### Developing a Collocation Dictionary Writing System (COLDWS) for an Online Multilingual Collocations Dictionary Platform (PLATCOL)



















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### **ACKNOWLEDGEMENTS**

### **Tanneke Schoonheim Grant**







## **Outline**

**Objectives** 

What is PLATCOL?

Collocations
Dictionary
Writing System
(COLDWS)



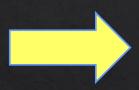
**Team** 

**Methodology** 

Final Remarks and Future Work

# **Project Objectives**

It aims at developing a phraseographical methodology and model for an *Online Corpus-Based Multilingual Collocations Dictionary Platform (PLATCOL)*, in five different languages so far.



to be customized for different target audiences according to their needs



# **Presentation Objectives**

We will focus on the development of a COLDWS, duly created to fulfill the specific needs of the collocations dictionaries. We have knowledge of Lexonomy, a web-based dictionary writing system (Měchura 2017), TshwaneLex (de Schryver 2007), and Fuertes-Olivera & Tarp's (2018), good quality DWSs.

However, we needed to rely on a DWS that would meet the specificities of a Multilingual Collocations Dictionary and also deal with the specific data output generated for our project.



A Phraseographical Methodology and Model for an Online Corpus-Based Multilingual Collocations Dictionary Platform (Process FAPESP 2020/01783-2)



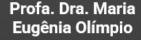
Profa. Dra. Adriane Orenha Ottaiano









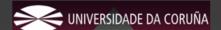


Profa. Dra. Margarita Alonso-Ramos

> Prof. Dr. Marcos Garcia





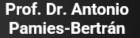


Profa. Dra. Marie-Claude L'Homme









Prof. Dr. José **Manuel Pazos** 













Carlos Roberto Valêncio João Pedro Quadrado







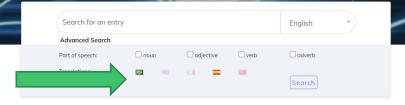






### Welcome to PLATCOL

A Platform of Multilingual Collocations Dictionaries



### **PLATCOL**

PLATCOL is an Online Platform of Multilingual Collocations Dictionaries. It aims to promote learning and translation of collocations more effectively, so that the dictionaries' users can develop proficiency and fluency as well as achieve native-like naturalness in many different languages.

### About the PLATCOL plataform

PLATCOL is an Online Platform of Multilingual Collocations Dictionaries. It aims to promote learning and translation of collocations more effectively, so that the dictionaries' users can develop proficiency and fluency as well as achieve native-like naturalness in many different languages. So for PLATCOL comprises of five languages: English, Portuguese, French, Spanish and Chinese. However, more languages will be coming soon.

### About us

Team Members
Others plataforn

Contact

Publications

### Ouick Links

What are collocations?

Register

\_--9...

### FAPESP

São Paulo Research Foundation

### unesp

São Paulo State University



http://www.institucional.grupogbd.com/dicionario/sobre?locale=en



# What is PLATCOL?



- ❖ A Platform that aims to offer a new way to search collocations, with a new dictionary format
  - ❖ A Platform that seeks to meet its users' needs higher customization of the structure of the dictionaries





Production dictionaries that can provide help to their users and contribute to the development of their collocational knowledge and competence Our proposal is based on the Functional Theory of Lexicography (Bergenholtz & Tarp 2003, Bothma & Tarp 2012, Fuertes-Olivera & Tarp 2014, Tarp 2013, 2014 and 2015).



Thus, both the procedures chosen for the selection, organization and presentation of lexicographical data, as well as the determination of the content, form and access routes are adapted and subordinated to the preferences of the users.

# **USERS**



**Pre-service Teachers** 



**In-service Teachers** 





**Language Learners** 



**Translators** 

Researchers and Lexicographers



**Material Developers** 



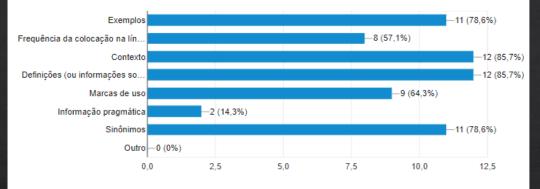
# Survey on users' needs



Que tipo de informação você esperaria de um dicionário de colocação de língua geral monolíngue?



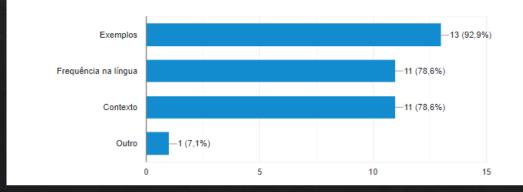
14 respostas



Que tipo de informação você esperaria de um dicionário de colocações de língua geral Bilíngue ou Multilíngue?



14 respostas



# **METHODOLOGY**

The methodology is based on the automatic approach described in Garcia *et al.* (2019a) and a manual review and validation of the extracted data made by lexicographers.



