Usability Recommendations for Annotation Tools

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Talk outline

(1) Introduction and usability fundamentals

(2) Usability evaluation of annotation tools

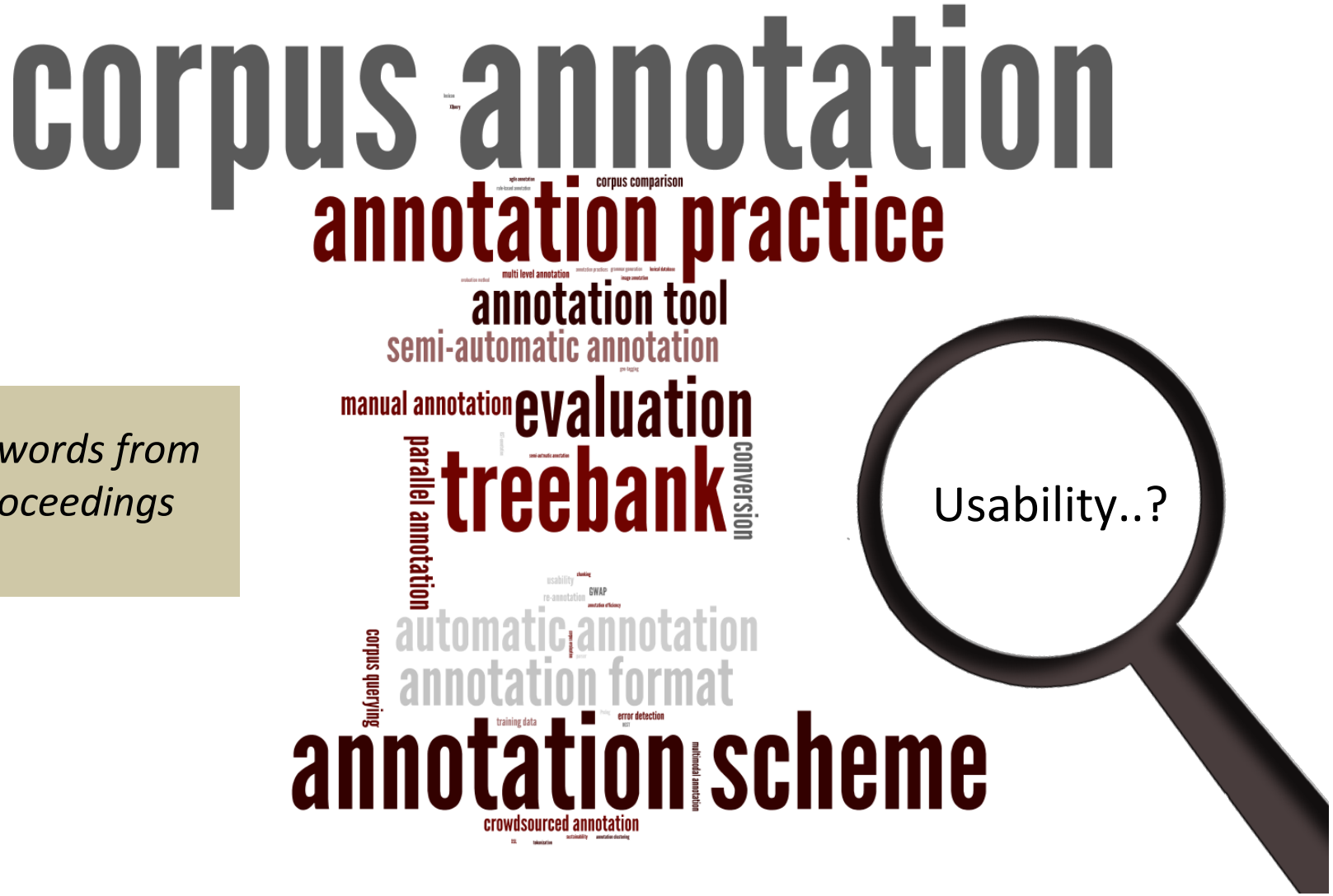
(3) Results: Design recommendations for usable annotation tools

Introduction and usability fundamentals

#01

Annotation and usability…

Topical keywords from the LAW proceedings 2007-2011.



Usability and Usability Engineering

- **Definition** of usability by **ISO 9241-11** (1999):
  "the extent to which a product can be used by **specified users** to achieve **specified goals** with **effectiveness**, **efficiency**, and **satisfaction** in a **specified context of use**."

→ **Bad usability** = a product/tool cannot be used with ease in a context it was originally designed for

- Usability can be **engineered** systematically by using a set of available tools and methods → **usability engineering toolbox**

Usability Testing: Goals

(1) Comparison: Find out which system is better

(2) Summative judgment: Judge how well a system works

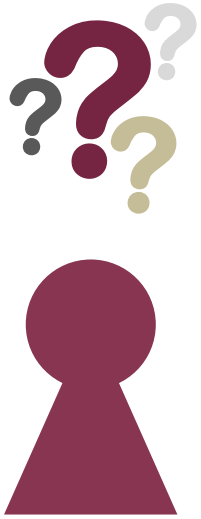
(3) Reveal usability problems: Find out why a system is bad

What‘s the problem with most of the existing annotation tools?

Usability Testing: Methods

Empirical methods

→ interviews, user obvervations, etc.



