

Normalization of temporal expressions in TimeML with a view to integration in a spatio-temporal GIS

GIS in the Humanities and Social Sciences
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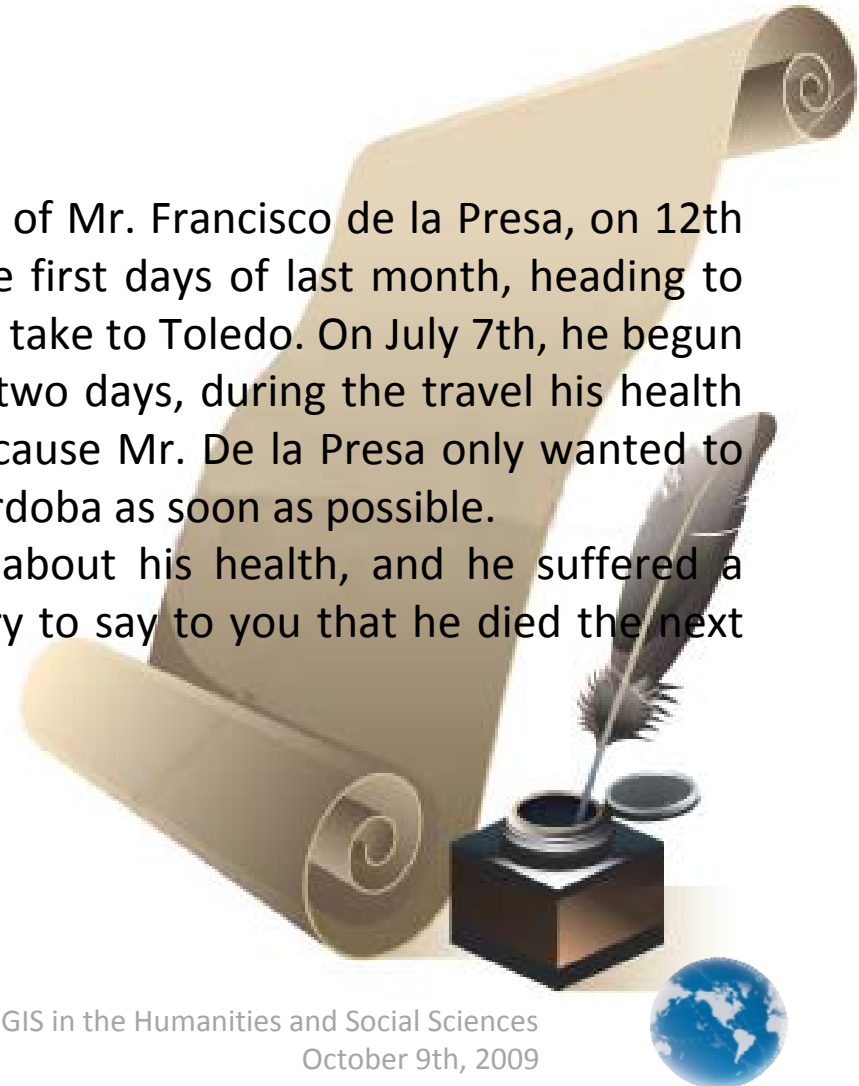
A glance of the future

To: Antonio Gomez

Date: First of August, 1570

I wrote to you in order to inform of the death of Mr. Francisco de la Presa, on 12th of July. I've been told he left Barcelona in the first days of last month, heading to Zaragoza to pick up some goods that he would take to Toledo. On July 7th, he begun the journey from Zaragoza to Toledo, it took two days, during the travel his health got bad. The trade was made very quickly because Mr. De la Presa only wanted to spent one night in Toledo in order to reach Cordoba as soon as possible. During the travel to this city, he felt worst about his health, and he suffered a blackout before enter the city. I feel very sorry to say to you that he died the next morning.

