



**Workshop: Inputlog 4.0 Beta**

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**Program workshop**

introduction

0 1 2 3 4 5

data collection → preparation → analyses

idf/wf → excel (between 2 and 3)  
excel → spss (between 4 and 5)




0 1 2 3 4 5

idf/wf → excel (between 2 and 3)  
excel → spss (between 4 and 5)

introduction

- writing processes ⇔ translation processes
- translog
- observation of writing processes
- demonstration of Inputlog



0 introduction • University of Antwerp



- Faculty of Applied Economics
- Department of Management
- Research group on Writing and Digital Media
  - Writing research methods
  - Speech Recognition
  - Online Writing Center (Calliope)



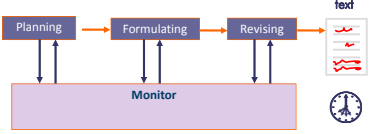

0 introduction • Publications (in the field)




- Studies in Writing (Elsevier, Emerald)
- Writing and speech recognition ([www.lotschool.nl](http://www.lotschool.nl) – nr. 161)
- Journal of Writing Research ([www.jowr.org](http://www.jowr.org))



0 introduction • Writing processes

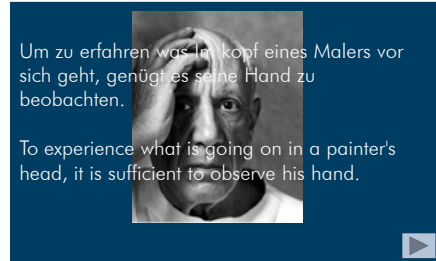
## 0 introduction • writing process research

Process observation provides data for research on:

- cognitive writing processes
- writing strategies
- writing development
- pausing behavior
- L1 versus L2 writing
- translation processes
- live subtitling
- manuscript (sub)versioning
- etc.

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## 0 introduction • picasso | the process



Um zu erfahren was im Kopf eines Malers vor sich geht, genügt es seine Hand zu beobachten.

To experience what is going on in a painter's head, it is sufficient to observe his hand.

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## Picasso | the product



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## Methods

- Thinking-aloud (retrospective interviews)
- Video recording (internal – external)
- Eyetracking
- Neuro imaging (fMRI – PET – ERP)

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## Eye tracking



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## Neuro imaging

MRI scanner

output



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## Methods

- Thinking-aloud (retrospective interviews)
- Video recording (internal – external)
- Eyetracking
- Neuro imaging (fMRI – PET – ERP)
- Keystroke logging

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## Keystroke logging

Keystroke logging registers every keystroke, mouse movement and pause in a session.

### Text data:

- 73 characters,
- 11 words,
- 1 sentence

### Process data:

- process time 29,4 seconds
- pause 3 seconds
- revision: 1 deletion

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## Linear text



Interval	Output
0:00:00	[Movement][1407]Keystroke-logging registers every-keystroke,
0:00:15	-mouse-movement-(3359)and-pause-in-a-session-(1172)
0:00:30	-[Movement][LeftButton][Movement][2212]writing(1110)-[Movement][RightButton]

- Keyboard
- [Mouse] (mouse movements and clicks)
- <Speech>
- {Pause}

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## Translog

- Especially designed for translation studies
- Two windows:
  - Source text (limited number of lines)
  - Target text (Translog window)
- Analyses
  - linear log file
  - dynamic replay
- Developments:
  - integration with eyetracking
  - interactive dictionaries (reading activation)



```
|!•the•play•er•s•and•***•offi•cial•s•  
*•04.83]ended•*u•p•in•a•gi•ganc•b•*•  
☒•*tc•*[*•06.98]W*ester*n***lik•e•  
*•04.08]n•*gnt•***
```

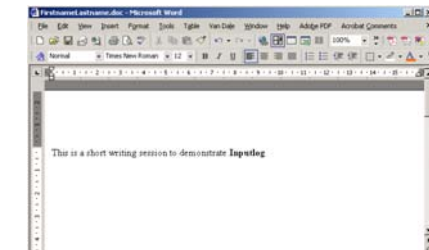
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## Inputlog 4.0 Beta

