Translation
- Tools for Collaborative Translation
- The Design of the New Platform: TranXtudio
- User Interface
- Areas of Application
- Concluding Remarks

WEB-BASED COLLABORATIVE BUSINESS TRANSLATION

Web-based Collaborative Business Translation

- Growing demand for translation in an increasingly globalised business environment: the translation of financial documents and the localisation of promotional materials

Translation Servers

- **Project Managers:** creating translation projects, managing team members, monitoring the progress of translation
- **Translators:** getting access to their projects and sharing up-to-date translation memories and terminology databases
- **Editors:** reviewing and modifying the target text online, without passing documents or databases back and forth by email

TOOLS FOR COLLABORATIVE TRANSLATION

Collaborative Translation Systems

- We have seen a growth in the number of collaborative translation systems available on the market over recent years

Strengths

The systems offer important features that could facilitate collaborative translation:

- File Transmission
- Database Update and Sharing
- Revision History: modifications made to the target text by editors or managers

However...

- Web-based collaborative business translation is **more than** practical / professional translation.
- It indeed opens up **exciting possibilities** for further research: the **nature** of online collaborative translation, ways to **boost its effectiveness and efficiency**, its **impact** on different dimensions (e.g. linguistic transfer, practical translation, and the language industry), and **translator-machine interaction**.

Room for improvement

- Few of the current systems are designed with researchers in mind, and they tend to provide **rather limited functionality** for research on collaborative translation (e.g. recording and analysing data on the collaborative process).

Room for improvement

- It is important to collect a broader spectrum of data to deepen our understanding of web-based team translation.
- With the consent of team members, it would be beneficial to collect data such as the usage of translation databases and the records of online conversations between members.
- The data can help answer a wider range of questions, including how professional translators work differently from junior translators within a team and how they interact with each other.

TRANXTUDIO

TranXtudio

- Started in June 2015, this on-going project involves the development of an online tool for the collection and analysis of data on web-based team translation.

TranXtudio

- It will provide translation students and translators with a free alternative to existing online platforms for team translation.
- It will offer translation scholars and researchers an integrated platform that could be customised according to their research objectives, so as to help them conduct experiments involving online translation teams and collect and analyse data accordingly.

User Types

- **Researchers:** managing the system, setting up and configuring projects for the collection of data on collaborative translation, and viewing and analysing the data collected
- **Project Managers:** managing projects assigned by researchers
- **Editors:** finalising the target text and changes made to translation databases
- **Translators:** preparing the target text and suggesting changes to translation databases
- **Observers:** viewing the project without having the right to make changes to texts and databases

Features

1. **Simple Implementation:** Providing simple ways to set up the system and supporting cross-platform users
2. **A Versatile Environment for Various Modes of Collaboration:** Offering a broad spectrum of customisable tools for researchers with different needs
3. **Rich Features of Data Logging:** Keeping track of a wide variety of data and user activities
4. **Handy Tools for Data Analysis:** Helping researchers analyse and interpret the data collected

Feature 1: Simple Implementation

- TranXtudio is a Single-Page Application (SPA) written in only HTML and JavaScript, and all translation files, databases and data collected from collaborative translation activities are stored on Firebase, an external cloud-based database provider.


```

function writeFullPOS(input){
  var output = input;
  var pos = [
    ["VB", "Verb (Generic)"], ["VBD", "Verb (Past-tense)"], ["VBN", "Verb (Past-participle)"], ["VBP", "Verb (Infinitive)"], ["VBZ", "Verb (Future-tense)"], ["CP", "Copula"], ["VBG", "Gerund Verb"],
    ["JJ", "Adjective (Generic)"], ["JJR", "Comparative Adjective"], ["JJS", "Superlative Adjective"], ["RB", "Adverb"], ["RBR", "Comparative Adverb"], ["RBS", "Superlative Adverb"], ["NN", "Noun (Singular)"],
    ["NNP", "Proper Noun (Singular)"], ["NNPA", "Noun (Acronym)"], ["NNPB", "Noun (Abbreviation)"], ["NNPS", "Proper Noun (Plural)"], ["NNS", "Noun (Plural)"], ["NNO", "Possessive Noun"], ["NG", "Gerund Noun"],
    ["PRP", "Personal Pronoun"], ["PP", "Possessive Pronoun"], ["FW", "Foreign Word"], ["IN", "Preposition"], ["MD", "Modal Verb"], ["CC", "Coordinating Conjunction"], ["DT", "Determiner"], ["UH", "Interjection"],
    ["EX", "Existential There"], ["CD", "Cardinal Value (Generic)"], ["DA", "Date"], ["NU", "Number"]
  ];
  for(var i=0; i<pos.length; i++){
    if (input === pos[i][0]) {
      output = pos[i][1];
      break;
    }
  }
  return output;
}

```

Feature 1: Simple Implementation

Easy Setup of the System:

- It is independent of server-side scripts such as PHP, researchers can set up the system easily with free web hosting providers that support HTML webpages.
- They do not need to install their own servers or subscribe to hosting services that manage server-side scripting.