### THE CORPUS

A large corpus for each of the five languages was automatically compiled, using different source data – and parsed with UDPipe (Straka & Straková, 2017):

Language	Sources	Size (tokens)
Portuguese	Jornal do Brasil, Wikipedia/Wikibooks, Paracrawl, CHAVE (Santos & Rocha, 2004), CBras, BrWaC (Wagner Filho et al., 2018)	4B
Spanish	EuroParl (Kohen, 2005), Literature (short stories/romances) (Garcia et al., 2019a), Wikipedia/Wikibooks	1,2B
English	EuroParl, Wikipedia/Wikibooks	1.6B
French	FrWaC (Baroni et al., 2009), Wikipedia/Wikibooks	2.5 B
Chinese	Wikipedia, Wikibooks, and literary texts	600M

### **METHODOLOGY**

Automatic retrieval of bases

Focus on collocation types with three morphosyntactic classes of bases:

- nouns
- verbs
- adjectives



AUTOMATICALLY EXTRACTED BASES						
	French	Portuguese	English	Spanish	Chinese	
Nouns	9,754	10,307	10,545	8,853	1,858	
Verbs	4,895	5,573	5,502	3,549	2,206	

VALIDATED CANDIDATES					
	French	Portuguese	English	Spanish	Chinese
Nouns	8,361	8,690	8,713	6,576	103
Verbs	2,902	3,817	3,982	2,459	100

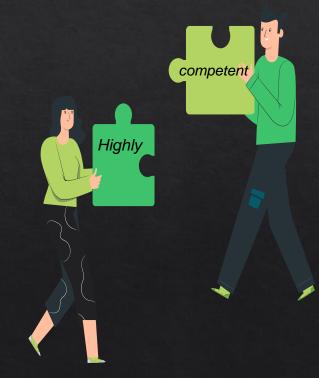
# VALIDATED BASES



# **METHODOLOGY**

Automatic Extraction of Collocations

■ We extracted dependency triples with the selected bases, and organize them as candidates with the following structure: relation (base, collocate).



# Registered Collocaciones in the COLDWS



Chinese	5,786
Spanish	71,131
French	60,447
English	52,826
Portuguese	62,968
Total	253,158

### Identification of example sentences

We use GDEX-inspired heuristics (Kilgariff et al., 2008) to automatically assign a score to each sentence in the corpus (containing candidate collocations).

Following Kosem et al (2019), we discard sentences with less than 6 tokens and incrementally penalize those with more than 30 tokens.



# **METHODOLOGY**

Automatic
Translation of
Collocations

(Garcia et al. 2019c)





### Electronic lexicography in the 21st century: post-editing lexicography

Proceedings of the eLex 2021 conference

edited by

Iztok Kosem Michal Cukr

virtual, 5-7 July 2021

elex.link/elex2021



Miloš Jakubíček Jelena Kallas Simon Krek Carole Tiberius

Corpus-based Methodology for an Online Multilingual Collocations Dictionary: First Steps

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### Abstract

This paper describes the first steps of a corpus-based methodology for the development of an online Platform for Multilingual Collocations Dictionaries (PLATCOL). The platform is aimed to be customized for different target audiences according to their needs. It covers various syntactic structures of collocations that fit into the following taxonomy; verbal, adjectival, nominal, and adverbial. Part of its design, layout and methodological procedures are based on the Bilingual Online Collocations Dictionary Platform (Orenha-Ottaiano, 2017), The methodology also relies on the combination of automatic methods to extract candidate collocations (Garcia et al., 2019a) with careful post-editing performed by lexicographers. The automatic approaches take advantage of NLP tools to annotate large corpora with lemmas. PoS-tags and dependency relations in five languages (English, French, Portuguese, Spanish and Chinese). Using these data, we apply statistical measures (Evert et al., 2017; Garcia et al., 2019b) and distributional semantics strategies to select the candidates (Garcia et al., 2019c) and retrieve corpus-based examples (Kilgarriff et al., 2008). We also rely on automatic definition extraction (Bond & Foster, 2013) so that collocations can be more effectively organized according to their specific senses.

Keywords: collocations; collocations dictionary; online platform; automatic extraction; lexicography

### 1. Introduction

In the past two decades, collocations have been high on the agenda of foreign language teaching and learning (Nesselhauf, 2005; Alonso-Ramos, 2008, 2019; Laufer, 2011; Orenha-Ottajano, 2021; Torner & Bernal, 2017, among others), Despite this fact, when it comes to the translation of collocations, the number of studies that can contribute to better comprehension of the difficulties regarding the complexity of translation of such combinations is not as significant (Kenny, 2001; Bernardini, 2007; Gregorio-Godeo & Molina, 2011; Orenha-Ottajano, 2009, 2012, forthcoming).



For more

information



### Signature

1. your name written in your own handwriting as a way of identification for a document, check etc., making it difficult to be copied

verb + SIGNATURE collocations

### collect signature

Arizona petition circulators had to change their operations to collect signature and meet the july deadline for 2020 ballot initiatives. 6 See more

### forge signature

Leading loyalist campaigner Jamie Bryson appears to have forged a signature used to verify a set of writing experts. 6 See more

### gather signature

Moore also said officials should allow activists to gather signatures online. But that's currently not Legislatures. • See more

### validate signature

In short, she had validated her signature on two letters that were specifically stated as confidential in an agreement we had both signed. • See more

adjective + SIGNATURE collocations

### digital signature

legal marijuana program have pushed for digital signature collection options. 

§ See more

### electronic signature

Today, there are some states that accept electronic signatures and remote online notarization for real estate transactions and the recording or filing of documents. 