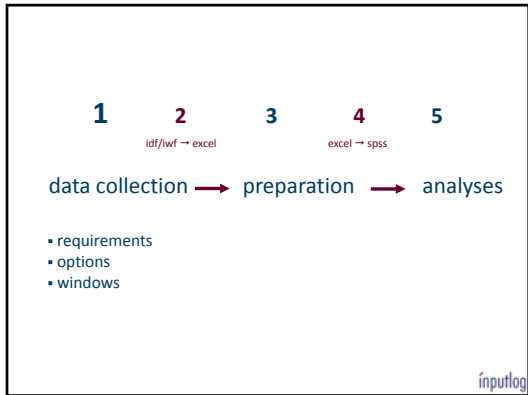
- Windows (e.g. MS Word)
- Writing modes
  - keyboard and mouse movements & clicks
  - speech (Dragon Naturally Speaking)
- Analyses
  - process- & product characteristics
  - linear text development and S-Notation
  - pausing behavior
  - mode and window monitoring
  - play-back
  - revision analysis
- Free download for researchers

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## Inputlog: demonstration



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### 1 data collection • requirements

None & Microsoft Word basic	Microsoft Word light, minimal, plus & full
<ul style="list-style-type: none"> <li>• Microsoft Framework 2.0</li> <li>• Visual studio</li> <li>• Microsoft Windows XP or later</li> <li>• Microsoft Word XP or later versions</li> <li>• Pentium III, 400 Mhz, 128mb RAM, 50MB additional disk space</li> </ul> <p style="font-size: 0.8em;">Screen and Word settings should be identical to the settings at the beginning of the logging session.</p>	<ul style="list-style-type: none"> <li>• Microsoft Framework 2.0</li> <li>• Visual studio</li> <li>• Microsoft Windows 2003, Vista or Windows 7</li> <li>• Microsoft Word 2003 or Vista</li> <li>• 2 GB RAM, 50MB additional disk space</li> </ul>

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### 1 data collection • options I

- Basic versus light, minimal, plus, full



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### 1 data collection • options II

Light	Minimal	Plus	Full
Time stamps Key strokes Mouse actions	Time stamps Key strokes Mouse actions	Time stamps Key strokes Mouse actions	Time stamps Key strokes Mouse actions
Cursor position	Cursor position	Cursor position	Cursor position
Document Length	Document Length	Document Length	Document Length
	Content of changes	Content of changes	Content of changes
		Limited set of changes in lay-out	All changes in lay-out

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### 1 general output • windows

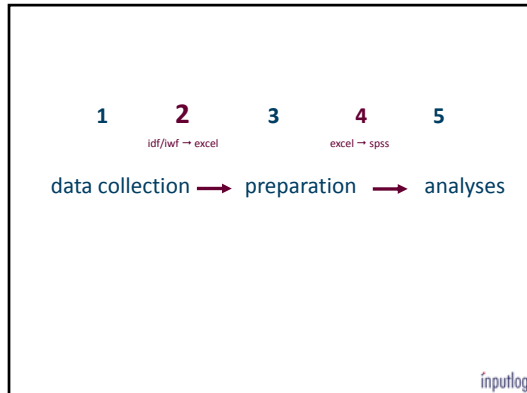
Writing Mode	Output	Position	Doc length	Start Time	Start Clock	Pause Time	Pause Location
5	document1.doc Microsoft Word		0	0:00:00	0	7	
1	o	2	2	2796	0:00:02	2796	5
1	e	3	3	3078	0:00:03	282	1
1	m	4	4	3718	0:00:03	640	1
1	o	5	5	4828	0:00:04	1110	1
1	SPACE	6	6	5359	0:00:05	531	2
1	ø	7	7	6125	0:00:06	766	2
1	f	8	8	6453	0:00:06	328	1
1	SPACE	9	9	6656	0:00:06	203	2
1	i	10	10	6984	0:00:06	328	2
1	n	11	11	7171	0:00:07	187	1
1	p	12	12	7437	0:00:07	266	1
1	u	13	13	7812	0:00:07	375	1
1	t	14	14	8125	0:00:08	313	1
1	i	15	15	8500	0:00:08	375	1
1	o	16	16	8703	0:00:08	203	1
1	g	17	17	9078	0:00:09	375	1

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### 1 general output • windows