Simon Ruiz



A glance of the future

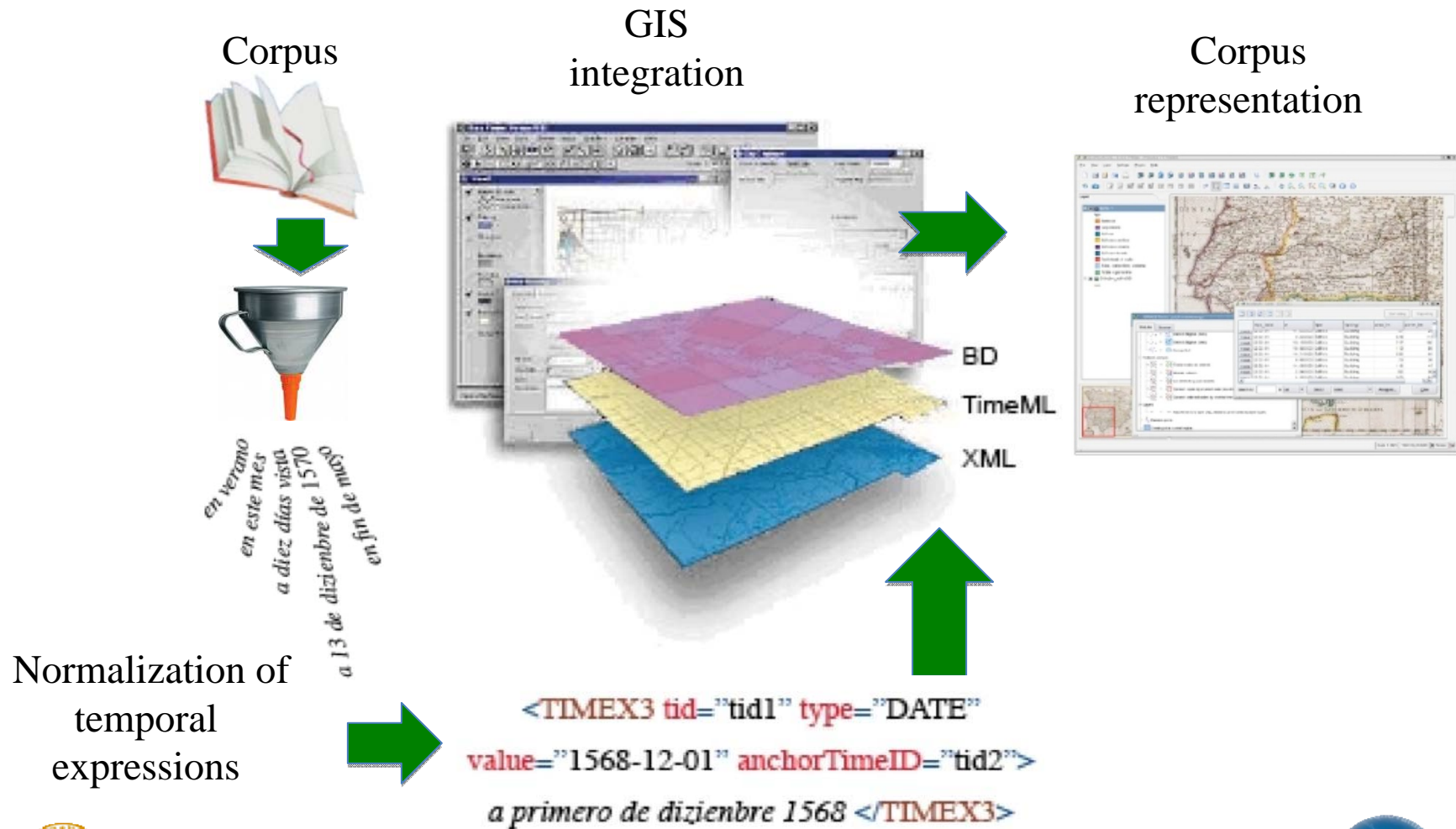
To: Antonio Gomez

Date: First of August, 1570

The route you was ordered to follow quickly
the death of Mr. De Alacázar and his presence
to the night in Toledo in order to
reach Cordoba as soon as possible.
I've been told he left Barcelona in the
first days of last month, heading to
Zaragoza about his health, and that
he would take to Toledo before enter the
city. I feel very sorry to say to you
On July 7th, He begun the journey
that he died the next morning.
from Zaragoza to Toledo, it took two
days, during the travel his health got
Simon Ruiz
bad.



