Authoring and Annotation of Web Pages in CREAM

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Overview

- Introduction
- Relational Metadata
- Modes of Interaction
- Meta Ontology
- Outlook & Summery

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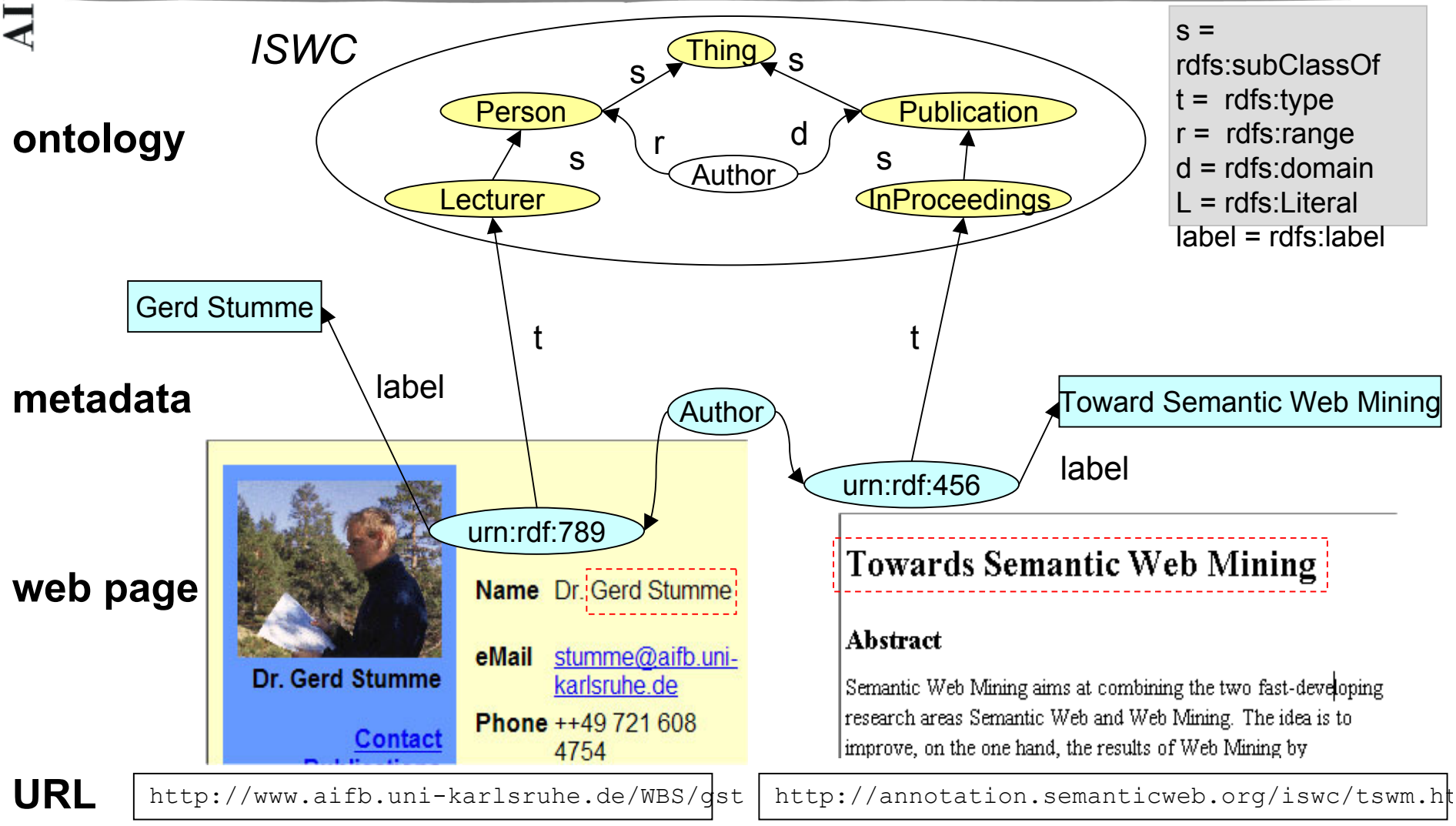
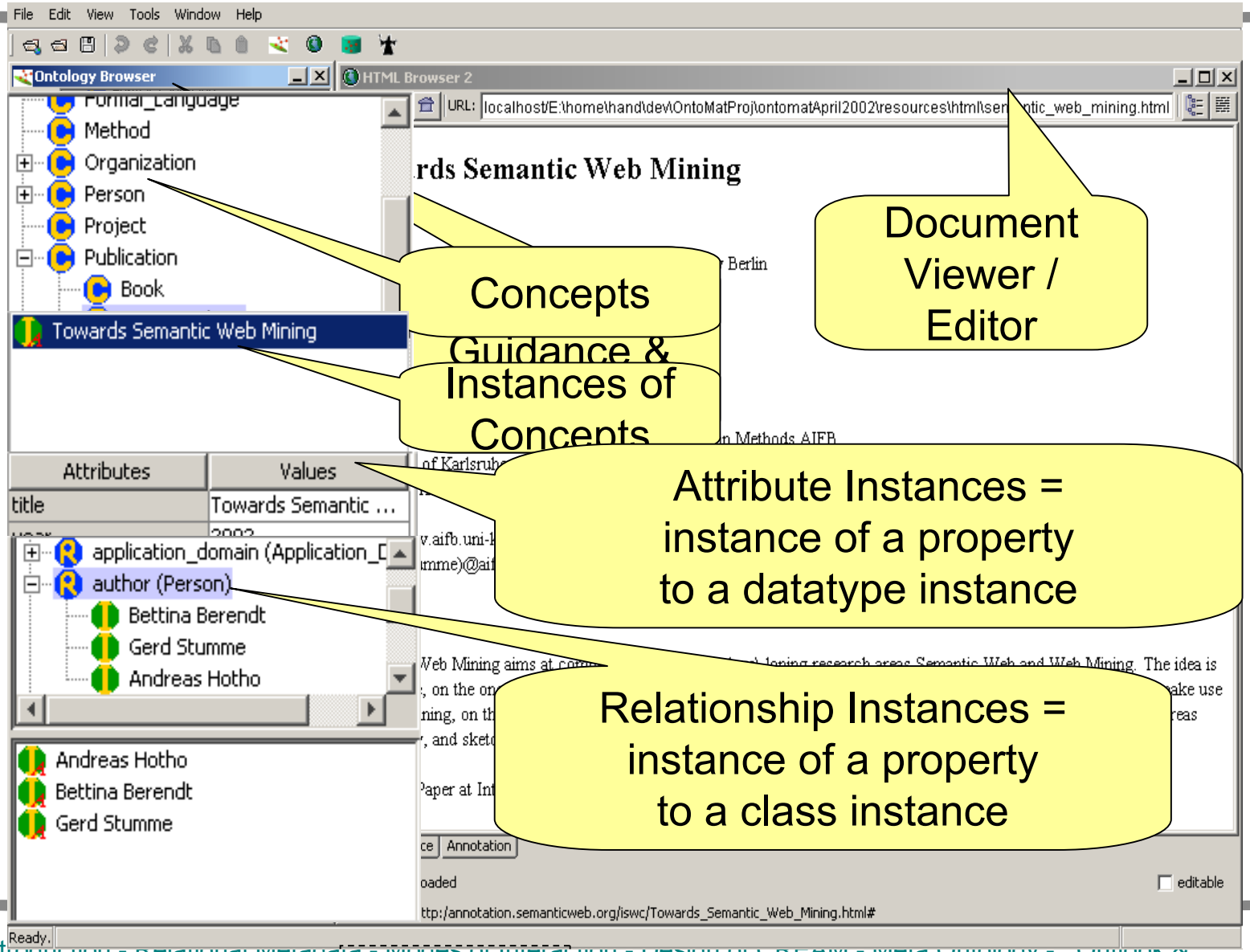
Introduction