1	g	17	17	9078	0:00:09	375	1
5	Collins COBUILD - Lexicon			34578	0:00:34	0	7
2	Movement			34734	0:00:34	31	7
2	Left Button			36531	0:00:36	360	7
1	t			38984	0:00:38	1063	7
1	s			39503	0:00:39	109	1
1	e			39550	0:00:39	157	1
1	t			39390	0:00:39	140	3
1	ENTER			40953	0:00:40	110	3
5	document1.doc			41234	0:00:41	0	7
1	Q	27	27	49453	0:00:49	3000	7
1	K	28	28	49703	0:00:49	250	1
2	Left Button			53875	0:00:53	266	1
5	IATE Search results Internet Explorer			53875	0:00:53	0	7
2	Movement			56390	0:00:56	1203	7
1	s			57546	0:00:57	859	7
1	e			57750	0:00:57	204	1
1	h			58000	0:00:58	250	1
1	...			58109	0:00:58	109	1
2	Left Button			65406	0:01:05	1266	7
5	document1.doc			65406	0:01:05	0	7

inputlog



### 2 conversion • idf & iwf

IDF (basic)	IWF (light, minimal, plus, full)
<pre>&lt;Event wm="1"&gt; &lt;output&gt;T&lt;/output&gt; &lt;startTime&gt;5672&lt;/startTime&gt; &lt;endTime&gt;5938&lt;/endTime&gt; &lt;/Event&gt;</pre>	<pre>&lt;DocumentChange&gt; &lt;time&gt;11250&lt;/time&gt; &lt;doclength&gt;2&lt;/doclength&gt; &lt;ranglength&gt;1&lt;/ranglength&gt; &lt;position&gt;2&lt;/position&gt; &lt;content&gt;T&lt;/content&gt; &lt;/DocumentChange&gt;</pre>

### 2 conversion • idf & iwf

- Idf to xml (titledocument.xml)

This XML allows you to:

- adapt data
- check data

```
<output>Left Button</output>
<startTime>2688</startTime>
<endTime>2813</endTime>
<x>578</x>
<y>277</y>
</Event>
<Event wm="1">
<output>T</output>
<startTime>5672</startTime>
<endTime>5938</endTime>
</Event>
<Event wm="1">
<output>h</output>
<startTime>6250</startTime>
<endTime>6406</endTime>
```

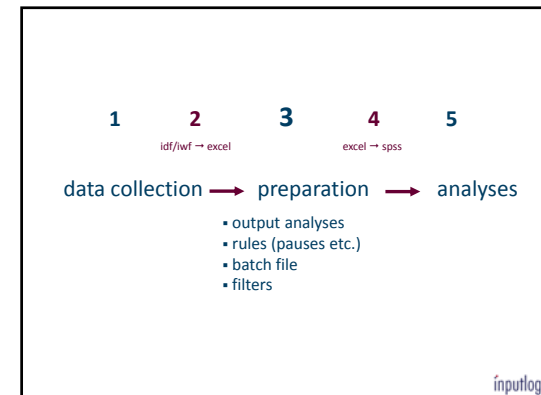
### 2 conversion • idf & iwf

- IWF to xml (titledocument-wordlog.xml)

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="xml_word_formatting.xsl"?>
<Session xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" version="WordLogger 0.3.1"
logVersion="Full" beginTime="2056984">
<DocumentChange>
<time>0</time>
<doclength>1</doclength>
<ranglength>1</ranglength>
<position>1</position>
<content>
</content>
</DocumentChange>
<DocumentChange>
<time>11250</time>
<doclength>2</doclength>
<ranglength>1</ranglength>
<position>2</position>
<content>T</content>
</DocumentChange>
```

### 2 conversion • idf & iwf

IDF	IWF
Time stamp events (key in and key out) - epoch - starttime X	Time stamp events (key in) - epoch - starttime Y
All Windows events - keystrokes (real) - mouse movements and clicks - (speech)	All Word events (in startdocument > document 1) - keystrokes (on the screen)
XY coordinates of mouse Window identification	cursor position document length selections (formatting)



### 3 preparation • output

The revision analyses creates several files:

- Endnotation.xml
- Revisionanalysis.xml
- Revisionssummary.xml
- Wordlog.xml
- Xml\_rev.xml
- Xml\_revisions.xml
- Xml\_word.xml\*

\* Move this file from the general folder to the folder in which all files are generated. (bug)

inputlog

### 3 preparation • rules

Inputlog uses a set of rules to calculate pause locations (handout)

WritingMode	Output	StartTime	StartClock	EndTime	EndClock	ActionTime	PauseTime	PauseLocation	X	Y
2	Left Button	1140	00:00:01	1263	00:00:01	125	1140	5	628	273
1	T	4423	00:00:04	4623	00:00:04	172	3389	7		
1	A	3719	00:00:09	3828	00:00:09	109	1266	1		
1	#	3879	00:00:09	4047	00:00:09	172	194	1		
1	SPACE	3384	00:00:09	4156	00:00:09	172	309	2		
1	D	1427	00:00:09	1647	00:00:09	150	403	2		
1	#	4842	00:00:09	5044	00:00:09	204	203	1		
1	#	4787	00:00:09	4989	00:00:09	172	137	1		
1	I	7015	00:00:07	7136	00:00:07	141	218	1		
1	BS	7734	00:00:07	7944	00:00:07	150	719			
1	v	8329	00:00:09	8437	00:00:09	109	394			
1	I	8994	00:00:09	9161	00:00:09	167	268			
1	I	8754	00:00:09	8919	00:00:09	125	142	1		
1	F	8328	00:00:09	8531	00:00:09	203	394	1		
1	v	8484	00:00:09	8609	00:00:09	123	136	1		
1	I	8719	00:00:09	8828	00:00:09	109	238	1		
1	SPACE	11309	00:00:11	11900	00:00:11	172	1809	2		
1	#	13437	00:00:12	13647	00:00:12	150	1109	2		
1	#	12612	00:00:12	12900	00:00:12	189	375	1		

adapt manually

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### 3 preparation • batch

You can use a batch to generate more files at once