Feature 1: Simple Implementation

Easy Access to the System by Cross-platform Users:

- Unlike certain OS-dependent translation systems (e.g., Snowman), TranXtudio is web-based and cross-platform.
- Users of different operating systems and devices can access the system by using browsers. They do not need to set up client-side applications on their computers.

Feature 2: A Versatile Environment for Various Modes of Collaboration

- TranXtudio will offer a wide range of **translation tools**, including machine translation, translation memories, terminology databases, electronic dictionaries, concordancers, and chat rooms.

Feature 2: A Versatile Environment for Various Modes of Collaboration

- For example, researchers may be interested in the impact of **similarity measures** of a translation memory system on the reuse of translation by team members.
- They can conduct experiments by changing the **similarity settings**.

Siu (2015a)

For $A = a_1 a_2 \dots a_{|A|}$ and $B = b_1 b_2 \dots b_{|B|}$,

$$\text{Similarity}(A, B) = \frac{1}{2} \left(\frac{\sum_{m=1}^{|A|} \text{CharSimB}(a_m)}{|A|} + \frac{\sum_{n=1}^{|B|} \text{CharSimA}(b_n)}{|B|} \right),$$

where

1. $\text{CharSimA}(b_n) = \begin{cases} 1 - \min_{a^*} (|\text{rpos}(b_n) - \text{rpos}(a^*)|), & \text{if there exists } a^* = b_n \text{ in } A; \\ 0, & \text{if otherwise} \end{cases}$
2. $\text{CharSimB}(a_m) = \begin{cases} 1 - \min_{b^*} (|\text{rpos}(a_m) - \text{rpos}(b^*)|), & \text{if there exists } b^* = a_m \text{ in } B; \\ 0, & \text{if otherwise} \end{cases}$
3. $\text{rpos}(a_m) = \frac{m}{|A|}$; and
4. $\text{rpos}(b_n) = \frac{n}{|B|}$.

Feature 3: Rich Features of Data Logging

TranXtudio will keep track of a wide variety of data and user activities.

- (a) **Data on Projects:** project turnaround time, the source text and the target text of the project, and machine translation scores (based on the comparison between the machine translation output and the team's translation)
- (b) **Data on the Use of Translation Tools:** the usage of translation tools and input by users

Feature 3: Rich Features of Data Logging

- (c) **Data on Users:** translators' background, translation time, and changes made to others' translators or to the output of machine translation
- (d) **Data on Interaction:** team members' comments on the target text and the records of discussion among team members

Feature 4: Handy Tools for Data Analysis

The system will be equipped with two tools to help researchers analyse their data:

- Report Generator
- Text Analysis Toolkit

Feature 4: Handy Tools for Data Analysis

Report Generator: TranXtudio can compile a number of reports that summarise statistics on collaborative translation.

- (a) **Report on a Project: Team Interaction and Translation:** summarising the features of a translation project, such as the revision history and the records of discussion.
- (b) **Report on the Usage of Translation Tools:** providing the records of the use of translation tools, such as the date and time that they are used, members who have used the tools, and the input history (e.g., words looked up in the team's dictionaries).

Feature 4: Handy Tools for Data Analysis

- (c) **Report on a Member:** summarising the activities of a team member, such as his or her translation, the records of discussion and revision, the speed of translation, and comments on his or her work by other translators.
- (d) **Report on a Member Category:** providing information about a particular member category (e.g., editors or translators) and helps study the behavioural patterns of the members.

Feature 4: Handy Tools for Data Analysis

Text Analysis Toolkit

- Based on the corpus analysis tool discussed in Siu (2015b), the toolkit enables researchers to **analyse** the source text and the target text by translation teams.
- The toolkit is equipped with a **bilingual concordancer and corpus pre-processing tools** such as part-of-speech taggers to help researchers conduct in-depth qualitative and quantitative analyses.