Analytic methods

→ inspection methods

Usability evaluation of annotation tools

#02

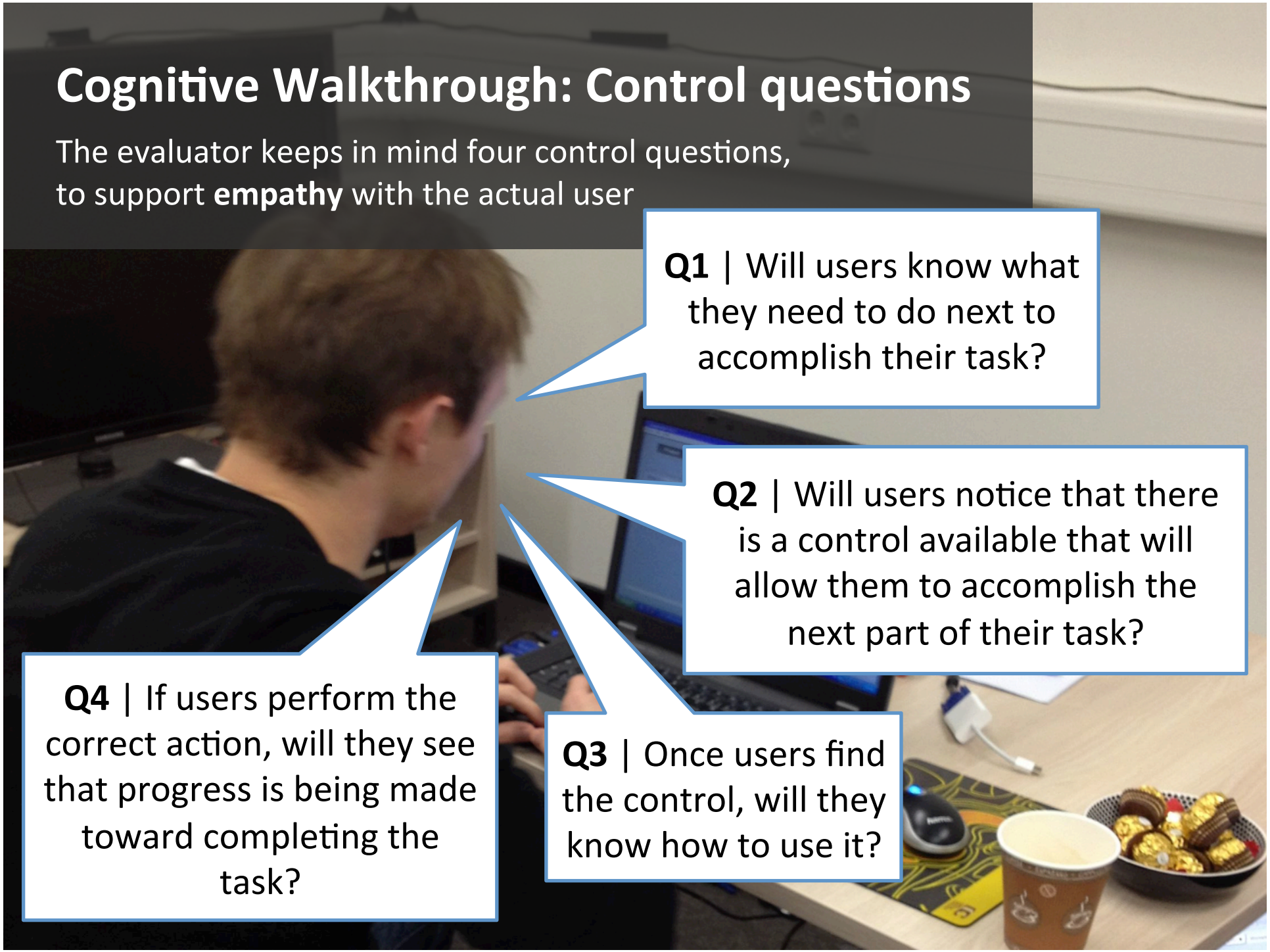
Heuristic Walkthrough

Cognitive Walkthrough: Tasks

- **Basic annotation** tasks for the test
  (1) Import a text document into the tool
  (2) Create an annotation scheme with two annotation layers, one for parts of speech, and one for phrases
  (3) Create some basic tags in each of the created annotation layers
  (4) Annotate the first sentence of the imported text
  (5) Delete an annotation

Cognitive Walkthrough: Control questions

The evaluator keeps in mind four control questions, to support **empathy** with the actual user



Q1 | Will users know what they need to do next to accomplish their task?

Q2 | Will users notice that there is a control available that will allow them to accomplish the next part of their task?

Q3 | Once users find the control, will they know how to use it?

Q4 | If users perform the correct action, will they see that progress is being made toward completing the task?

Heuristic Evaluation

Evaluators document **usability problems** by ranking the **severity** of the problem and by categorizing them by one or more **heuristics**.