See more

### valid signature

Envelopes with a valid signature are cut open using an extraction machine, then the ballots verifiable archive that can later be double-checked. 

See more

### Other entries

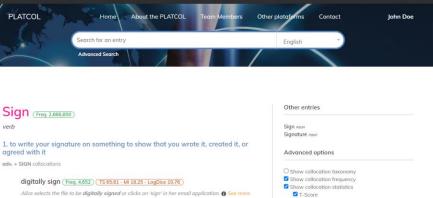
Sign roon Sign web

### Advanced options

- ☐ Show collocation taxonomy
- ☐ Show collocation frequency
- Show translations

unesp

- Advanced options will be available if a user opts to sign in, according to a users' profile.
  - A new dictionary structure will be available as users can choose from items in a Menu



### About the PLATCOL plataform

countersianature. 6 See more

PLATCOL is an Online Platform of Multilingual French, Spanish and Chinese. However, more

### About us

duly sign (Freq. 2,356) (TS 48.08 - MI 17.86 - LogDice 9.44)

jointly sign (Freq. 738) (TS 26.93 - MI 17.00 - LogDice 6.93)

mortgage which they duly signed. 6 See more

In 2002, they took out a mortgage with The Woolwich (part of Barclays), and were sent a deed of

Partnership shall be registered by way of the partners jointly signing the partnership document in the

Mutual Information ☑ LogDice

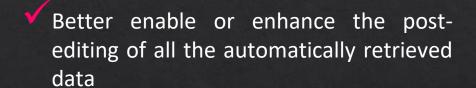
Show translations

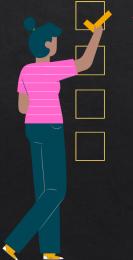




### Collocations Dictionary Writing System (COLDWS) - Purposes







Developed to specifically compile and produce collocation dictionaries, so that all automatically extracted data are automatically inserted into this COLDWS, post-edited by the lexicographers, as well as be exported to an end-user platform.

### Collocations Dictionary Writing System (COLDWS)

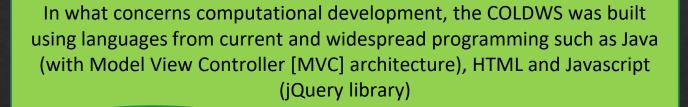


The software has a lot of functionalities – register, edit, and post-edit all dictionary information, such as:

- senses
- collocations
- morphosyntactic structures
- taxonomy of the collocations
- Translations
- statistical measures etc.

## Collocations Dictionary Writing System (COLDWS)





For the storage, consultation and deletion of entries, the relational data model with PostgreeSQL software was used in conjunction with SQL language

In addition, concepts of User Experience - UX were applied to provide a good experience for the lexicographers.

COLDWS will also be of valuable help when it comes to optimizing translation of entries or collocations

# COLDWS – Translations

For example, the collocations "develop a plan", in English, and "desenvolver um plano", in Portuguese, are equivalents. Similarly, the collocations "desenvolver um plano", in Portuguese, and "desarrollar un plan", in Spanish, also have a translation relationship.

This way, even if it has not been previously identified in the automatic extraction process, the relationship between the collocations "develop a plan" and "desarrollar un plan" will be automatically inferred.

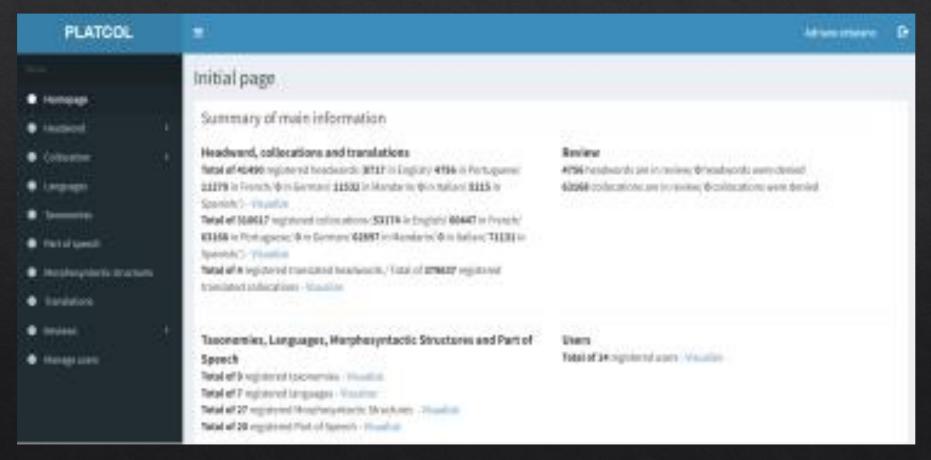


It shows lexicographers the possibilities of translations

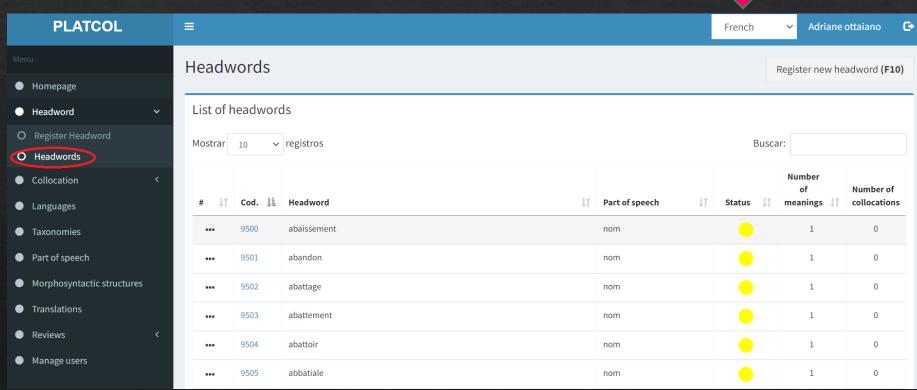
They analyze the reliability and quality of the translation found (from 0 -1).