USER INTERFACE

Login Page: Logging into the system

TranXtudio

Online Collaborative Translation System

Welcome!

Username

Password

Main Page: Showing your projects

TranXtudio

Online Collaborative Translation System

Your Projects

Create a Project

Project Name	Project ID	Creation Date	Owner	Status	Action
Sample Project 1	1	28/12/2015	scsiu	To be launched at 08:00 on 29/12/2015	Select an action... ▼

Project Creation Page: Creating and configuring your project

The screenshot shows the 'TranXstudio Online Collaborative Translation System' project creation interface. It features a 'Create a Project' section with a horizontal tab bar containing 'Basic Settings', 'Members', 'Pre-processing', 'MT', 'TM', 'Termbases', 'Dictionaries and Corpora', and 'Data to be Recorded'. The 'Members' tab is highlighted with a blue border. Below the tabs are input fields for 'Project Name', 'Firebase URL' (with a note to leave blank if self-hosted), and 'Source Text'. A 'Ready to Go' button is in the top right, and an 'Open' button is at the bottom left. Two callout boxes provide additional context: a green one for the 'Ready to Go' button and a blue one for the 'Members' tab.

TranXstudio
Online Collaborative Translation System

Create a Project

Basic Settings **Members** Pre-processing MT TM Termbases Dictionaries and Corpora Data to be Recorded

Project Name

Firebase URL
Please leave this blank if you are hosting your own instance of TranXstudio.

Source Text

Open

Ready to Go

Team members can log into the system

Configuring the settings of the translation platform to suit research needs

Configurable Items	Details
(1) Pre-processing	<p>Researchers can specify</p> <ul style="list-style-type: none"> ● how the source text should be segmented; ● whether pre-translation should be enabled; and ● how pre-translation should be conducted (e.g., translating with machine translation only, translating with translation memories only, or translating with both tools).
(2) Machine Translation	<p>Researchers can specify</p> <ul style="list-style-type: none"> ● whether machine translation should be enabled; ● which machine translation engines should be used (e.g., Google Translate, Bing Translator, and the customisable “Stepwise” machine translation engine); and ● what bilingual files should be used by the customisable machine translation engine.
(3) Translation Memories	<p>Researchers can specify</p> <ul style="list-style-type: none"> ● whether translation memories should be enabled; ● what translation memory databases should be used; ● how the sentence similarity should be calculated; ● what the minimum similarity score for fuzzy matches should be; and ● which member categories can access, modify or finalise the translation memory databases.

Configurable Items	Details
(4) Terminology Databases	<p>Researchers can specify</p> <ul style="list-style-type: none"> ● whether terminology databases should be enabled; ● what terminology databases should be used; and ● which member categories can access, modify or finalise terminology databases.
(5) Electronic Dictionaries and Corpora	<p>Researchers can specify</p> <ul style="list-style-type: none"> ● whether electronic dictionaries (or corpora) should be enabled; and ● what electronic dictionaries (or corpora) should be imported into the system.
(6) Data to be Captured	<p>Researchers can specify</p> <ul style="list-style-type: none"> ● what data about the project should be collected; ● what data about translation tools should be collected; ● what data about team members should be collected; and ● what data about team interaction should be collected.

Consent Page

TranXtudio

Online Collaborative Translation System

Consent Page

Username: demo_user_01

email: demo_user_01@tranxtudio.com

Project name: Sample Project 2

Project ID: 2

By clicking the Agree button, you agree that the following data will be collected automatically for research purposes:

- your translation
- your comments
- your usage of translation tools
- your discussion records

Please click Exit if you do not agree to the above terms.

Agree

Exit

Collaborative Editor: Centralised Translation Workbench for Translation and Revision