(1) Visibility of system status

(2) Match between system and the real world

(3) User control and freedom

(4) Consistency and standards

(5) Error prevention

(6) Recognition rather than recall

(7) Flexibility and efficiency of use

(8) Aesthetic and minimalist design

(9) Help users recognize, diagnose, and recover from errors

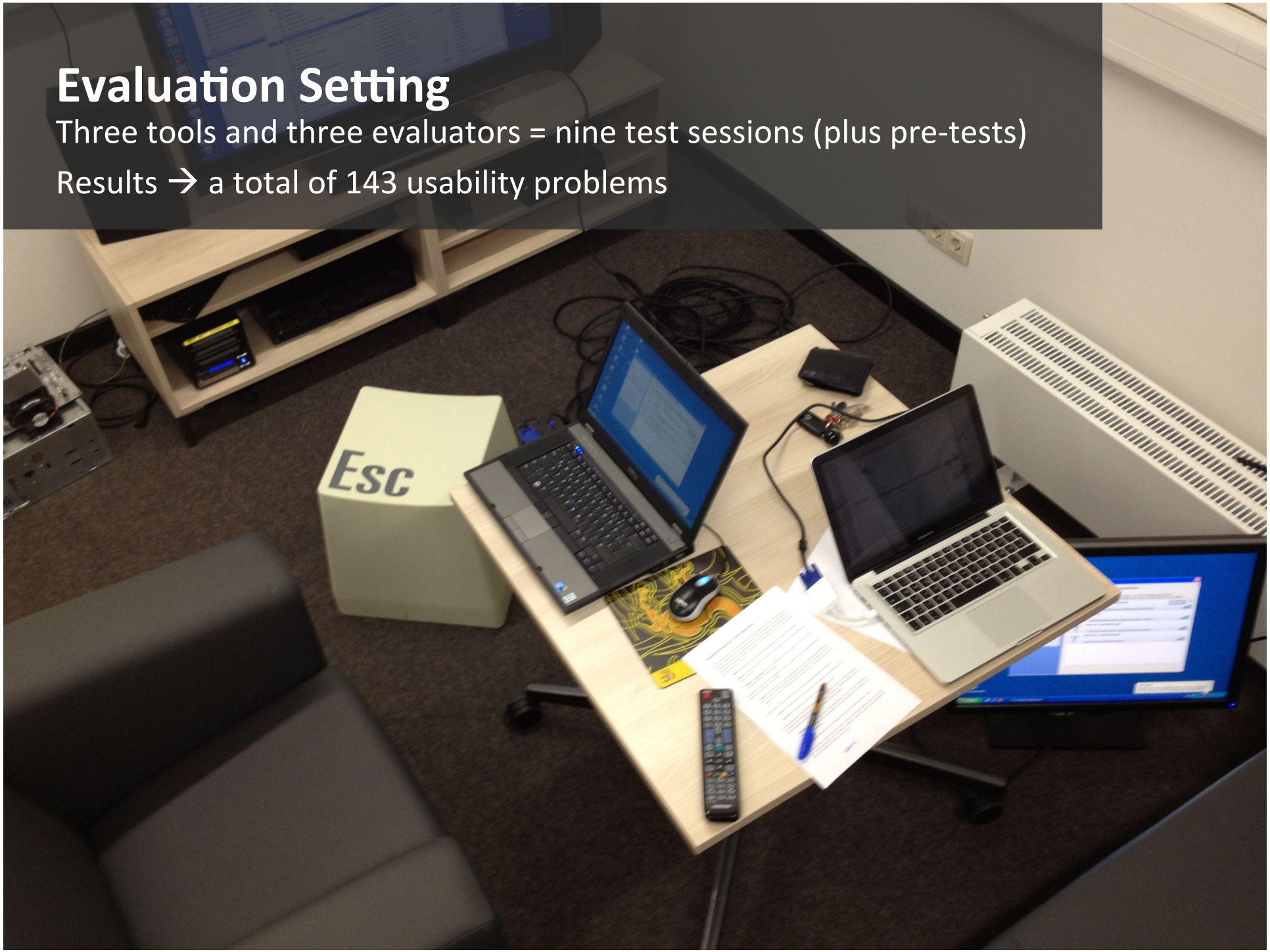
(10) Help and documentation

Heuristics by Jakob Nielsen, source: http://www.useit.com/papers/heuristic/heuristic_list.html

Evaluation Setting

Three tools and three evaluators = nine test sessions (plus pre-tests)

Results → a total of 143 usability problems



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Tool	All problems	Unique problems	Average severity
GATE	51	29	2.8
MMAX2	41	23	2.9
UAM CT	51	29	2.8