- Creating RElational Annotation-based Metadata for the Semantic Web
- Annotation Frameworks
  - First create content, second annotate content
- **Propose**: Combine Annotation and Authoring
- Hide the Border between Annotation and Authoring
- Extend CREAM Framework and **OntoMat-*Annotizer***, requires
  - Modes of Interaction
  - Meta Ontology

Relational Metadata

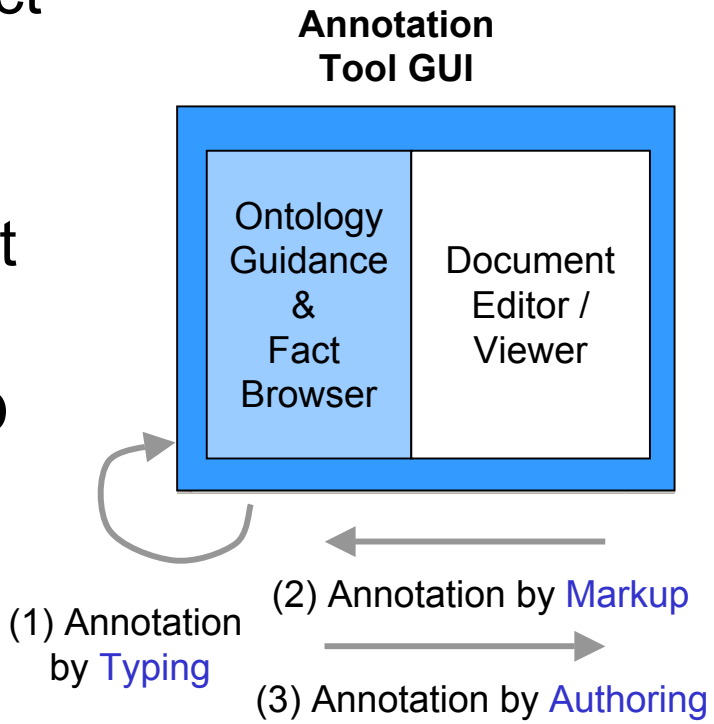