TranXstudio

Online Collaborative Translation System

Collaborative Editor

Back

Source Text	Target Text	Actions
至於衍生產品市場方面，香港期貨交易所（期交所）及聯交所提供一系列期貨及期權產品，包括指數期貨、股票期貨、利率期貨、債券期貨、黃金期貨、指數期權及股票期權。	For the derivatives market, the Hong Kong Futures Exchange (<u>HKFE</u>) and the <u>SEHK</u> offer a wide range of futures and options products, including index futures, stock futures, interest rate futures, bond futures, gold futures, index options and stock options.	<div>Show Toolkit</div> <div>Confirm</div>
在兩個交易所內進行的交易透過三間互連的結算公司進行交收及結算，該三間公司分別是香港中央結算有限公司、香港聯合交易所期權結算公司及香港期貨結算公司。	The transactions on the two exchanges are cleared and settled through their three associated clearing houses, namely, the Hong Kong Securities Clearing Company (<u>HKSCC</u>), the Stock Exchange of Hong Kong Options Clearing House Company (<u>SECH</u>) and the Hong Kong Futures Exchange Clearing Corporation (<u>HKCC</u>).	<div>Show Toolkit</div> <div>Confirm</div>
截至2015年4月底，共有27間海外交易所和市場營運者獲認可為自動化交易服務提供者，為香港機構提供交易服務。	As at the end of April 2015, 27 overseas exchanges and market operators were <u>authorised</u> as automated trading services providers to offer their trading services to institutions in Hong Kong.	<div>Show Toolkit</div> <div>Confirm</div>
除股票及期貨市場外，本港亦有一個活躍的場外交易市場，該市場主要由專業機構參與運作及使用，而涉及的产品包括與股票、利率及貨幣有關的掉期、遠期及期權合約。	Apart from the stock market and the futures market, there is also an active over-the-counter (OTC) market which is mainly operated and used by professional institutions and trades swaps, forwards and options in relation to equities, interest rates and currencies.	<div>Show Toolkit</div> <div>Confirm</div>
香港交易及結算有限公司附屬公司香港場外結算有限公司（場外結算公司）已於2013年11月投入運作，為若干類別的場外衍生產品結算提供服務。	OTC Clearing Hong Kong Limited (OTC Clear), a subsidiary of the Hong Kong Exchanges and Clearing Limited (<u>HKEx</u>), commenced operation in November 2013 to provide clearing services for certain types of OTC derivative products.	<div>Show Toolkit</div> <div>Confirm</div>

Show Toolkit

Translation Toolkit

Collaborative Editor

Back

Source Text	Target Text	Actions
至於衍生產品市場方面，香港期貨交易所（期交所）及聯交所提供一系列期貨及期權產品，包括指數期貨、股票期貨、利率期貨、債券期貨、黃金期貨、指數期權及股票期權。	For the derivatives market, the Hong Kong Futures Exchange (HKFE) and the SEHK offer a wide range of futures and options products, including index futures, stock futures, interest rate futures, bond futures, gold futures, index options and stock options.	<div>Close Toolkit</div> <div>Confirm</div>

Translation Toolkit

Suggested Translation ▼

SL	Source	TL
Sentences		
至於衍生產品市場方面，香港期貨交易所（期交所）及聯交所提供一系列期貨及期權產品，包括指數期貨、股票期貨、利率期貨、債券期貨、黃金期貨、指數期權及股票期權。	100%	For the derivatives market, the Hong Kong Futures Exchange (HKFE) and the SEHK offer a wide range of futures and options products, including index futures, stock futures, interest rate futures, bond futures, gold futures, index options and stock options.
至於衍生產品市場方面，香港期貨交易所（期交所）及聯交所提供一系列期貨及期權產品，包括指數期貨、股票期貨、利率期貨、債券期貨、黃金期貨、指數期權及股票期權。	MT	As for the derivatives market, the Hong Kong Futures Exchange (HKFE) and the Stock Exchange offers a range of futures and options products, including index futures, stock futures, interest rate futures, bond futures, gold futures, index options and stock options.
Expressions		
衍生產品市場	TB	derivatives market
香港期貨交易所	TB	Hong Kong Futures Exchange
期貨	TB	futures

Drop-down list:
More tools...

TM

TM

TB

Option	Description
Machine Translation	Getting the output of machine translation
Translation Memories	Viewing 100% or fuzzy matches retrieved from the team's translation memories
Terminology Databases	Viewing terms retrieved from the team's terminology databases
Electronic Dictionaries and Corpora	Accessing the team's electronic dictionaries and corpora
Comments	Adding comments to the current target text segment
Chat Room	Accessing the chat room of the current project
History	Viewing the revision history of the current target text segment

Collaborative Editor: Centralised Translation Workbench for Translation and Revision