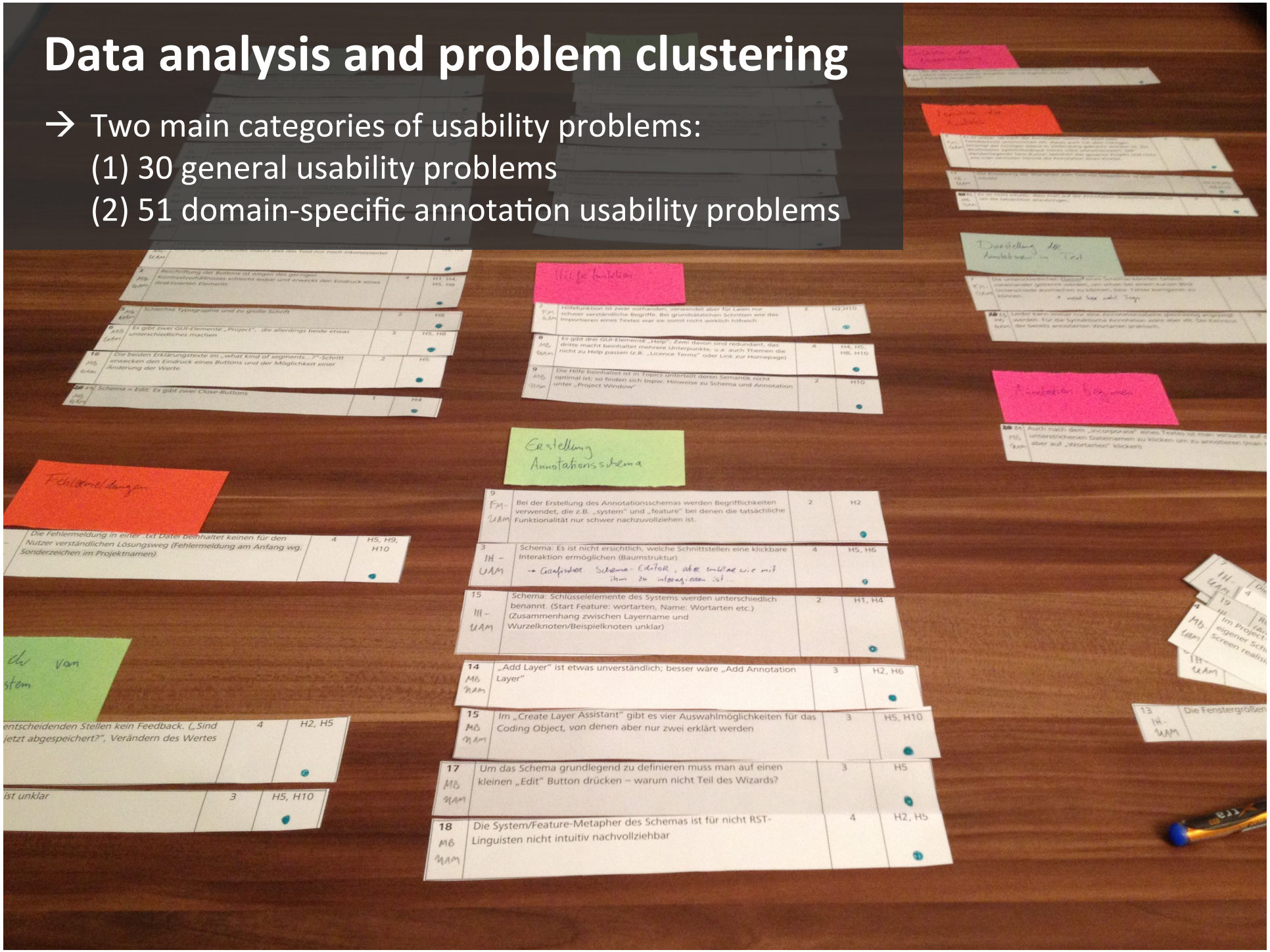
Number of usability problems per tool

Results: Design recommendations for usable annotation tools

#03

Data analysis and problem clustering

→ Two main categories of usability problems:
(1) 30 general usability problems
(2) 51 domain-specific annotation usability problems



Data analysis and problem clustering

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main category	category	description	GATE	MMAX2	UAM CT	total
general usability problems	A	Feedback and user guidance, error messages	2	6	7	15
	B	UI elements and design	4	3	8	15
specific annotation usability problems	C	Wording and metaphors	4	1	2	7
	D	Import / edit primary data	4	2	3	9
	E	Import / create / edit annotation scheme	7	5	5	17
	F	Apply / edit / delete annotations	6	3	2	11
	G	Visualize (parallel) annotations	2	3	2	7
		number of unique problems	**29**	**23**	**29**	**81**

Nielsen‘s heuristics

(1) Visibility of system status
(2) Match between system and the real world
(3) User control and freedom
(4) Consistency and standards
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(6) Recognition rather than recall
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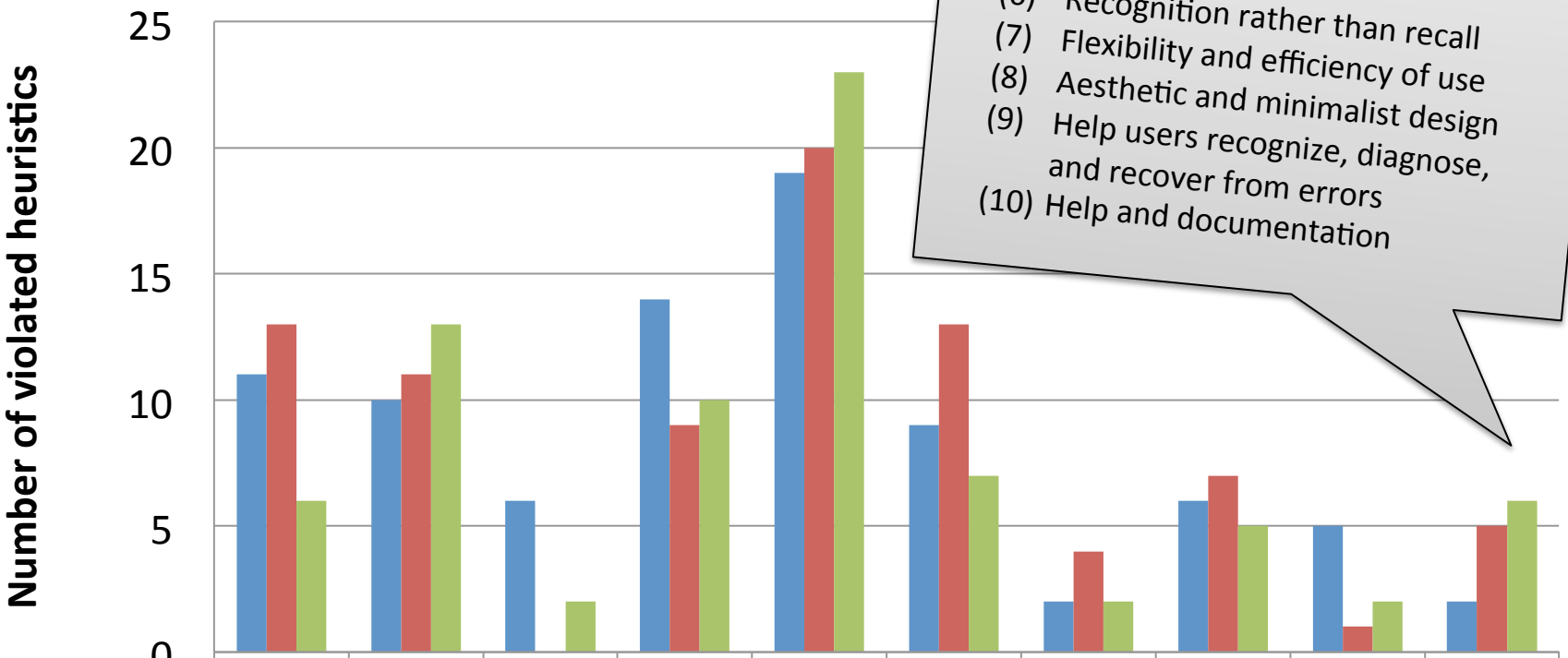
(8) Aesthetic and minimalist design
(9) Help users recognize, diagnose, and recover from errors
(10) Help and documentation



	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
GATE	11	10	6	14	19	9	2	6	5	2
MMAX2	13	11	0	9	20	13	4	7	1	5
UAM CT	6	13	2	10	23	7	2	5	2	6

Results of the evaluation

→ **28 design recommendations** for annotation tools, to avoid the most common usability problems

(1) Basic guideline for tool designers → How to improve existing tools or design new tools…

(2) Basic checklist for decision makers → Which tool to choose from the plethora of existing tools, with regard to usability issues…