Modes of Interaction - GUI

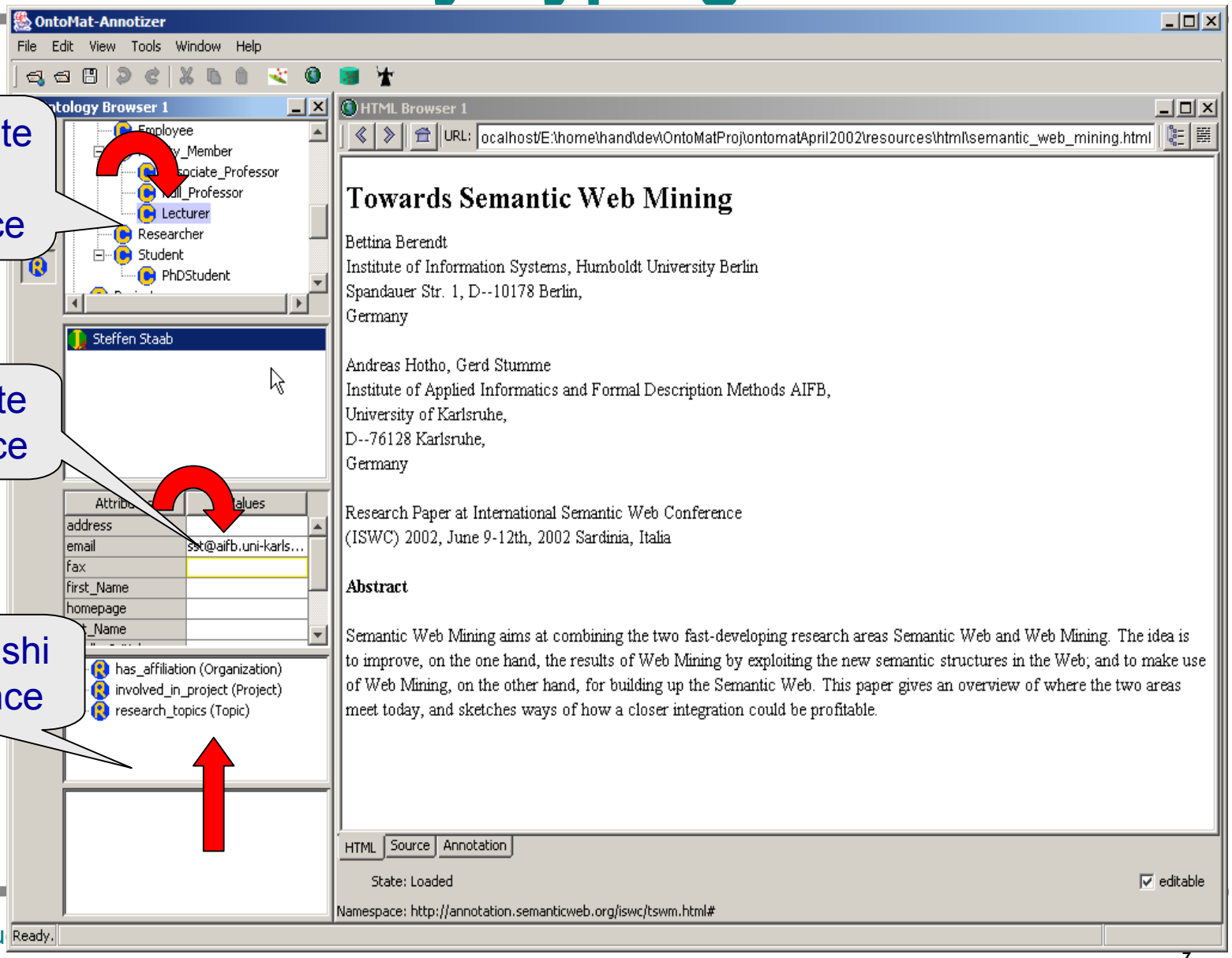


Modes of Interaction

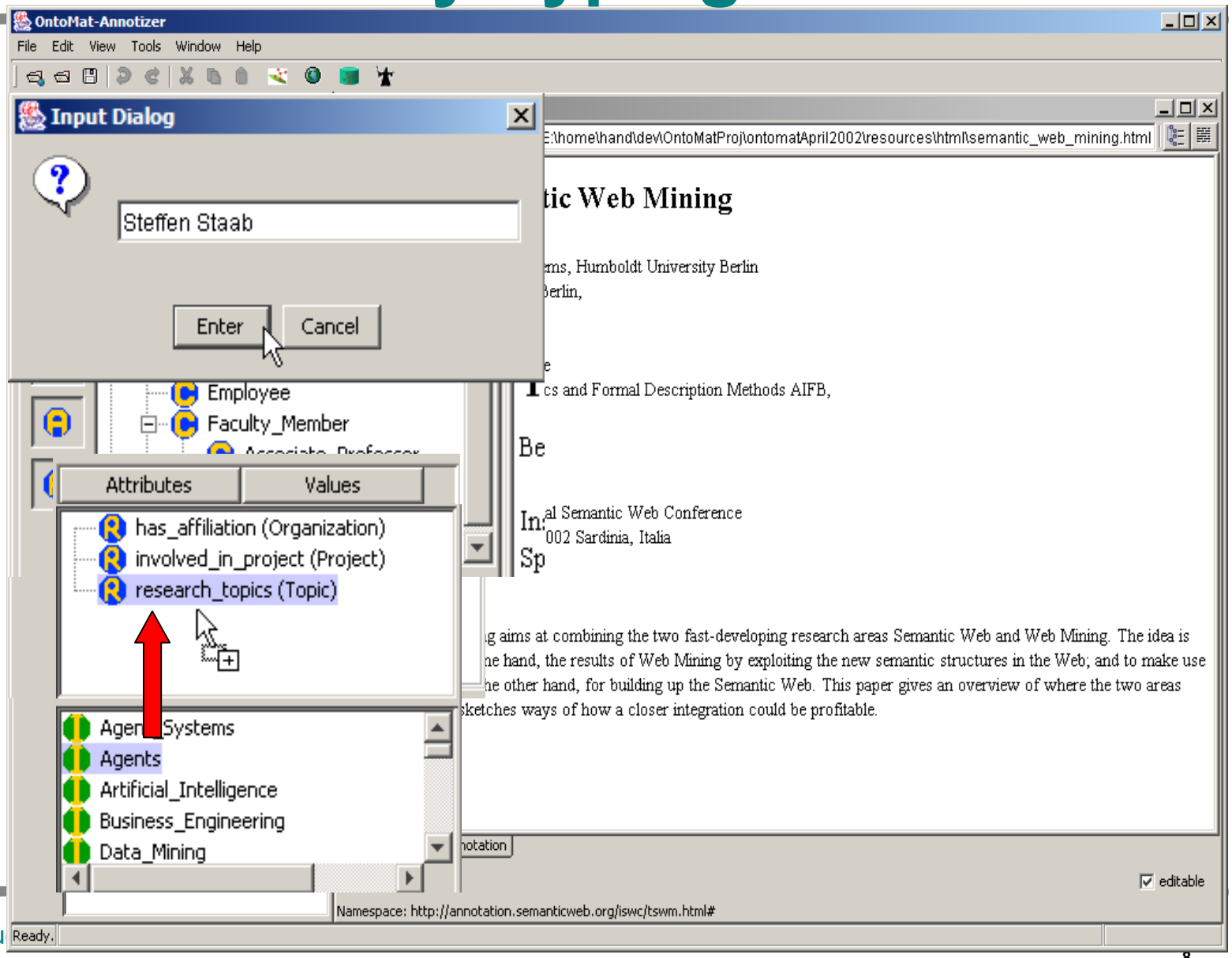
1. Annotation by Typing Statements
   - Exclusively with Ontology & Fact Browser
2. Annotation by Markup
   - Reuse Data from the Document Editor in the Fact Browser
3. Annotation by Authoring Web Pages
   - Reuse Data from the Fact Browser in the Document Editor