TranXstudio

Online Collaborative Translation System

Collaborative Editor

Back

Source Text	Target Text	Actions
至於衍生產品市場方面，香港期貨交易所（期交所）及聯交所提供一系列期貨及期權產品，包括指數期貨、股票期貨、利率期貨、債券期貨、黃金期貨、指數期權及股票期權。	For the derivatives market, the Hong Kong Futures Exchange (<u>HKFE</u>) and the <u>SEHK</u> offer a wide range of futures and options products, including index futures, stock futures, interest rate futures, bond futures, gold futures, index options and stock options.	<div>Show Toolkit</div> <div>Confirm</div>
在兩個交易所內進行的交易透過三間互連的結算公司進行交收及結算，該三間公司分別是香港中央結算有限公司、香港聯合交易所期權結算公司及香港期貨結算公司。	The transactions on the two exchanges are cleared by three associated clearing houses, namely the Clearing Company (<u>HKSCC</u>), the Stock Exchange Clearing House Company (<u>SECH</u>) and the Hong Kong Futures Exchange Clearing Corporation (<u>HKCC</u>).	<div>Show Toolkit</div> <div>Confirm</div>
截至2015年4月底，共有27間海外交易所和市場營運者獲認可為自動化交易服務提供者，為香港機構提供交易服務。	As at the end of April 2015, 27 overseas exchanges and market operators were <u>authorised</u> as automated trading services providers to offer their trading services to institutions in Hong Kong.	<div>Show Toolkit</div> <div>Confirm</div>
除股票及期貨市場外，本港亦有一個活躍的場外交易市場，該市場主要由專業機構參與運作及使用，而涉及的产品包括與股票、利率及貨幣有關的掉期、遠期及期權合約。	Apart from the stock market and the futures market, there is also an active over-the-counter (OTC) market which is mainly operated and used by professional institutions and trades swaps, forwards and options in relation to equities, interest rates and currencies.	<div>Show Toolkit</div> <div>Confirm</div>
香港交易及結算有限公司附屬公司香港場外結算有限公司（場外結算公司）已於2013年11月投入運作，為若干類別的場外衍生產品結算提供服務。	OTC Clearing Hong Kong Limited (OTC Clear), a subsidiary of the Hong Kong Exchanges and Clearing Limited (<u>HKEx</u>), commenced operation in November 2013 to provide clearing services for certain types of OTC derivative products.	<div>Show Toolkit</div> <div>Confirm</div>

Confirm

Main Page: Translation Progress and Data Review and Analysis

TranXtudio

Online Collaborative Translation System

Your Projects

Create a Project

Project Name	Project ID	Creation Date	Owner	Status	Action
Sample Project 1	1	28/12/2015	scsiu	To be completed by 08:00 on 12/1/2016	Select an action...