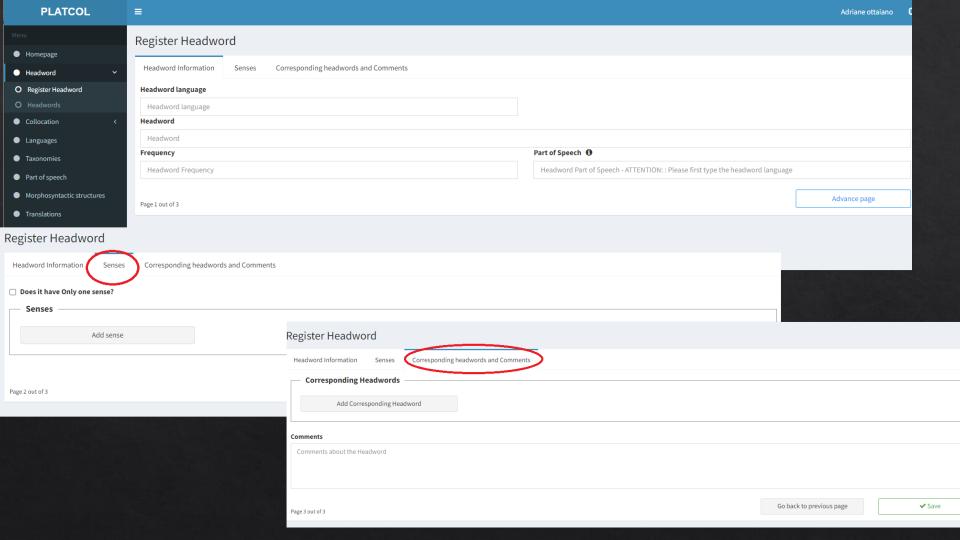
Collocation	↓↑ Tı	ranslation	Ţţ	Trust value	ŢŢ	
fazer diferença	fa	ire différence (French)		0.98	Approve	Disapprove
fazer diferença	ha	acer diferencia (Spanish)		0.90	Approve	Disapprove
fazer diferença	m	ake difference (English)		0.93	Approve	Disapprove
ter condição	de	evoir condition (French)		0.87	Approve	Disapprove
ter condição	ha	acer condición (Spanish)		0.89	Approve	Disapprove
ter condição	h	ave condition (English)		0.94	Approve	Disapprove
ter opção	po	ouvoir option (French)		0.97	Approve	Disapprove
ter opção	te	ener opción (Spanish)		0.96	Approve	Disapprove
ter opção	gi	ve option (English)		0.72	Approve	Disapprove

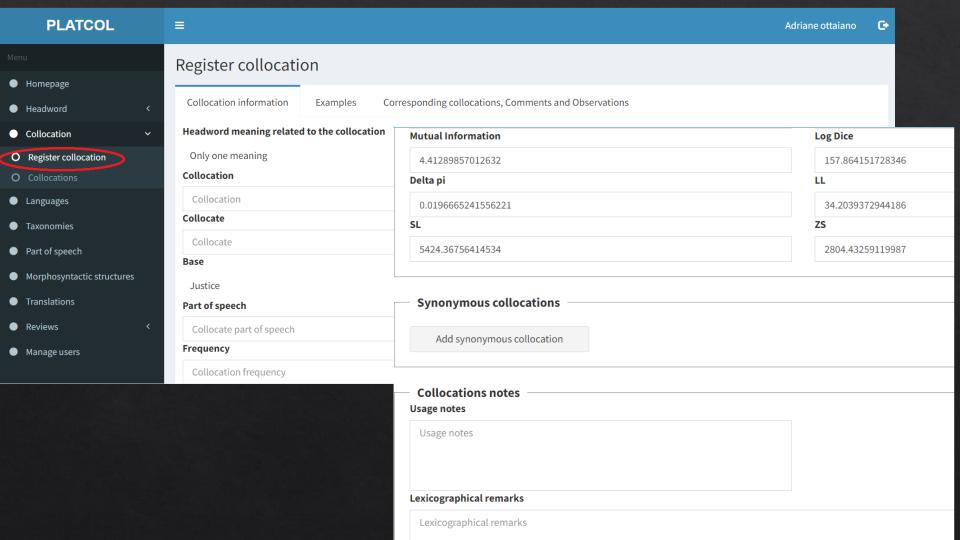
### Collocations Dictionary Writing System (COLDWS)