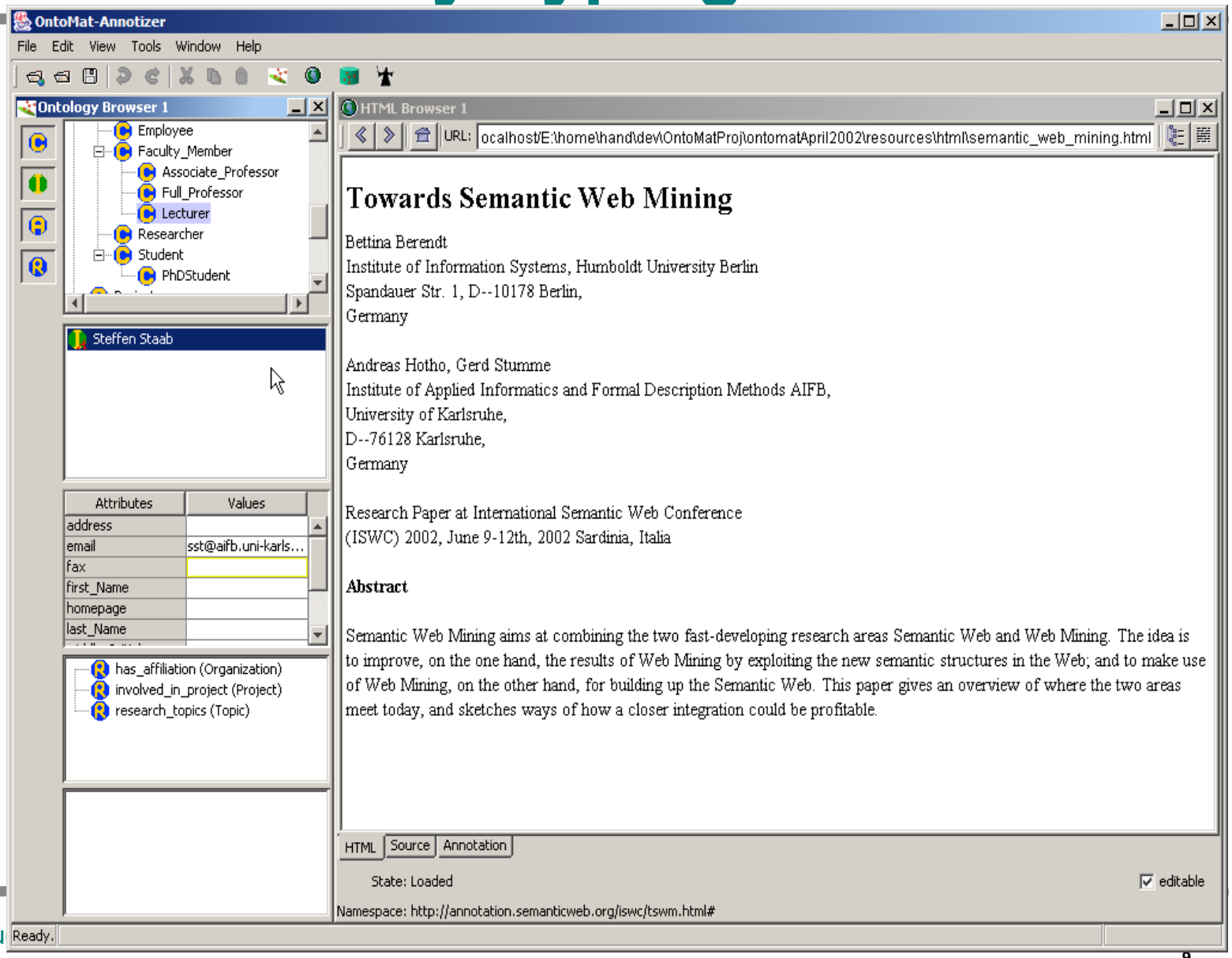
Annotation by Typing Statements



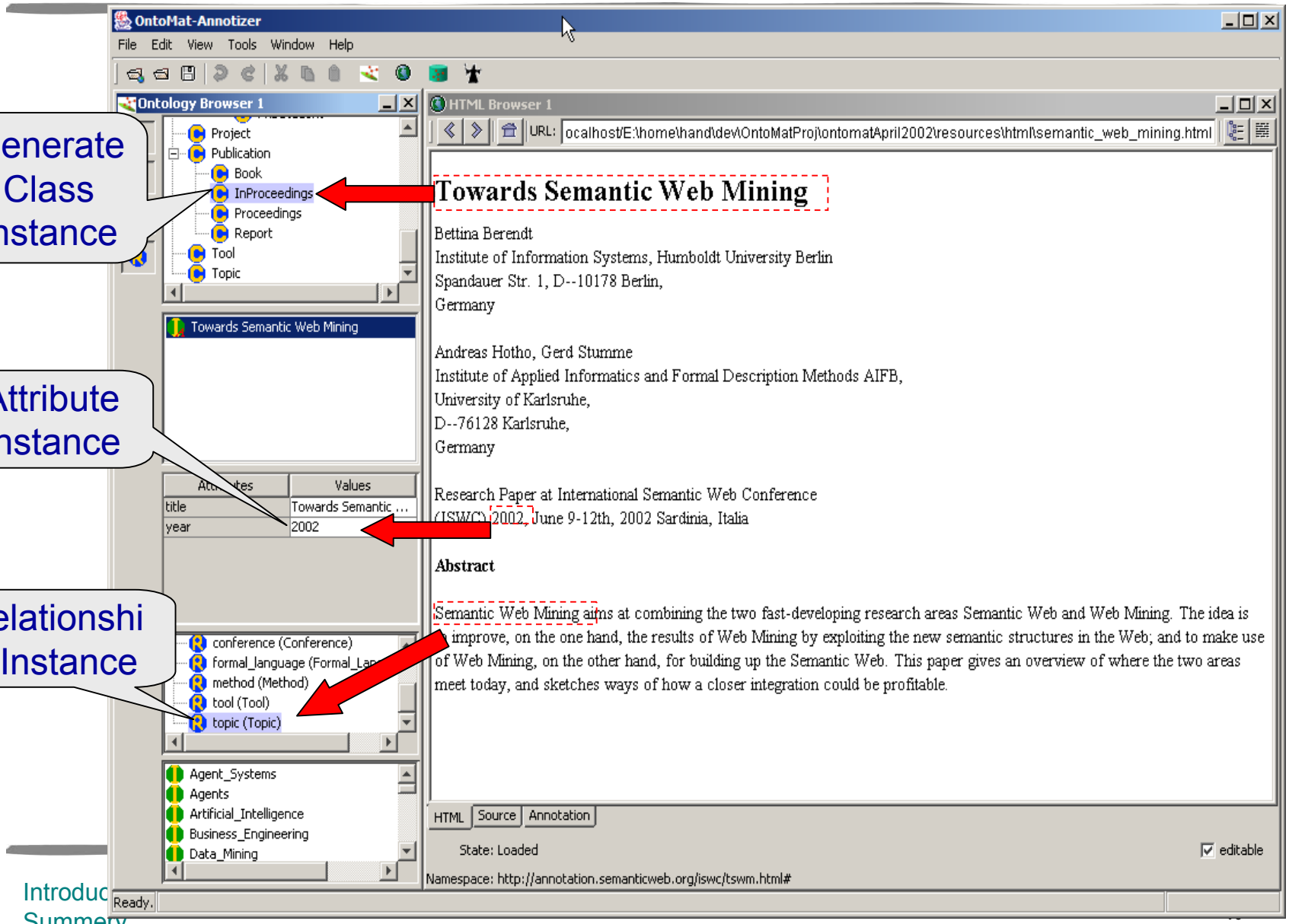
Annotation by Typing Statements