Index and Goals



Our Corpus

- DynCoopNet Project
- Historical GIS
- 20 letters dated from 1567-1578
- Corpus type: commercial letters of Castilian merchant Simon Ruiz
- Language: Castilian of XVI century
- Time expressions: definite, deictic, intervals and indeterminate expressions.

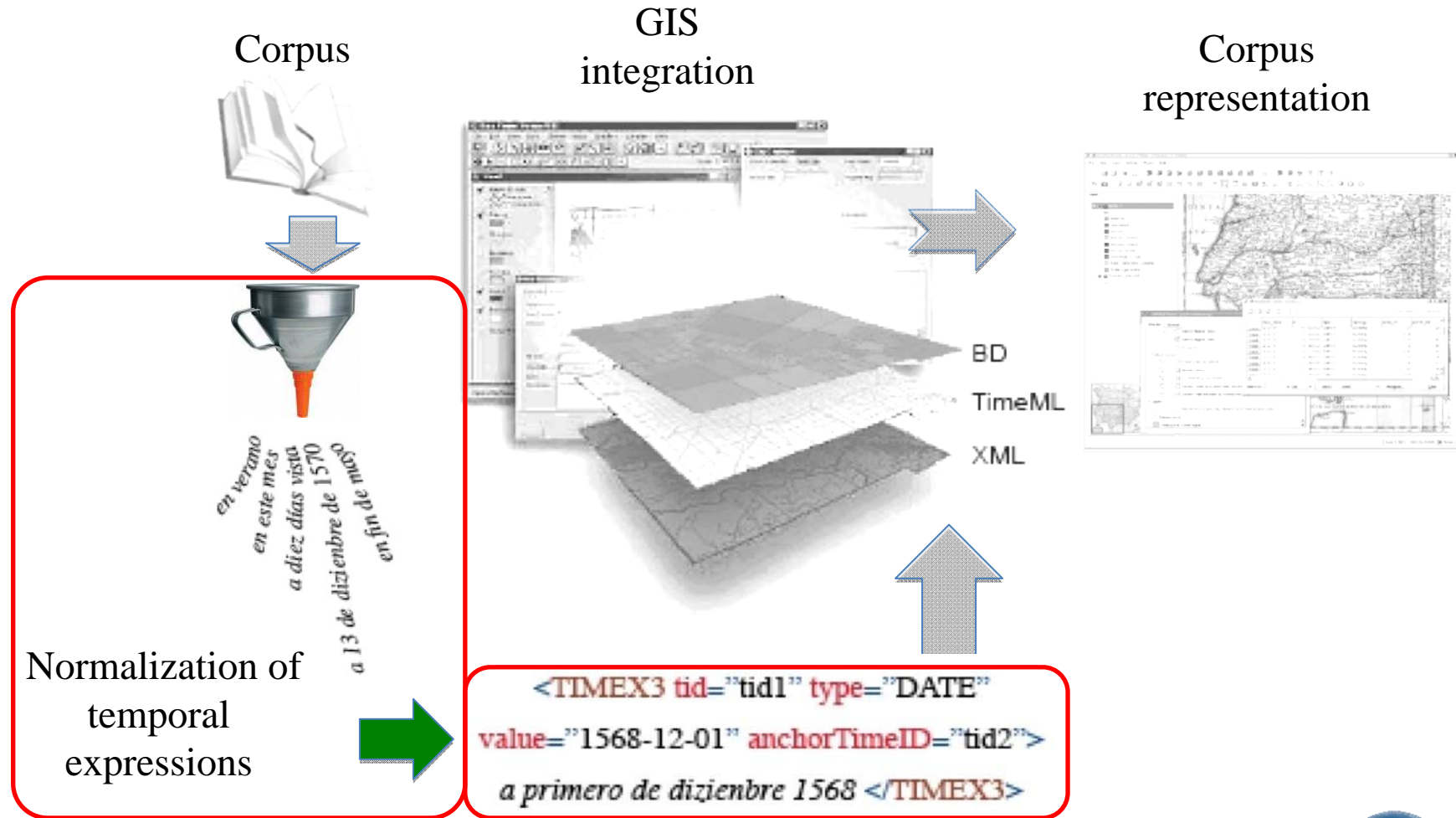


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Corpus and GIS

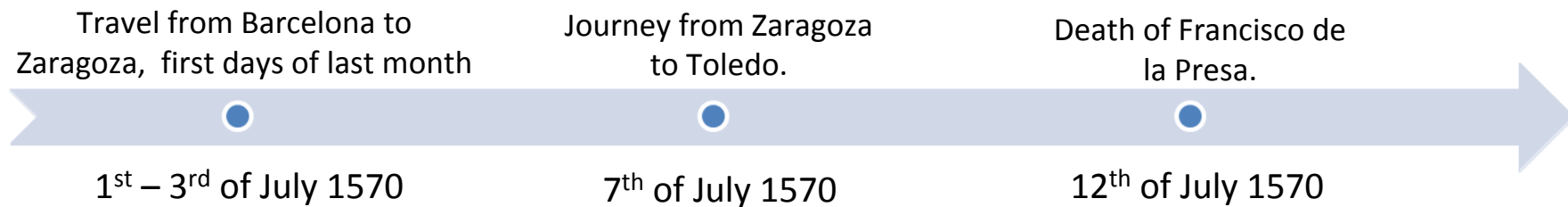


Normalization of Temporal Expressions



What's TimeML?

- Linguistic specification to annotate events and temporal expressions.
 - Timing of the events
 - Sorts the events with regard to other events
 - interprets the temporal expressions



Why TimeML?

- TERQAS (2002)
- TANGO(2003)
- ISO WD 24617-1:2007



TimeML's elements

- **TIMEX3**: yesterday, at 6 p.m. in the afternoon, this Saturday, next year.
- **EVENT**: happen, believe, study.
- **SIGNAL**: before, after, during.
- **TLINK**: Mary traveled to Taiwan from 5th to 10th of October.
- **ALINK**: She began to give a lecture in Taiwan.
- **SLINK**: Peter said that he went to Taiwan on October.



Recognition of elements

To: Antonio Gomez

Date: **First of August, 1570**

I **wrote** to you in order to **inform** of the **dead** of Mr. Francisco de la Presa **on 12th of July**. I've been told He **left** Barcelona **In the first days of last month**, heading to Zaragoza to **pick up** some goods that he would take to Toledo **On July 7th**, he **begun** the journey from Zaragoza to Toledo, it took **Two days** during the travel his health get bad. The Trade **was made** very quickly because Mr. De la Presa only wanted to spent one night in Toledo in order **to reach** Cordoba as soon as possible. During the travel to this city, he **felt worst** about his health, and he **suffered** a blackout before **enter** in the city, I feel very sorry to say to you that he **died** **the next morning**