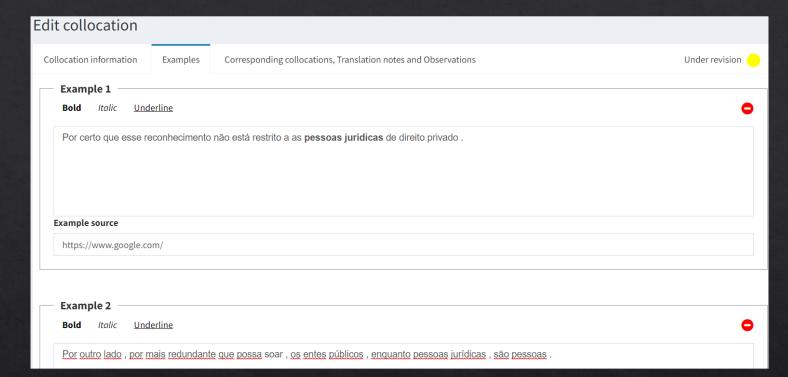








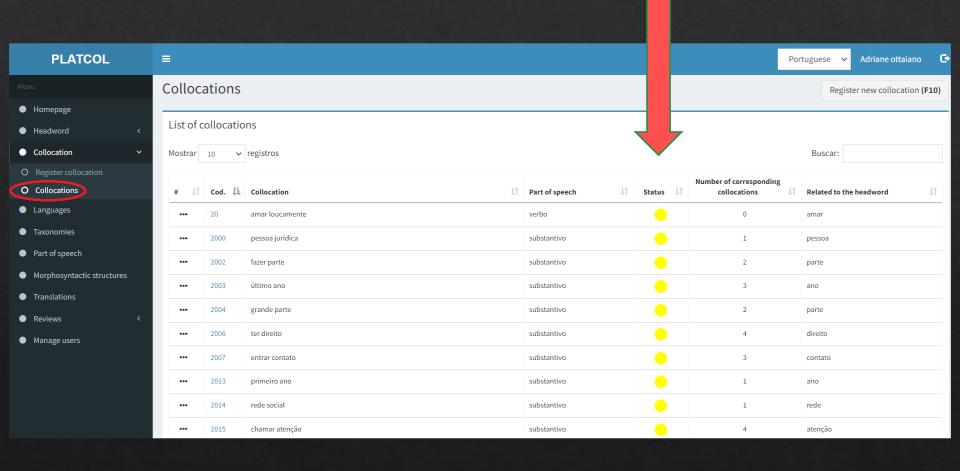


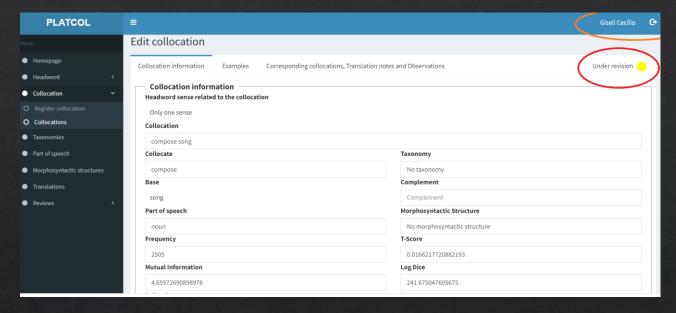




### Edit collocation Collocation information Corresponding collocations, Translation notes and Observations Under revision Examples **Corresponding collocations** Corresponding collocation Language Spanish persona jurídica ☐ Free combination ☐ A single lexical unit Add corresponding collocation Observations (1) Observations about the collocation. Translation Notes 🗿 Notes about the translations. **LEGAL**

PERSON





With respect to the validation process, the software will allow lexicographers to choose from three phases (traffic lights phases), indicating to users the status of the entries or collocations.



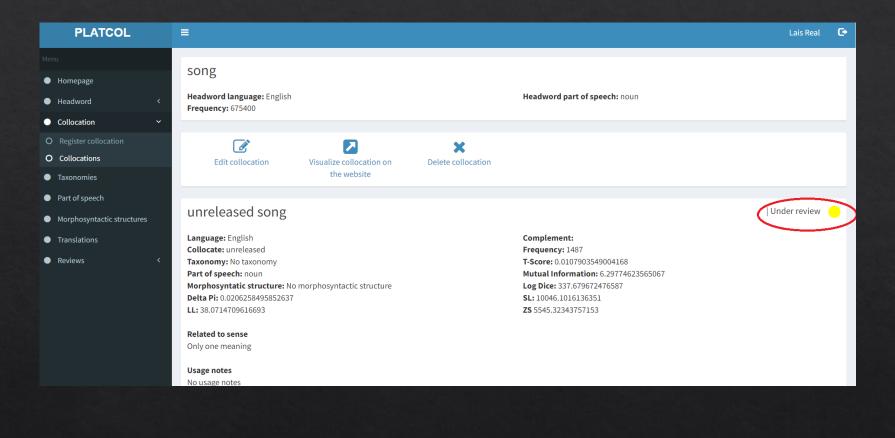
Phase 1 – data automatically inserted into the COLDWS (not revised yet): a red icon will be displayed, even to users, when exported to the end-user platform