Annotation by Typing Statements



Annotation by Markup

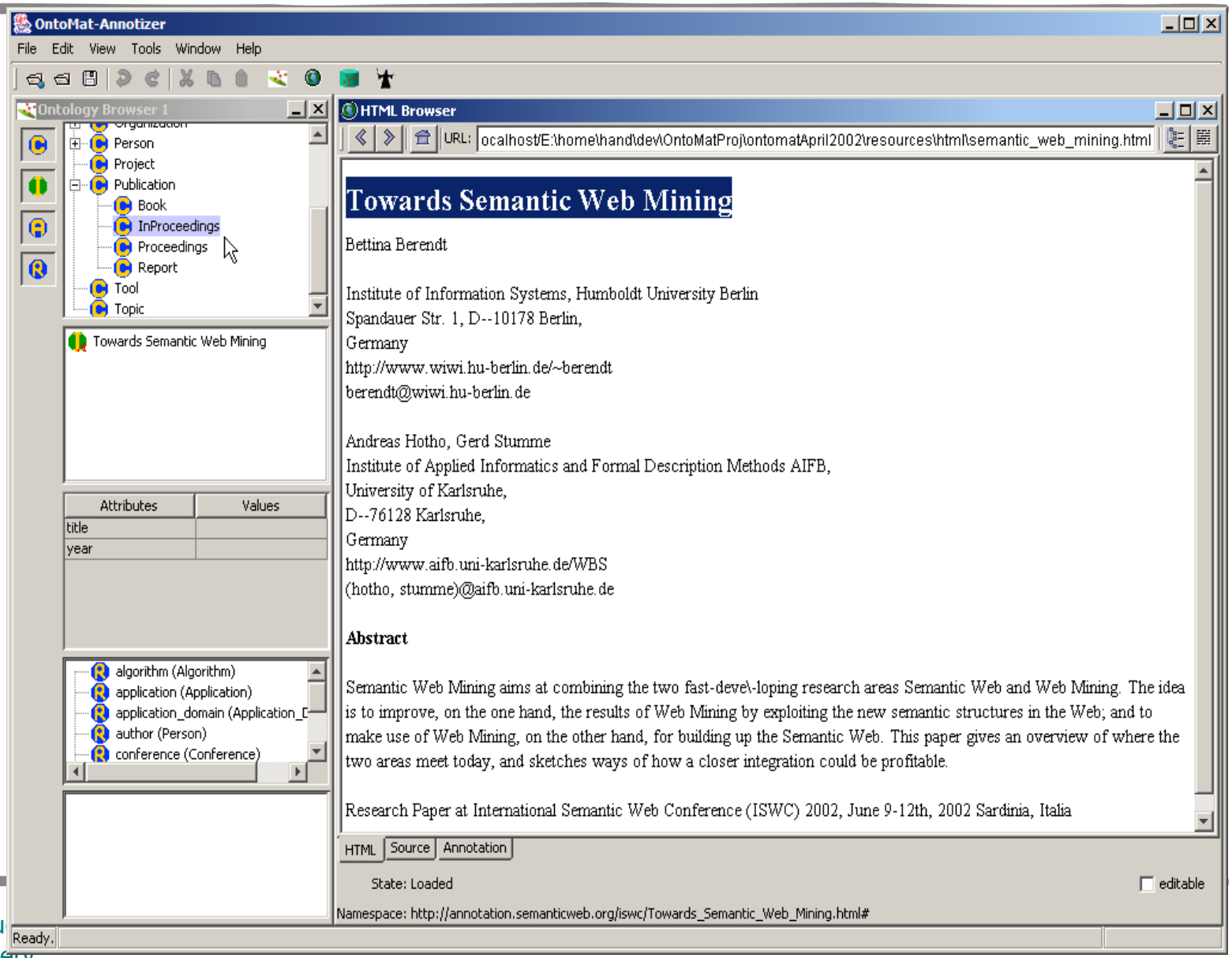


Generate Class Instance