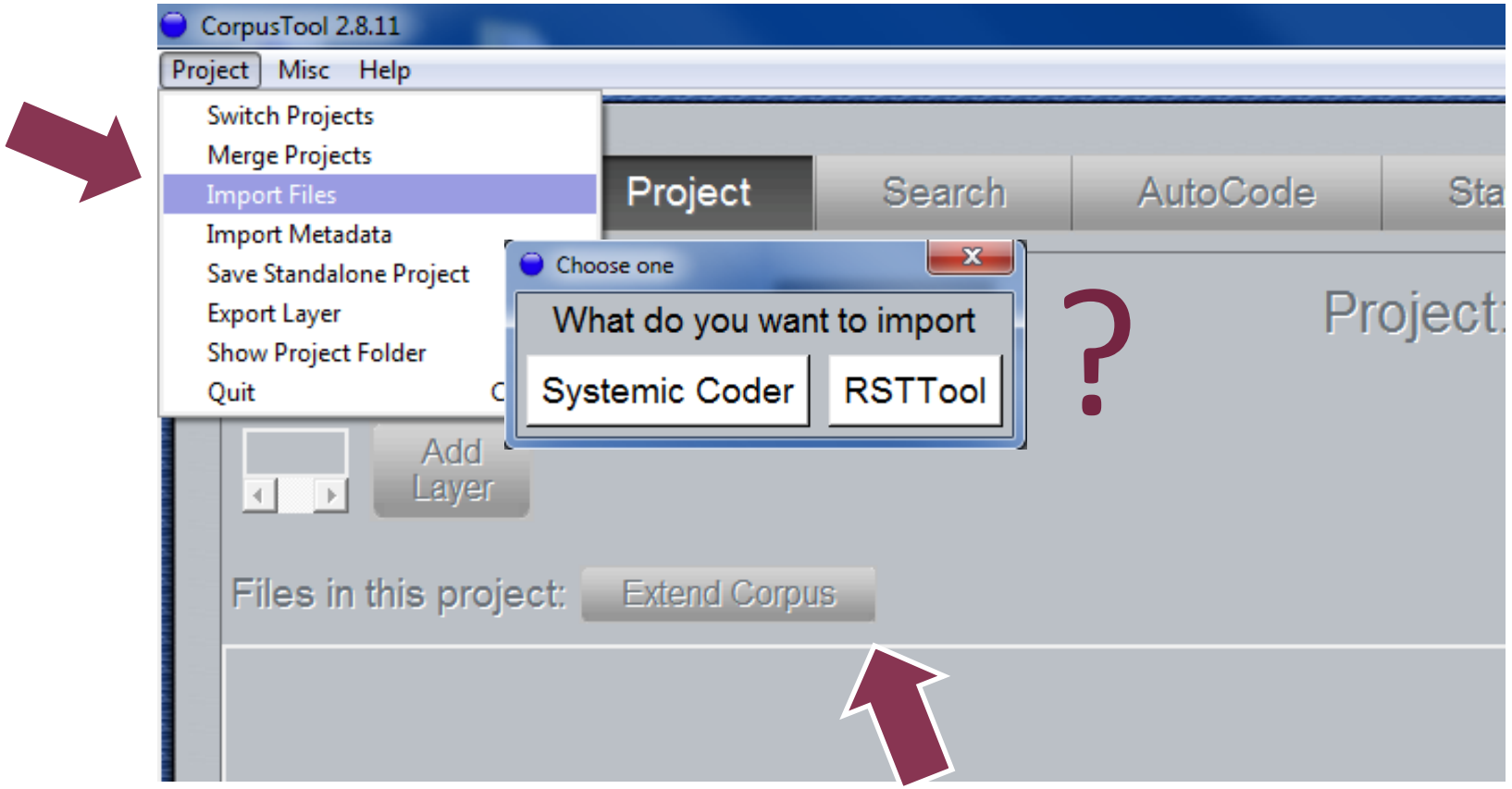
Overview of recommendations

Problem category	Number of recommendations
Wording and metaphors	4
Primary data	7
Annotation scheme	6
Annotation process	6
Annotation visualization	5
Total	28

Example from category „Wording and metaphors“

Recommendation 01 | “Do not invent new metaphors for fundamental interaction paradigms that are known from numerous other tools, but rather stick to conventionalized wording for basic actions like e.g. importing or saving a file”