View Progress

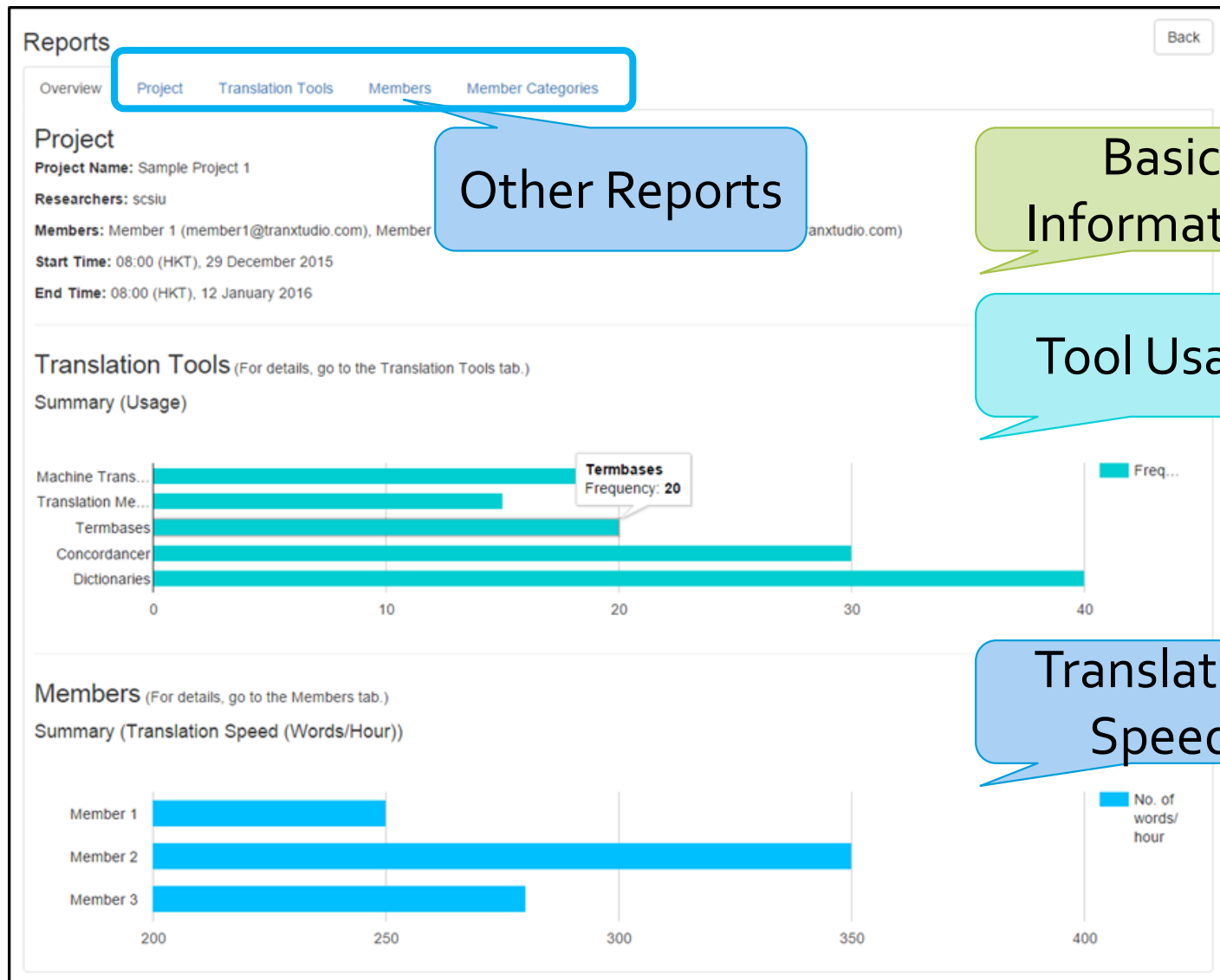
Member	Email	Progress
Member 1	member1@tranxtudio.com	
Member 2	member2@tranxtudio.com	70%
Member 3	member3@tranxtudio.com	50%