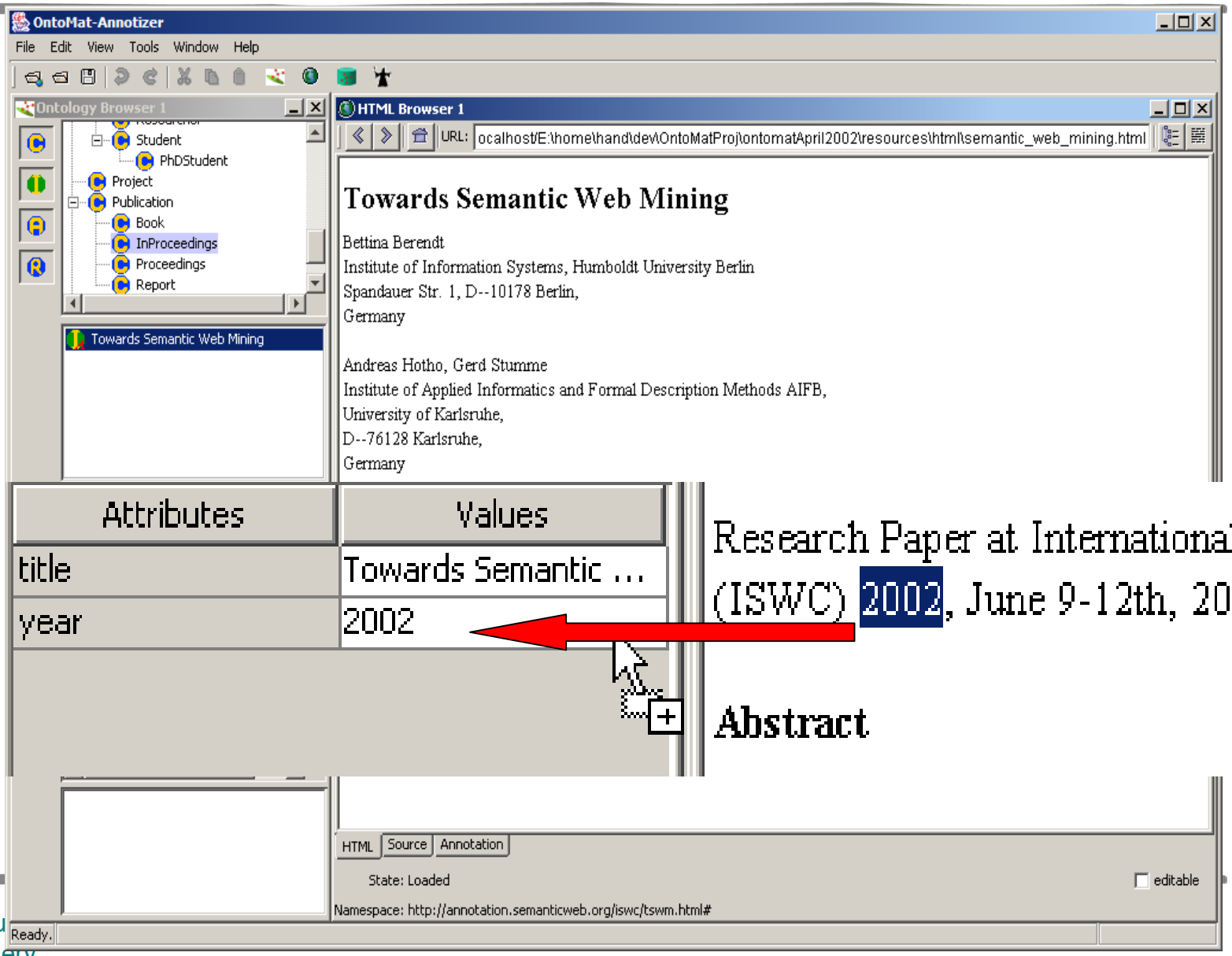
Attribute Instance

Relationship Instance

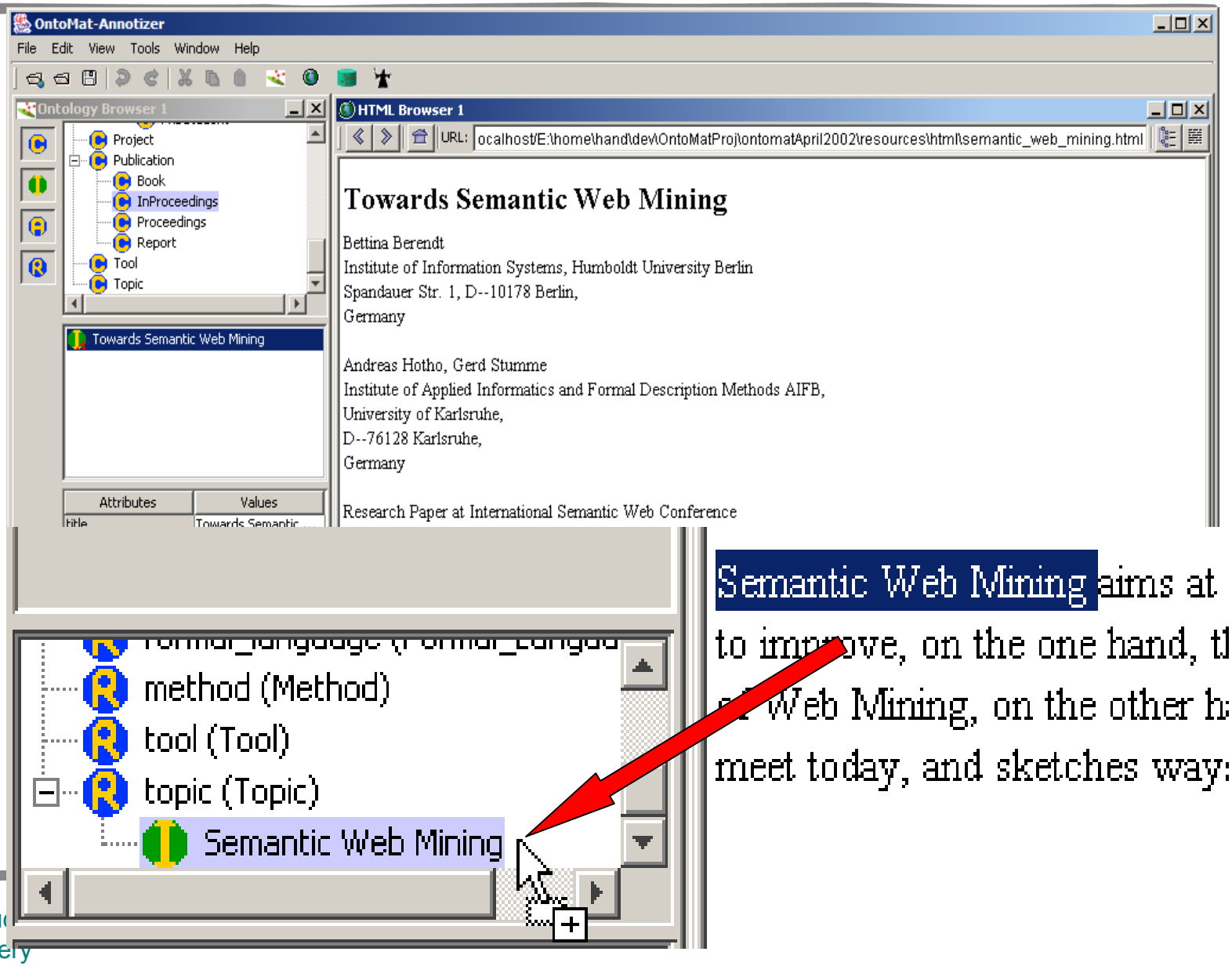