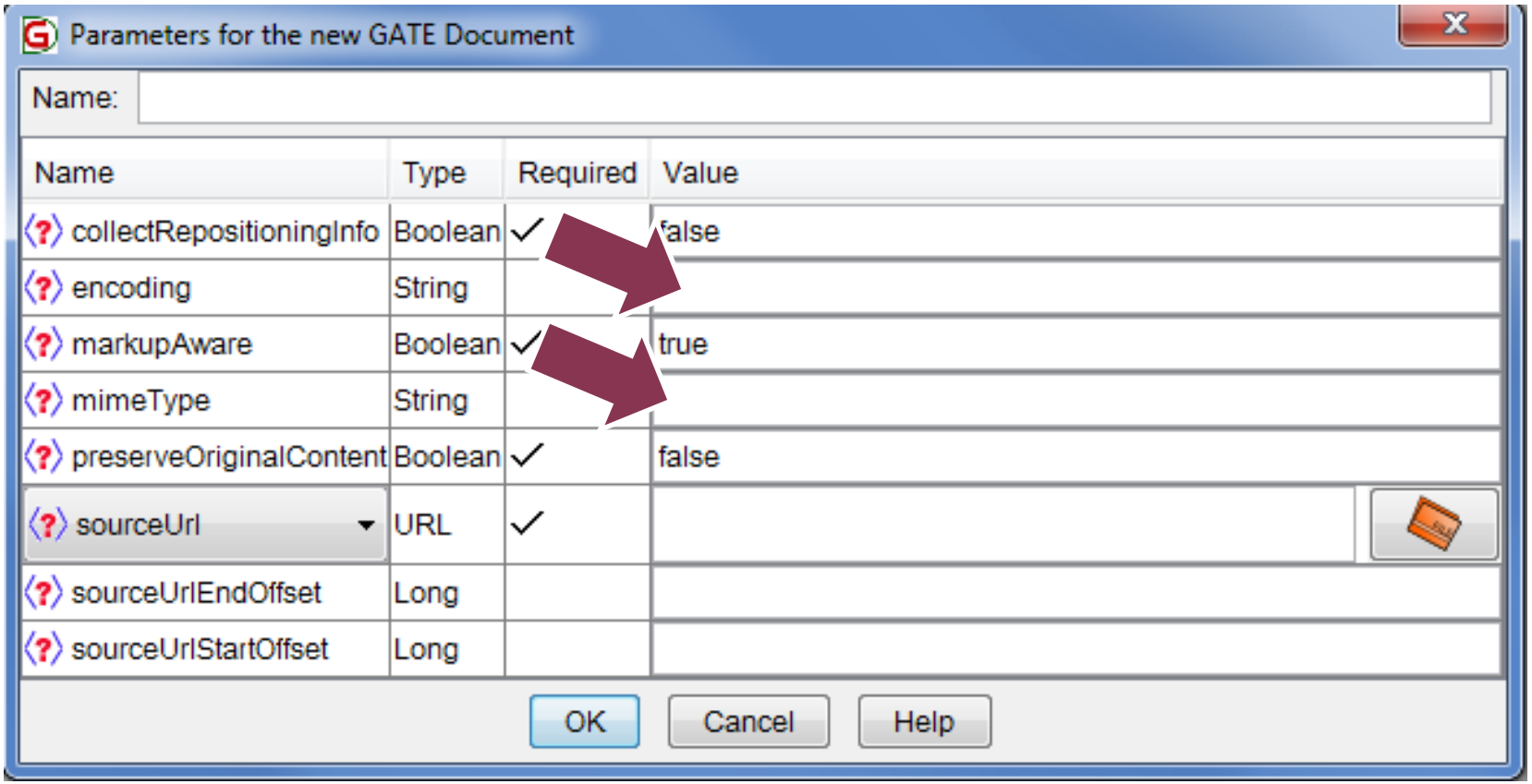
Task: Import documents in CorpusTool



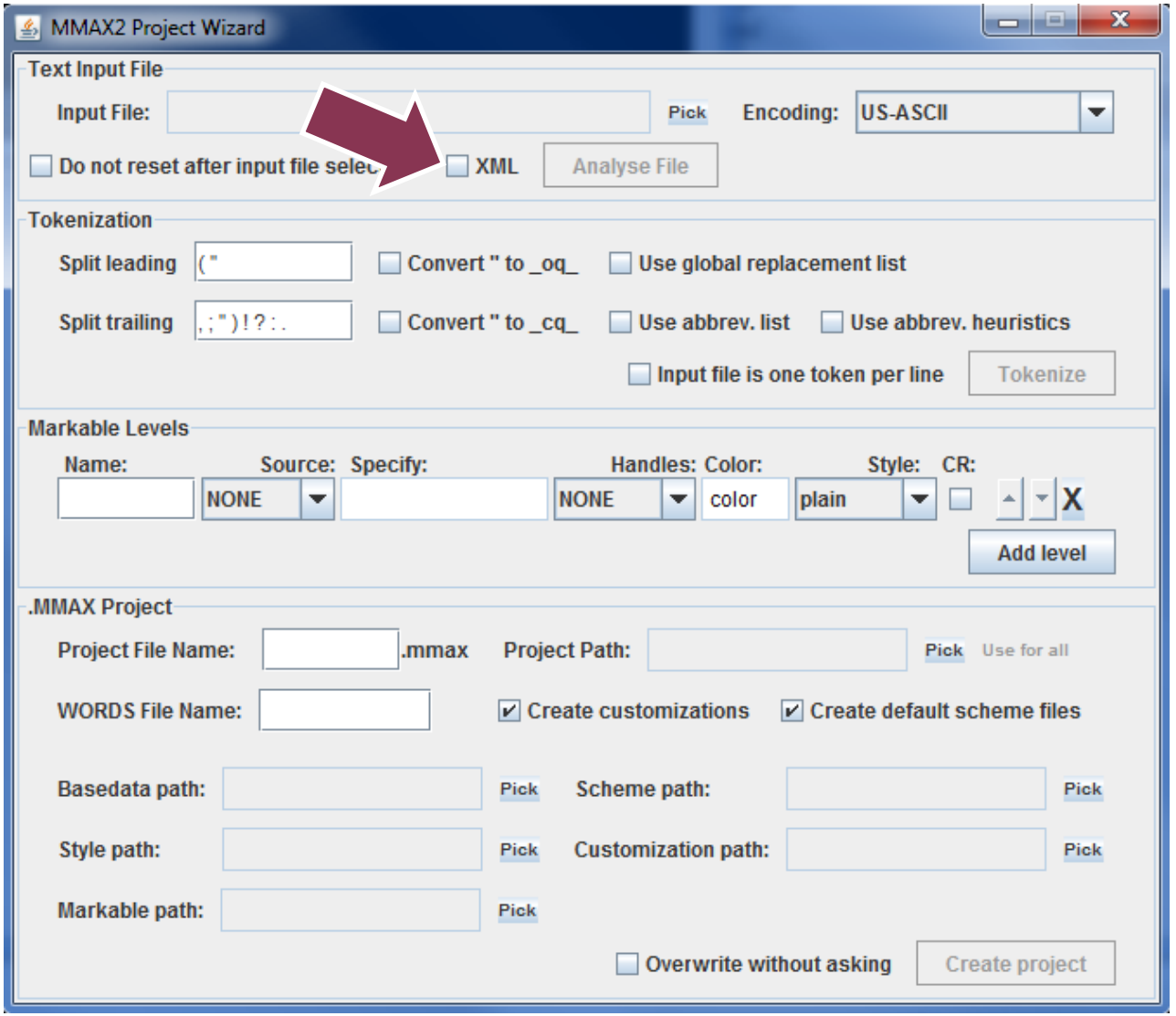
Example from category „Primary data“

Recommendation 05 | “Guide the user through the import process and make clear which parameters have to be set by providing default values and a list of options rather than free text fields”