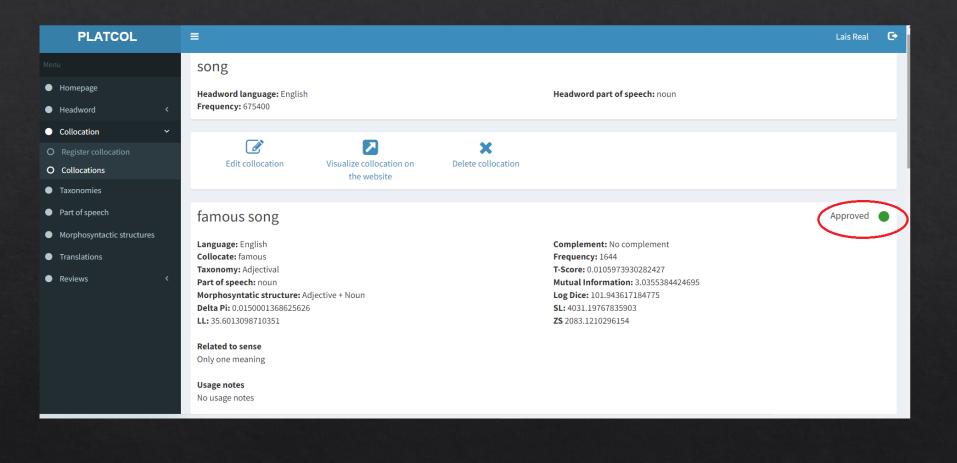


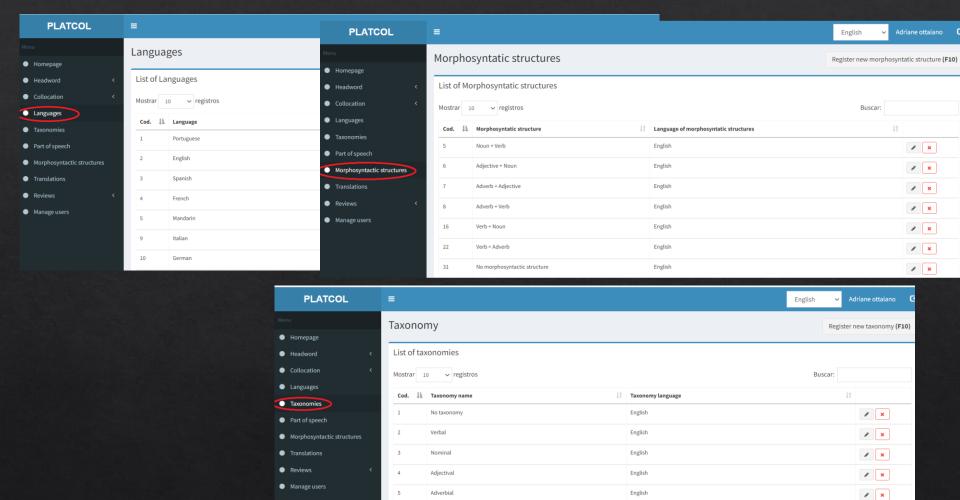
Phase 2 – represents data revised by one member of the team (reviewer 1), but which may still need a second evaluation and/or some adjustments: an orange icon will be shown.



Phase 3 – data is checked by a second reviewer (reviewer 2) and now considered to be suitable