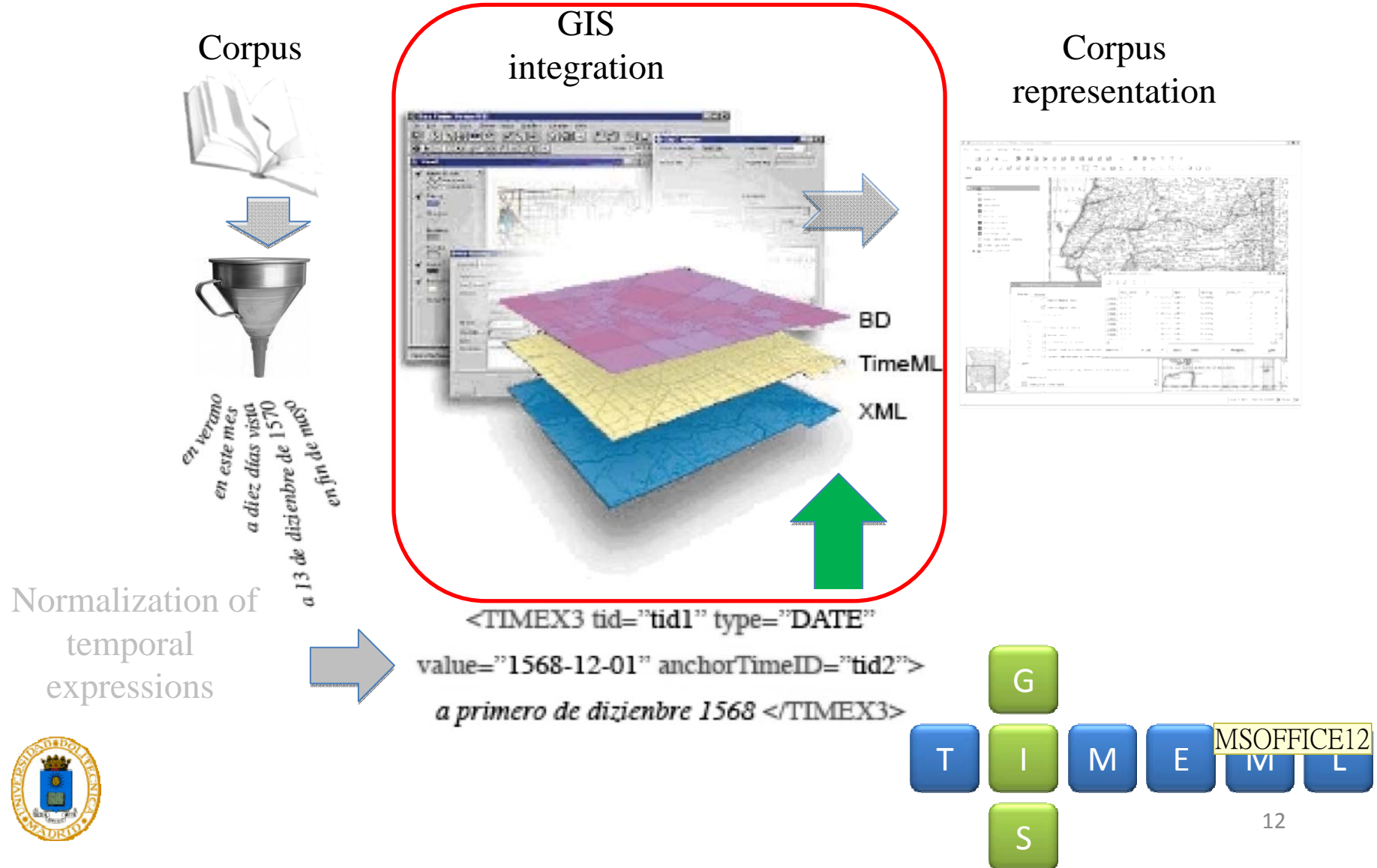
Simon Ruiz

EVENT

TIMEX3



TimeML integrated in GIS



en verano
en este mes
a diez dias visto
a 13 de dizienbre de 1570
oionu ap fuju en



投影片 12

MSOFFICE12 No sé, aunque está bien que pongas eso para que la gente entienda la foto de la portada, queda demasiado recargado, yo lo quitaría o lo haría más pequeño o lo pondría como animación que saliera en el último momento....
, 2009/10/8