Task: Import document in GATE



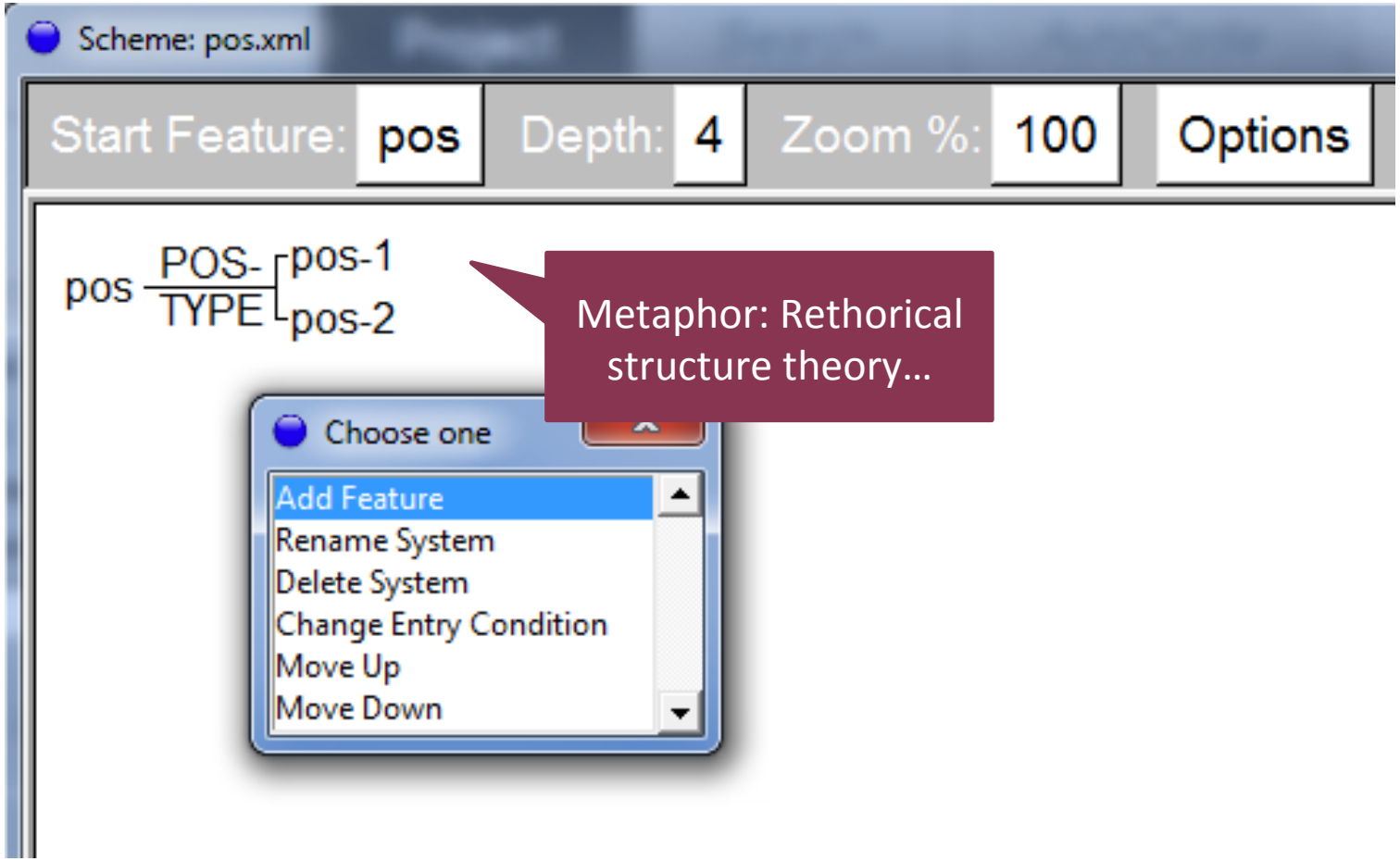
Task: Import document in MMAX2



Example from category „Annotation scheme“

Recommendation 13 | “Allow the creation and editing of an annotation scheme from within the tool; hide technical details by providing a graphical scheme-editor and offer an optional XML-mode for advanced users”