View Progress

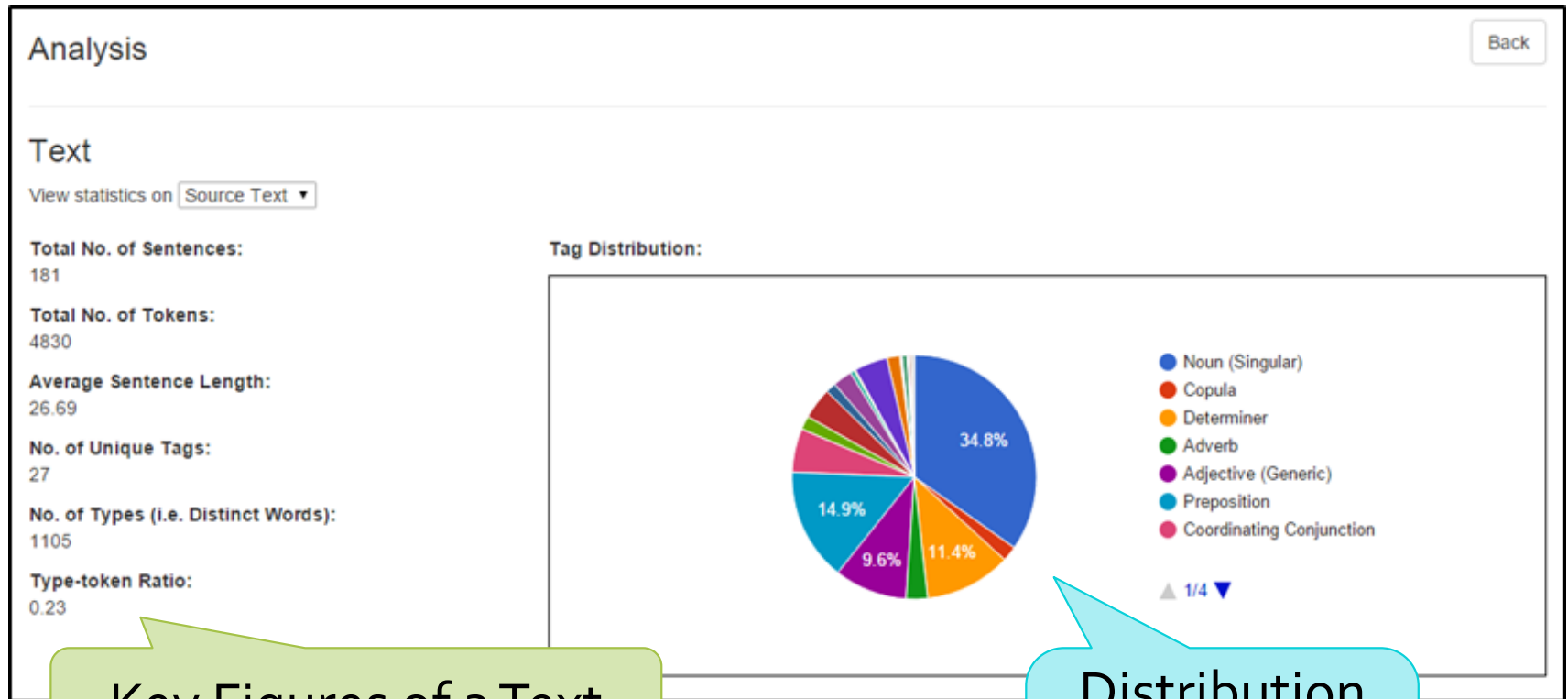
Reports

Text Analysis

Report Generator: Main Tab of "Reports" Page



Text Analysis Toolkit: Text Analysis



Key Figures of a Text

Distribution
of Parts of
Speech

Text Analysis Toolkit: Sentence Analysis

Revision History of a Sentence

Sentence			
Sentence 1 <input type="button" value="Change Sentence"/>			
Event	Actor	Time	Content
Source Text Imported	System	09:00 (HKT), 9 January 2016	Hong Kong is a major international financial centre, comprising an integrated network of institutions and markets which provide a wide range of products and services to local and international customers and investors.
MT Generated	System	09:00 (HKT), 9 January 2016	香港是重要的國際金融中心，包括機構和市場，這為本地和海外客戶和投資者提供多元化的產品和服務的綜合網絡。
TT Provided	Member 1	09:30 (HKT), 9 January 2016	香港是主要的國際金融中心，當中包括了由機構和市場整合而成的網絡，為本地和海外客戶及投資者提供多元化的產品及服務。
TT Revised	Member 2	10:00 (HKT), 9 January 2016	香港是主要的國際金融中心，金融機構和市場緊密聯繫，為本地和海外客戶及投資者提供多元化的投資產品及服務。
<input type="button" value="More"/>			

ST

MT

Translator 1

Translator 2

Text Analysis Toolkit: Expression Analysis

Expression to be analysed

Bilingual
Concordancer

Expression	
<input type="text" value="SEHK"/>	<input type="button" value="Go"/>
Source Language	Target Language
As at the end of April 2015, 1 780 companies were listed on the Stock Exchange of Hong Kong (SEHK), with a market capitalisation of HK\$30,995.2 billion. Among them, 896 were Mainland enterprises which have together raised around HK\$4,531.4 billion from 1993 to the end of April 2015.	截至2015年4月底，在香港聯合交易所（聯交所）掛牌的上市公司有1780間，資本市值總額達309,952億港元，當中有896間為內地企業，這些內地企業由1993年至2015年4月底已透過香港集資約45,314億港元。
For the derivatives market, the Hong Kong Futures Exchange (HKFE) and the SEHK offer a wide range of futures and options products, including index futures, stock futures, interest rate futures, bond futures, gold futures, index options and stock options.	至於衍生產品市場方面，香港期貨交易所（期交所）及聯交所提供一系列期貨及期權產品，包括指數期貨、股票期貨、利率期貨、債券期貨、黃金期貨、指數期權及股票期權。
Within the regulatory framework, the SFC has regulatory oversight of the HKEx and its subsidiaries, namely the SEHK, the HKFE and four recognised clearing houses.	證監會致力維持和促進證券期貨業的公平、效率、競爭力、透明度及秩序，並為投資者提供保障。
The listing of Exchange Fund Notes on the SEHK since August 1999 has broadened the investor base to include retail investors.	外匯基金債券於1999年8月開始在聯交所上市，把投資者基礎擴大至個人投資者的層面。
The listing of Exchange Fund Notes on the SEHK since August 1999 has broadened the investor base to include retail investors. In June 2007, the HKMA also extended the CMU BID bond tendering service to other debt securities issuers as an additional channel for issuing debt securities in Hong Kong.	2007年6月，金管局把債務工具中央結算系統的債券招標服務推廣至其他債券發行機構，從而增加在香港發行債券的渠道。
<input type="button" value="More"/>	