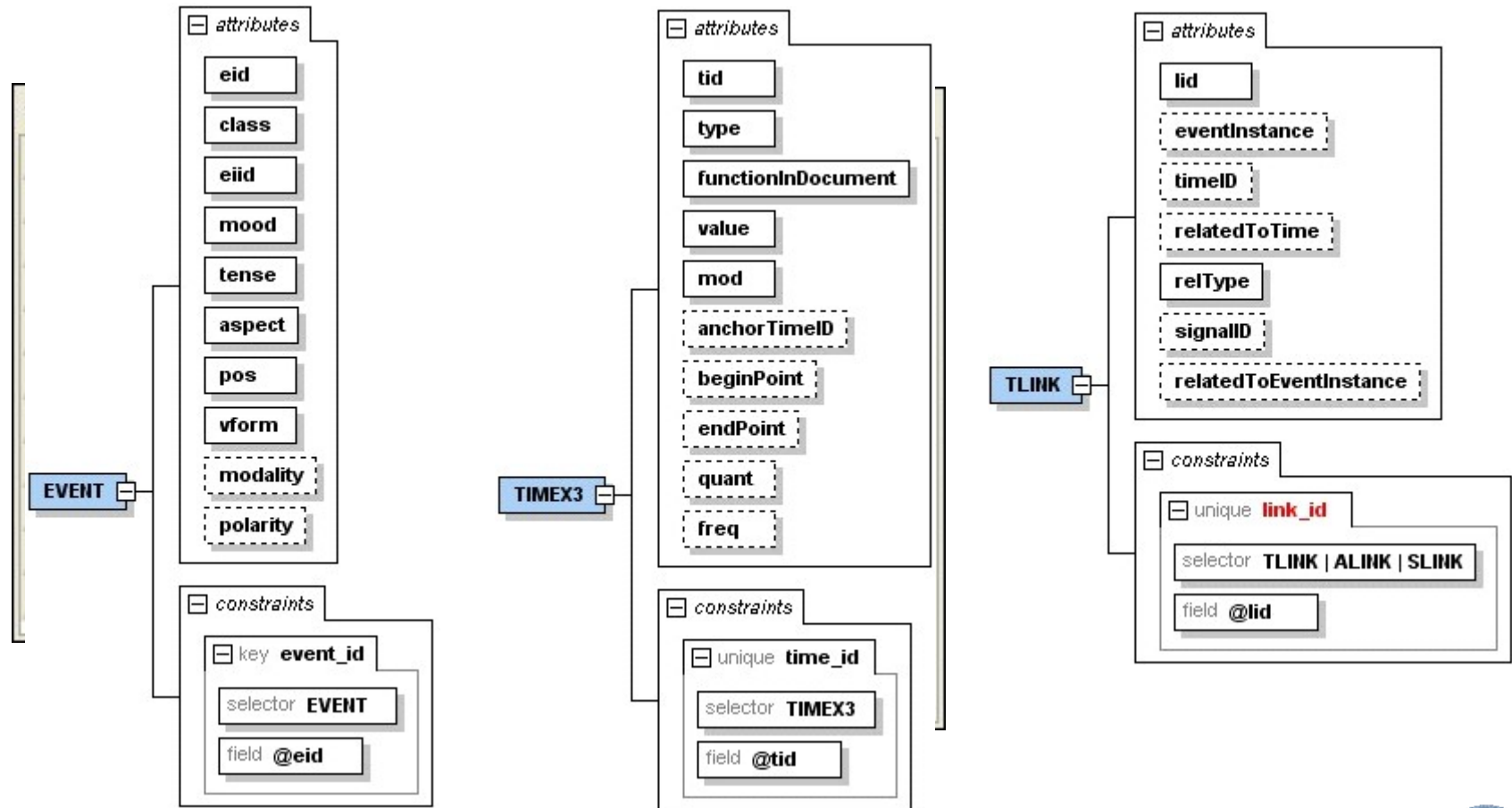
From DTD to Database

- What's a DTD?
- Why It's important?