Markup Class Instances



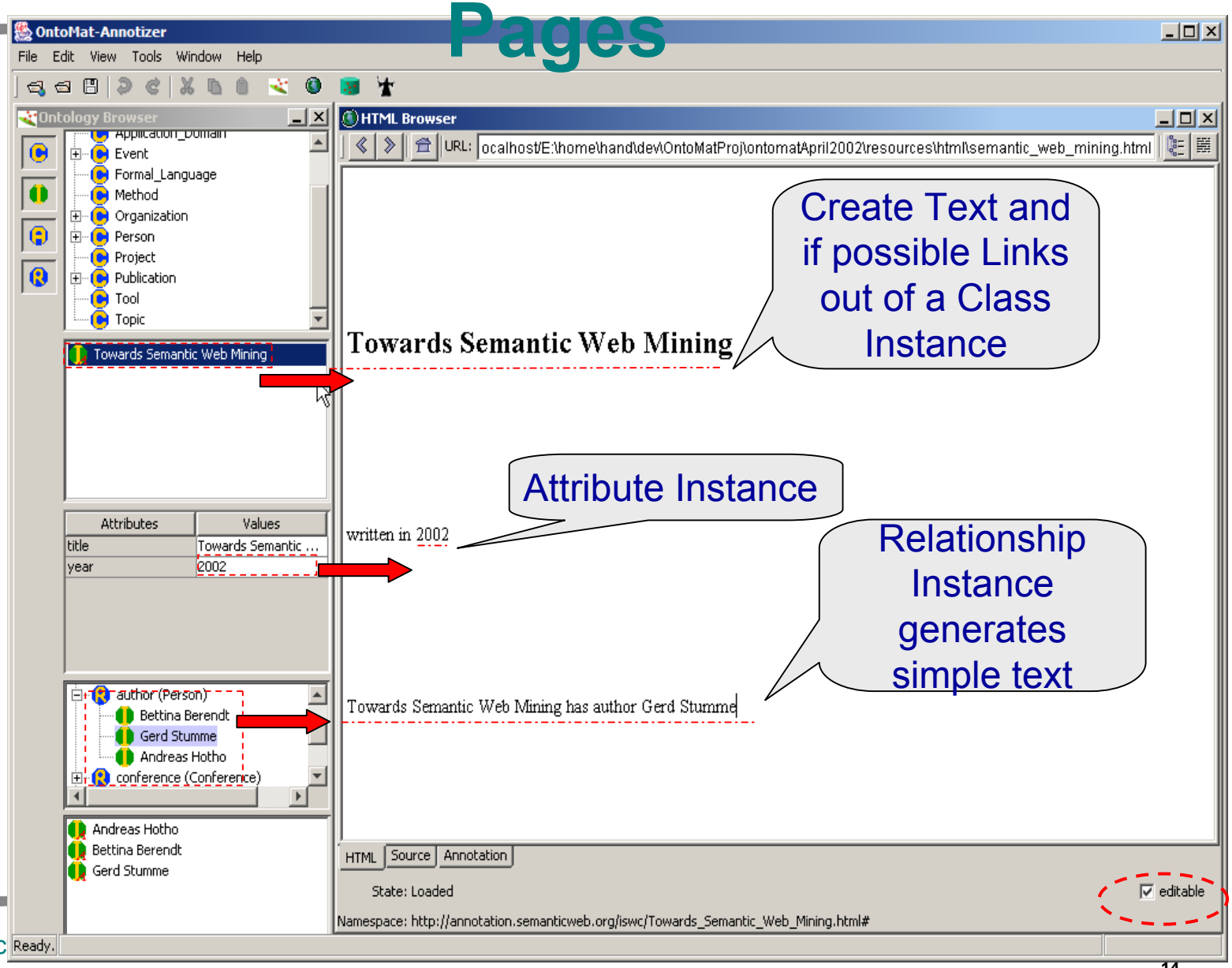
Markup Attribute Instances



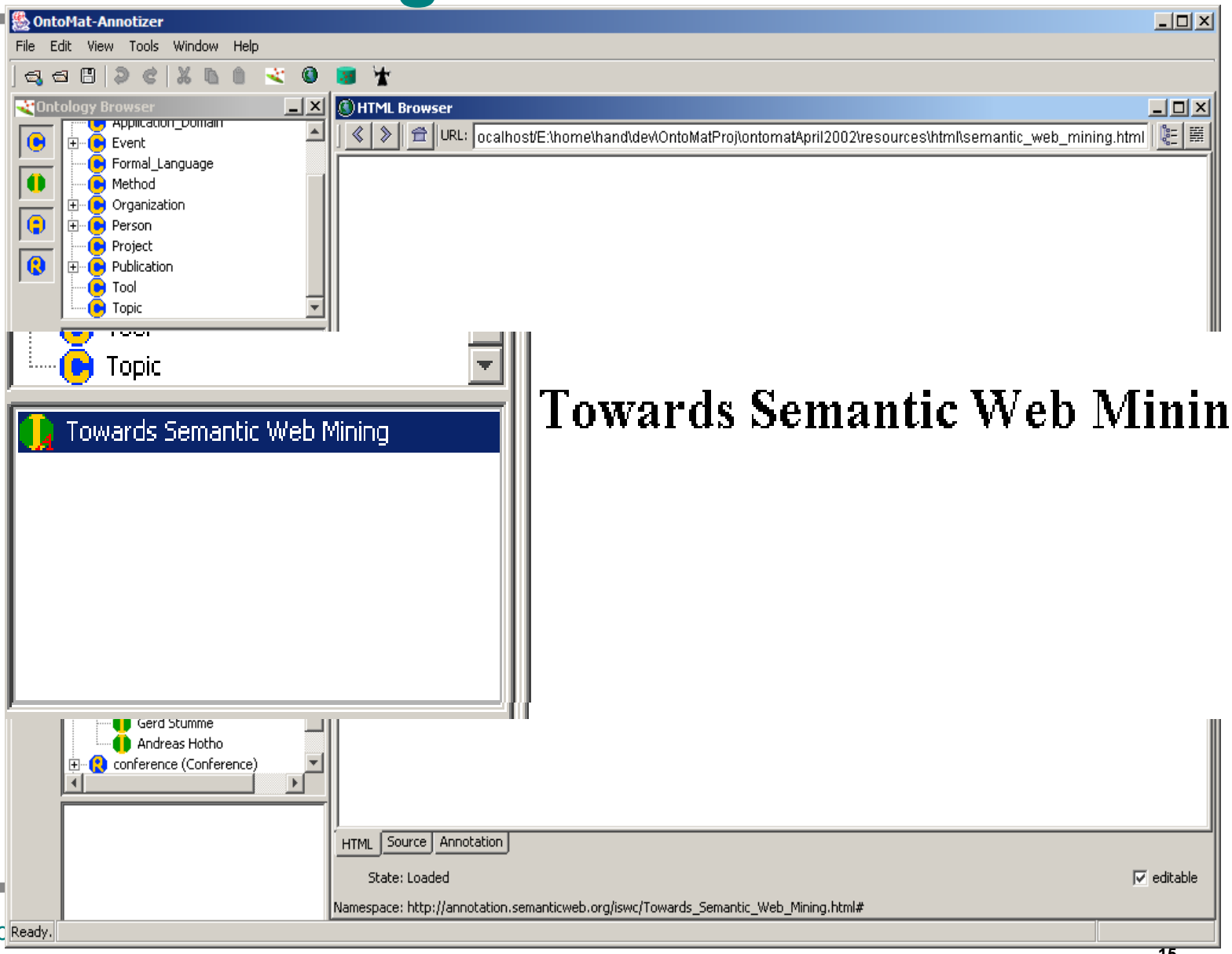