Bilingual sentence pairs that are retrieved from the ST and the final output of the team and contain the expression

AREAS OF APPLICATION

Area of Application (1)

The Teaching and Learning of Team Translation and Translation Technology

- The system will provide a free, web-based **alternative** to commercial translation systems.
- Teachers can customise the system to meet their **teaching needs** or simulate different **real-world translation scenarios** to give students a taste of challenges faced by team translators.
- The cross-platform nature of TranXtudio will also encourage students using different devices to create translation teams **outside the classroom**.

Area of Application (2)

Professional Translation

- The system will be a useful tool for (1) professional translators who would like to familiarise themselves with team-based translation and (2) small and medium-sized translation companies that would like to experiment with team translation tools before purchasing full-scale commercial systems.

Area of Application (3)

Research into Collaborative Translation

- The tool will also help researchers open up a number of **research opportunities**: translators, products, tools, and workflow

Example (Team-oriented Research)

Studying how translators interact with each other and solve translation problems

- Reviewing discussion records and the revision history of the target text, researchers can develop a better understanding of the operation of a translation team by, for example, identifying common questions faced by junior translators in the team and the ways in which senior members provide assistance to them.

Example (Product-oriented Research)

Studying the features of the target texts prepared by members with different levels of translation experience

- By comparing translations prepared by different team members and considering their backgrounds, researchers can identify their **differences** in translation style or methods and consider **factors** that may contribute to such differences.

Example 1 (Tool-oriented Research)

Studying how post-editing is done by human translators

- Researchers can compare the machine translation output with the post-edited output by team members to **discover post-editing patterns**, which could be used to enhance the teaching of post-editing and improve existing machine translation engines.

Example 2 (Tool-oriented Research)

Studying what tools are useful to team members in a particular domain of translation (e.g., financial translation)

- By studying the usage of translation tools, researchers can have a better understanding of translation problems encountered by team members and the tools that could be more useful to them.
- By changing the settings of the tools (e.g., similarity measures) for different experiments, researchers can even identify how the settings could have an impact on the use of the tools and thus explore ways to develop better translation technology.

Example (Process-oriented Research)

Studying different modes of collaboration

- Researchers can set up translation projects that involve the translation of the same piece of text with different modes of translation, such as (a) manual translation; (b) machine translation with post-editing; and (c) human translation with translation memories. They can thus compare the statistics for the different modes and consider their effectiveness and efficiency.

CONCLUDING REMARKS

Conclusion

- Translation students and professional translators will get **hands-on experience** of translation technology for team translation.
- Researchers in the field can ask novel research questions, design and conduct **innovative experiments** on web-based translation teams, and find ways to **observe and explain translators' behaviour** with the help of the **diverse range of data collected**.

Conclusion

- The new projects will help develop a better understanding of collaborative translation and contribute to advances in technology for multilingual communication and for the management of translation teams.
- It is hoped that the continuous development of the system will provide insights into the theory and practice of collaborative translation.

Suggestions

- New **member categories** (e.g., terminologists) in view of the growing sophistication of translation teams
- **Quality checks** on the target text (e.g., checking the consistency of technical terms and the translation of numbers)
- More **file formats**

Suggestions

- More **tools for data analysis** (e.g., statistical analysis on correlation and hypothesis testing) by interoperating with third-party statistical tools such as R (The R Foundation, 2015)
- Further research on (1) the use of the system in **different contexts** of multilingual communication and (2) the identification of **new questions** that could be answered with the help of the system.

References

- Siu, S. C. (2015a). TranXearch: Zhuanmen Wei Yizhe Er She de Zhineng Souxunyingqing [TranXearch: An Intelligent Search Engine for Translators, in Chinese]. In National Academy for Education Research (Ed.), *Translation and Interpreting Professions and Information Technology in Taiwan* (pp. 93-112). Taipei: National Academy for Education Research.

References

- Siu, S. C. (2015b). An Online English-Chinese/Chinese-English Corpus Analysis System for Translators and Translation Researchers. *Proceedings of Taiwan International Conference on Translation & Interpretation: Technology and T&I Development*, pp. 84-95. Taipei: National Academy for Education Research.
- The R Foundation. (2015). R [Computer software]. Retrieved from <https://www.r-project.org>