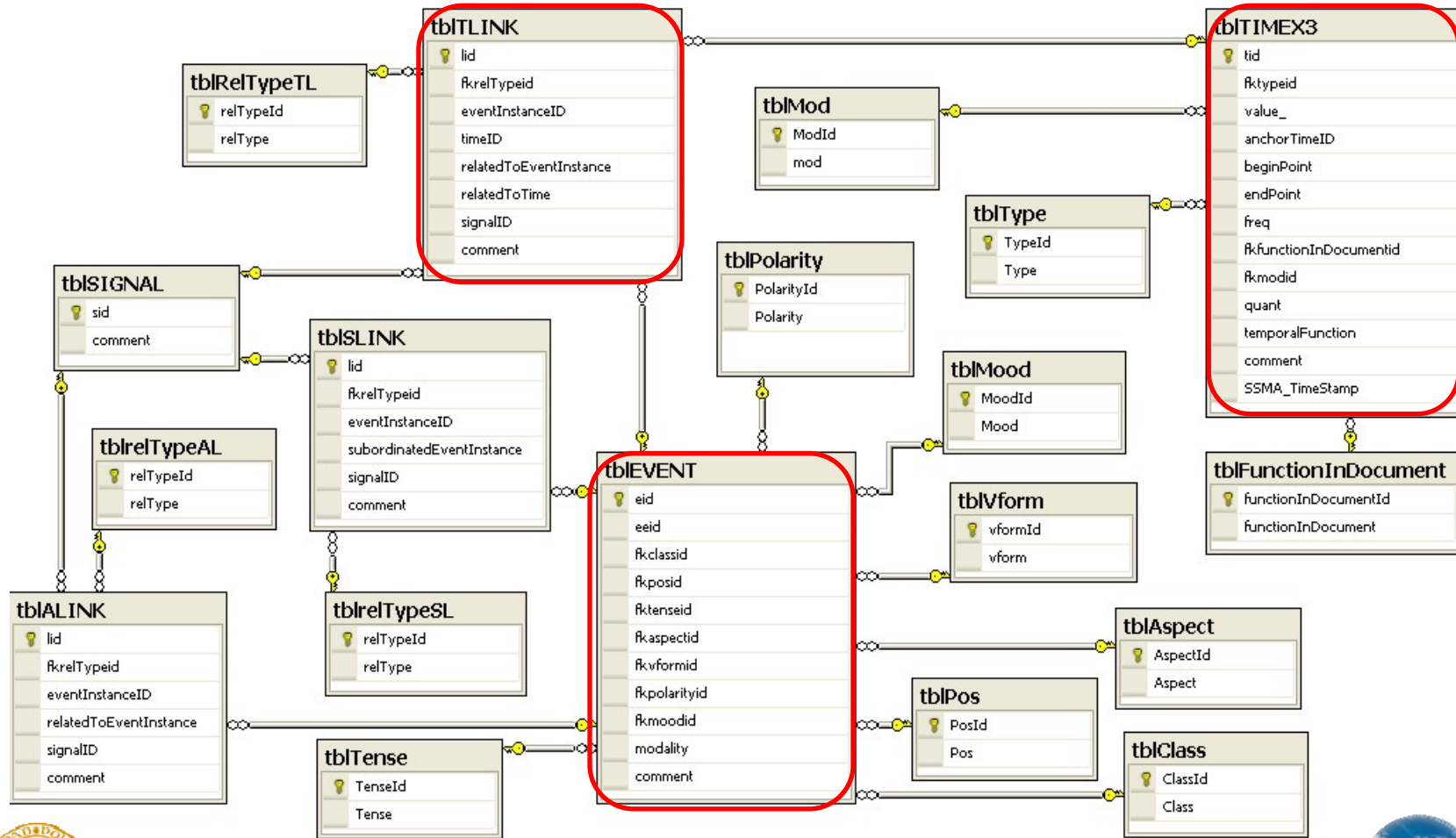
Structure



From DTD to Database :Mapping




The whole picture



The movement of data

TIMEX3 (3)

Rbc Text	tid	type	funtionInDocum...	value	anchorTimeID
1 a 3 de febrero de 1567	tid1	DATE		1567-02-03	tid2
2 de 13 del pasado	tid3	DATE	PUBLICATION_TIME	1567-XX-13	tid2
3	tid2	DATE	CREATION_TIME	1567-02-03	

tblTIMEX3	
	tid
	fktypeid
	value_
	anchorTimeID
	beginPoint
	endPoint
	freq
	fkfunctionInDocumentid
	fkmodid
	quant
	temporalFunction
	comment
	SSMA_TimeStamp



Conclusion

- We have used TimeML to recognize and normalize temporal expressions, events and the relationships among them in a 16th century Spanish corpus.
- We propose a methodology for the integration of temporal expressions and GIS.
- We have mapped the TimeML DTD into a Database.