```
xml2.exe D:\Naam.idf D:\Naam.isf D:\Naam.ixf
generateXml2.exe D:\Naam.ixf D:\Naam.xml
```

```
generateanalysis.exe D:\Naam.xml D:\Naam.isf -B 2000 -B 1000 -Lp 2000 60000 -Lp 1000 60000 -Li 2000 10 -Li 1000 10
generateanalysis.exe D:\Naam.xml D:\Naam.isf -S 2000
generateanalysis.exe D:\Naam.xml D:\Naam.isf -S 0
generateanalysis.exe D:\Naam.xml D:\Naam.isf -Pp 2000 60000 -Pp 1000 60000
generateanalysis.exe D:\Naam.xml D:\Naam.isf -Pi 2000 10 -Pi 1000 10
```

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### 3 preparation • batch

- -B 2000: general with threshold 2 seconds
- -Lp 2000 60000: linear in periods of 60 seconds, threshold 2 seconds
- -Li 2000 10: linear in 10 intervals, threshold 2 seconds
- -S 1000: statistical with threshold of 1 second
- -S 0: statistical with threshold of zero seconds
- -Pp 2000 60000: pause analysis in periods of 60 seconds, threshold 2 seconds
- -Pi 2000 10: pause analysis in 10 intervals, threshold 2 seconds

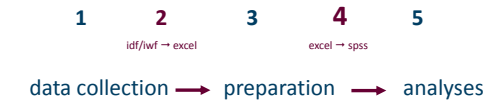
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### 3 preparation • filters

	AV	AV	AV	AJ	BA	BB	BC	BD	BE	BF	BG	BH
1	Time in Interval (check) seconds	Interval in S	Interval in S	All passes	Interval in 1000 ms	Interval in 1000 ms	Interval in 1000 ms	Interval in 2000ms	Interval in 2000ms	Interval in 5000 ms	Interval in 5000 ms	
2	5,219	2,00	2,00	5279	0	0	0	0	0	0	0	
3	13,249	2,00	2,00	4922	0	0	0	0	0	0	0	
4	15,000	3,00	3,00	4742	0	0	0	0	0	0	0	
5	24,833	4,00	4,00	21212	8888	8888	8888	8888	8888	8888	8888	
6	27,800	6,00	6,00	22292	0	0	0	0	0	0	0	
7	38,959	8,00	8,00	30841	8141	8141	8141	8141	8141	8141	8141	
8	36,044	7,00	7,00	36807	0	0	0	0	0	0	0	
9	42,456	8,00	8,00	35219	0	0	0	0	0	0	0	
10	45,031	9,00	9,00	37532	0	0	0	0	0	0	0	
11	50,201	10,00	10,00	44932	4308	4308	4308	4308	4308	4308	4308	
12	59,238	10,00	10,00	51719	7187	7187	7187	7187	7187	7187	7187	
13	60,278	12,00	12,00	52079	0	0	0	0	0	0	0	
14	67,015	13,00	13,00	58916	5328	5328	5328	5328	5328	5328	5328	
15	70,843	14,00	14,00	63344	0	0	0	0	0	0	0	
16	75,281	15,00	15,00	67782	0	0	0	0	0	0	0	
17	83,550	16,00	16,00	76001	5219	5219	5219	5219	5219	5219	5219	
18	87,031	17,00	17,00	79632	3196	3196	3196	3196	3196	3196	3196	

selection

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### Keep in touch...

- [www.inputlog.net](http://www.inputlog.net) (presentation > manuals)
- Example of analyses > fact sheets

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