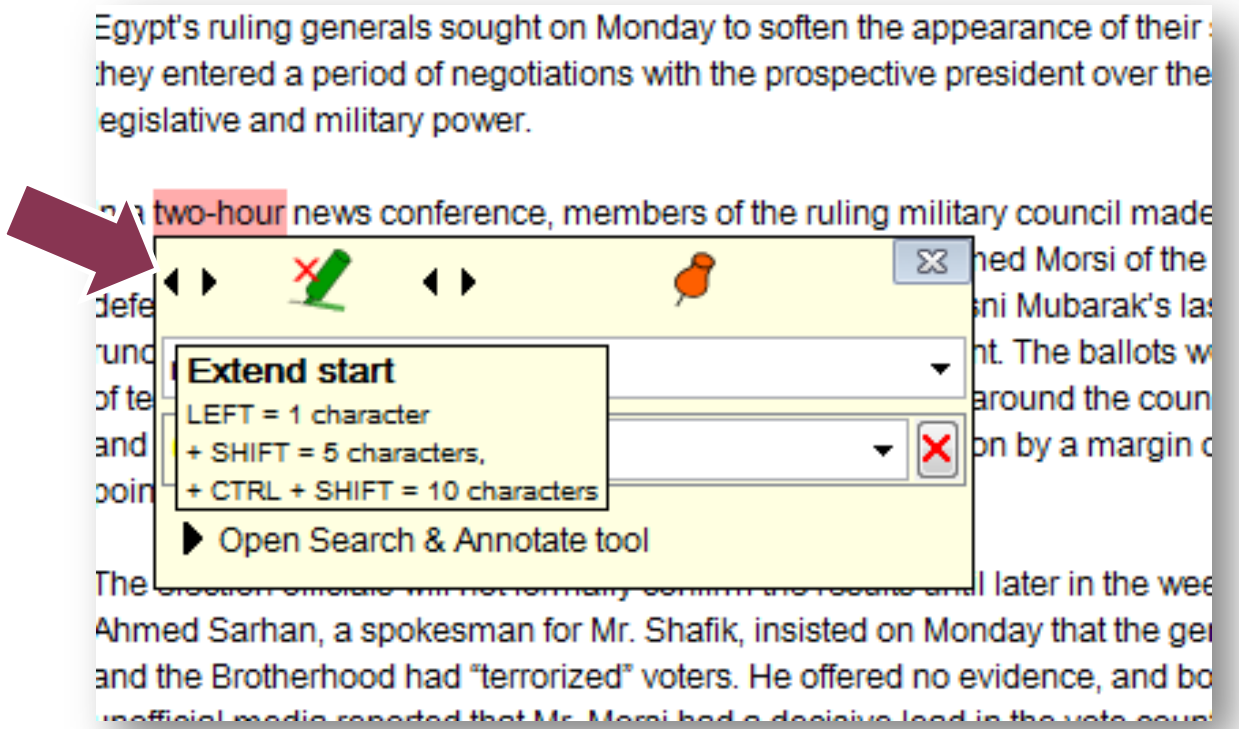
Task: Create annotation scheme in CorpusTool (only tool with GUI)



Example from category „Annotation process“

Recommendation 20 | “Allow easy modification (expand or shrink the range) and deletion of existing annotation bases”

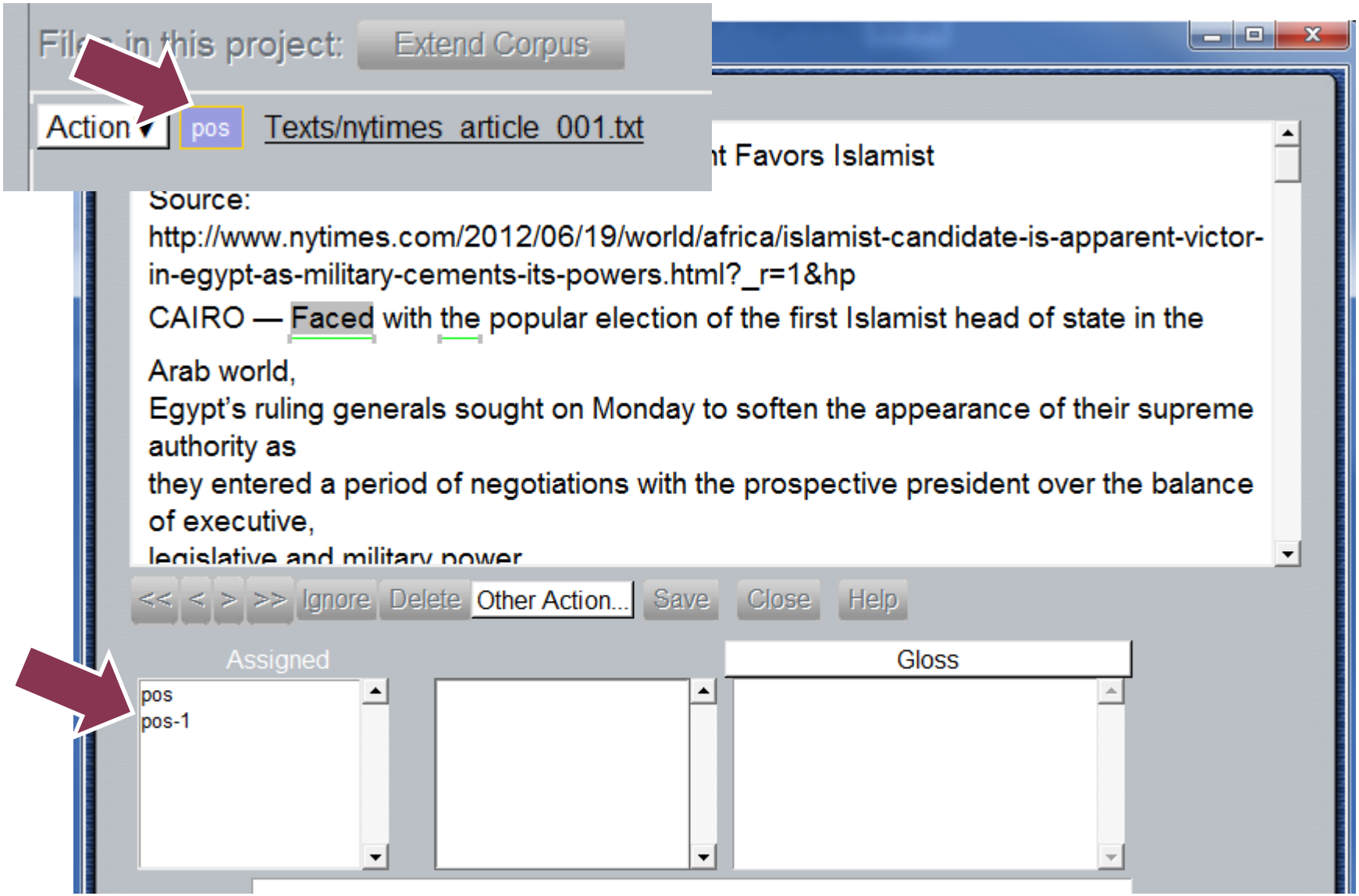
Task: Change the range of the annotation base in GATE



Example from category „Annotation visualization“

Recommendation 24 | “Display an annotation when clicking on or hovering over an annotated text unit”

Task: Show annotations in CorpusTool



Thank you for your attention!

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