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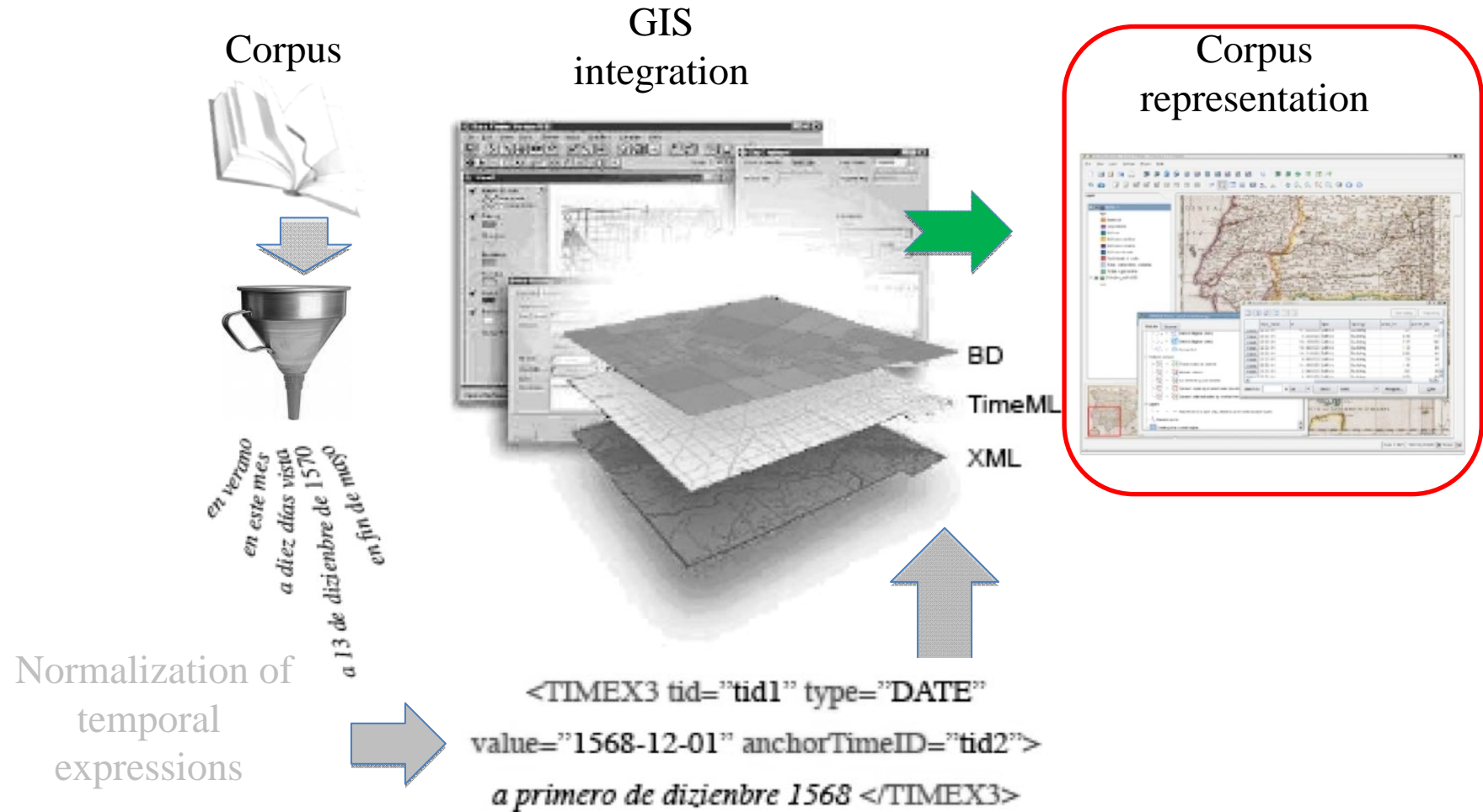


投影片 17

MSOFFICE7 Yo lo diría diferente para que no haya errores: hemos aplicado el TimeML en un corpus histórico del español o el TimeMI para el reconocimiento y normalización de expresiones temporales, eventos y relaciones temporales en un corpus del español del s. XVI
, 2009/10/8

MSOFFICE15 María José propone que modifiques esto, porque el uso del nosotros y los verbos no están bien empleado. ponlo en infinitivo mejor.
, 2009/10/8

Future works



投影片 18

MSOFFICE16 No hay pie de página. presta atención a esto.
, 2009/10/8

Future works

- To integrate GIS with the linguistic spatial annotation.
- To prepare for incorporation in GIS spatial and temporal linguistic annotation.
- To view the annotated corpus in GIS.
- To create a tool of temporal expressions analysis.
- To be able to use this knowledge for the creation of easier spatio-temporal queries using natural language.



¿Some question?



That's all folks!

iThank you!

谢谢您

Members of DynCoopNet UPM Project

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