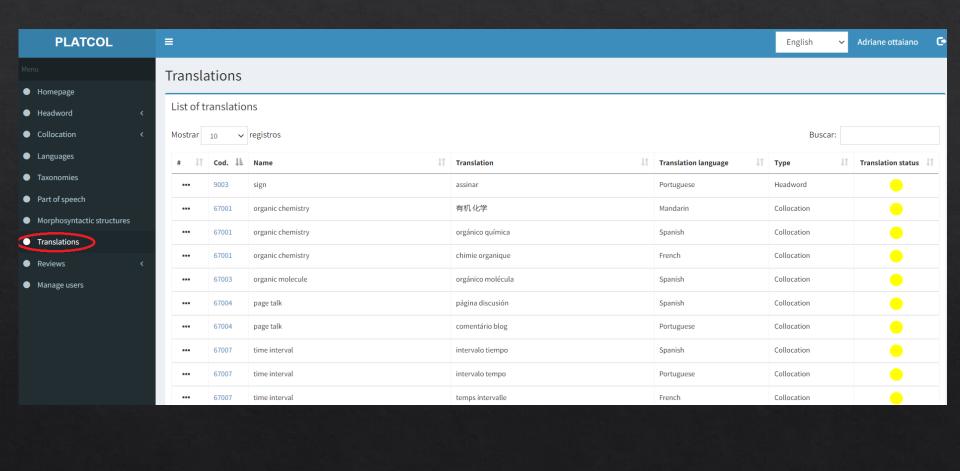


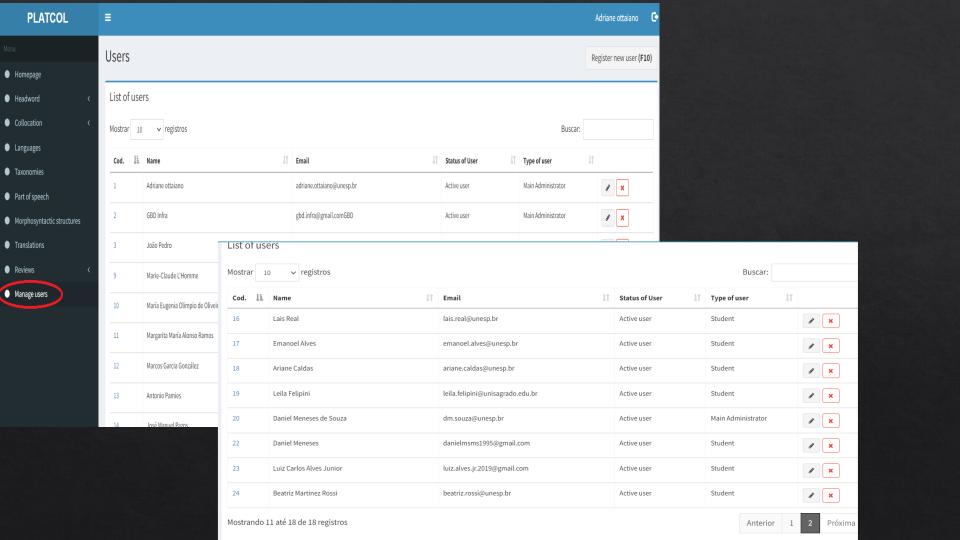


Mostrando 1 até 5 de 5 registros

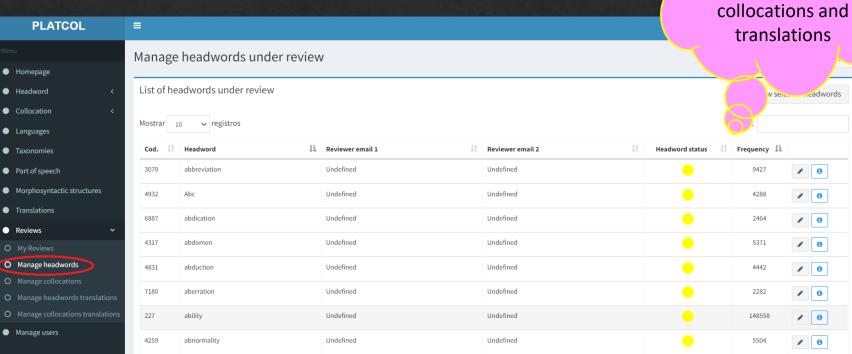
Anterior

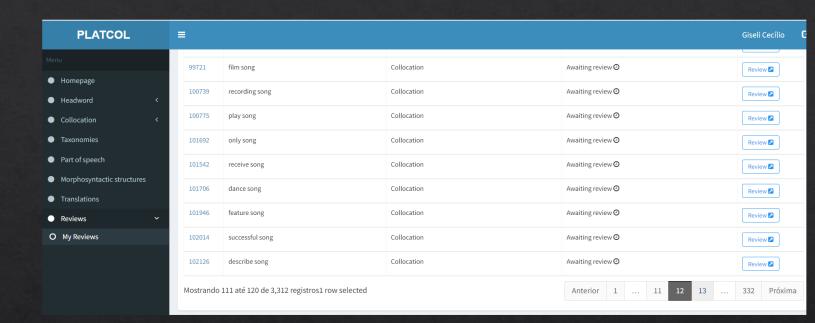
Próxima



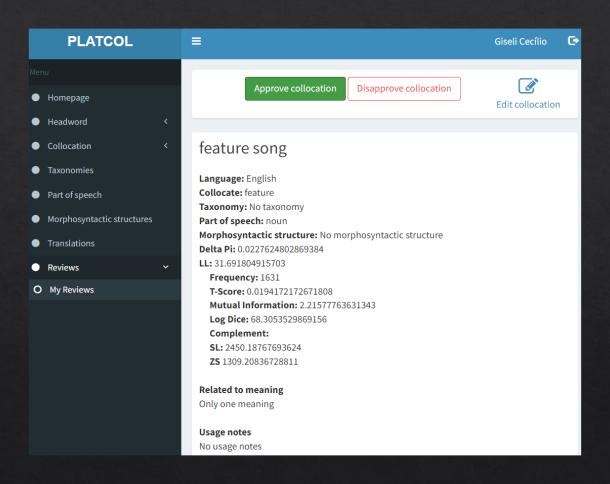


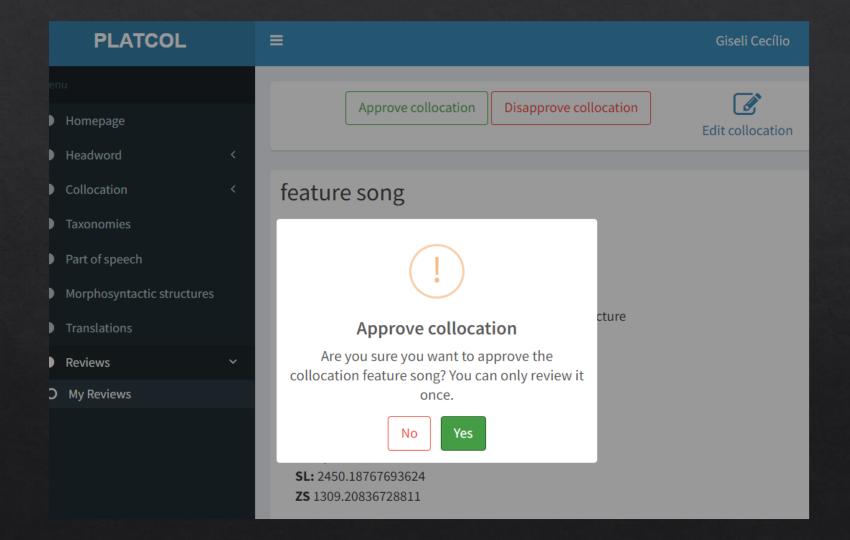
There is also a functionality with which reviewers can post-edit entries, collocations and translations





Reviewer's screen





### famous song

Language English



### Collocation approved

The collocation was successfully approved.



**Complement:** No complement

**SL:** 4031.19767835903

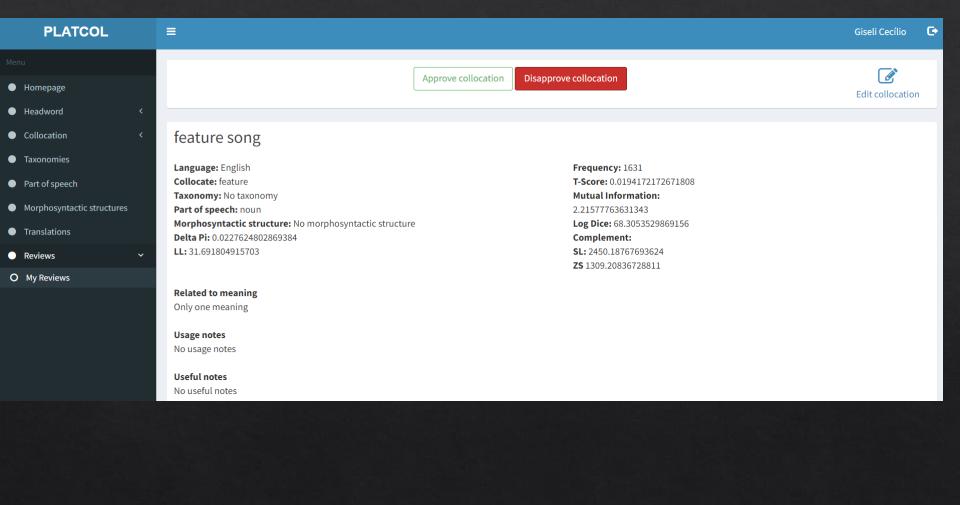
**ZS** 2083.1210296154

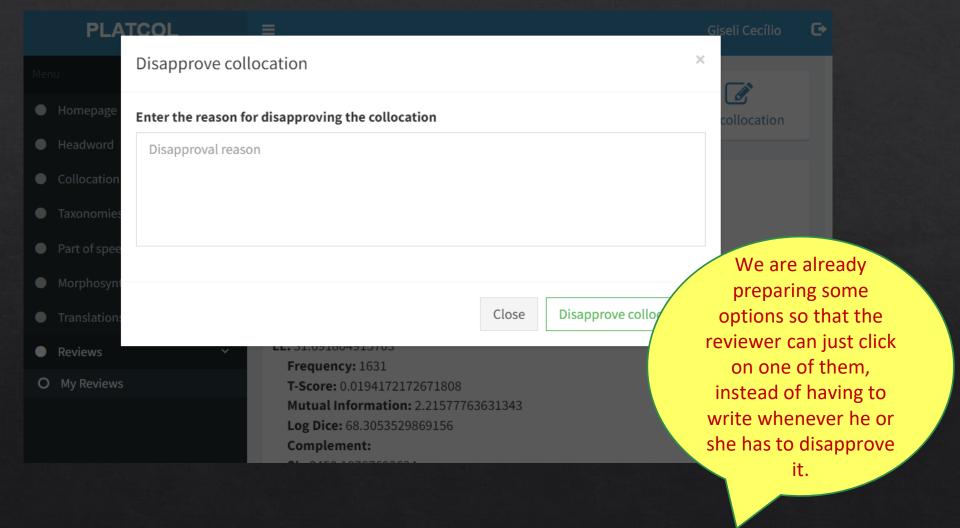
### **Related to meaning**

Only one meaning

#### Usage notes

No usage notes





# CONCLUDING REMARKS

We aim to objectively establish an appropriate methodology and phraseographic model for PLATCOL.

Likewise, we intend to contribute to the development of the collocational competence of its users.





## FUTURE WORK

Need for carrying out some minor improvements in the COLDWS.



Some macro and microstructure decisions may still be reshaped, with a view to best adjust the dictionaries to the new languages as well as to users' different lexicographical needs — will be further discussed in future work.

Finish developing the end-user platform in order to launch PLATCOL until the end of 2022!



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## COLDWS - Translations into other languages

Once translation pairs between collocations are identified and registered in the system, making up a multilingual database, it becomes possible to identify and automatically suggest new translations among other languages (Mausam et al., 2010).



## **COLDWS – Translations into other languages**

This process occurs through an inference-based algorithm (e.g. Mausam et al., 2010), built from an inference hypothesis related to the composition of multiple translation dictionaries:

If word A translates into word B which in turn translates into word C, what is the probability of C being a translation of A?