Markup Relationship Instances



Annotation by Authoring Web Pages

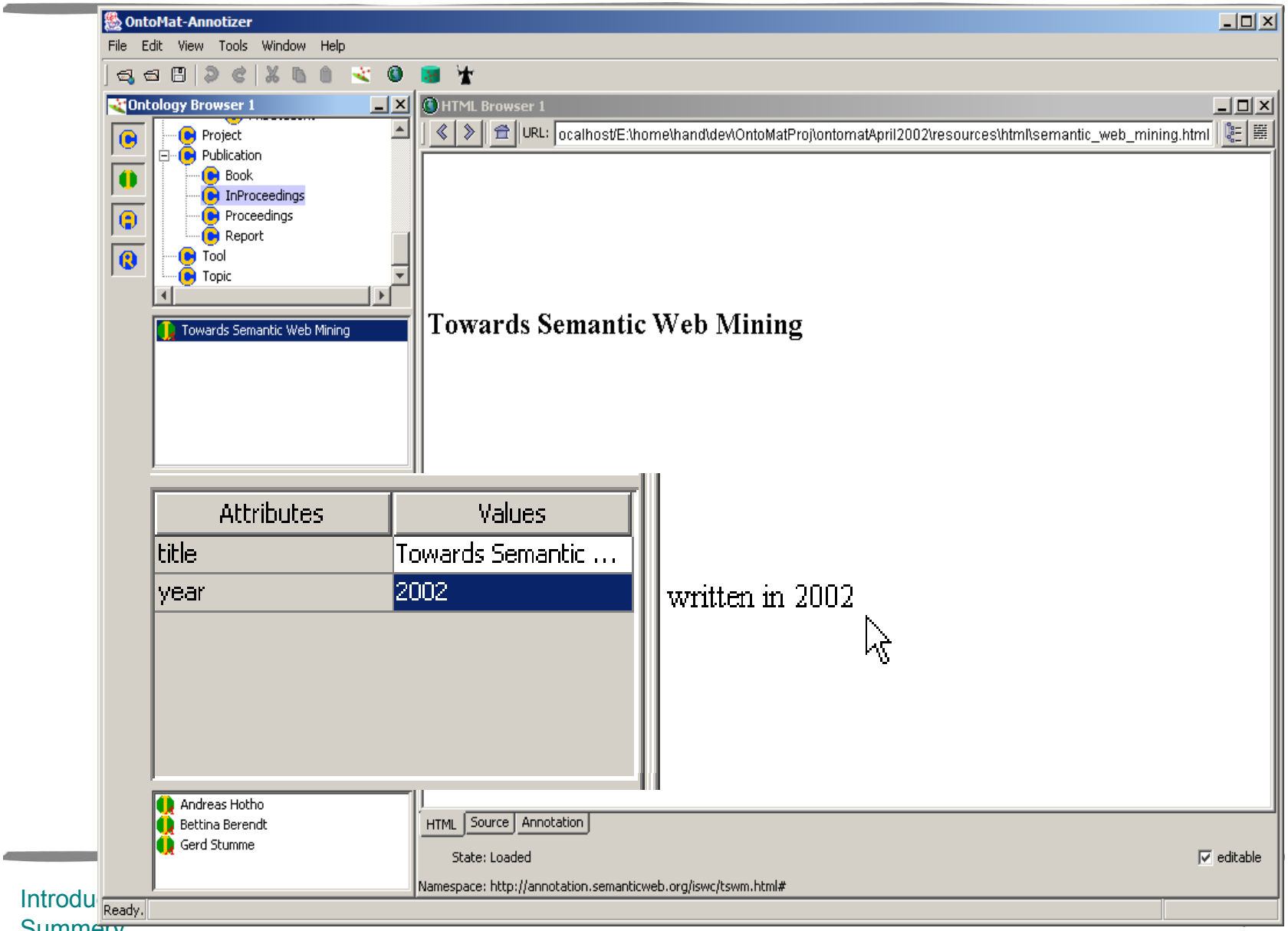


Authoring Class Instances

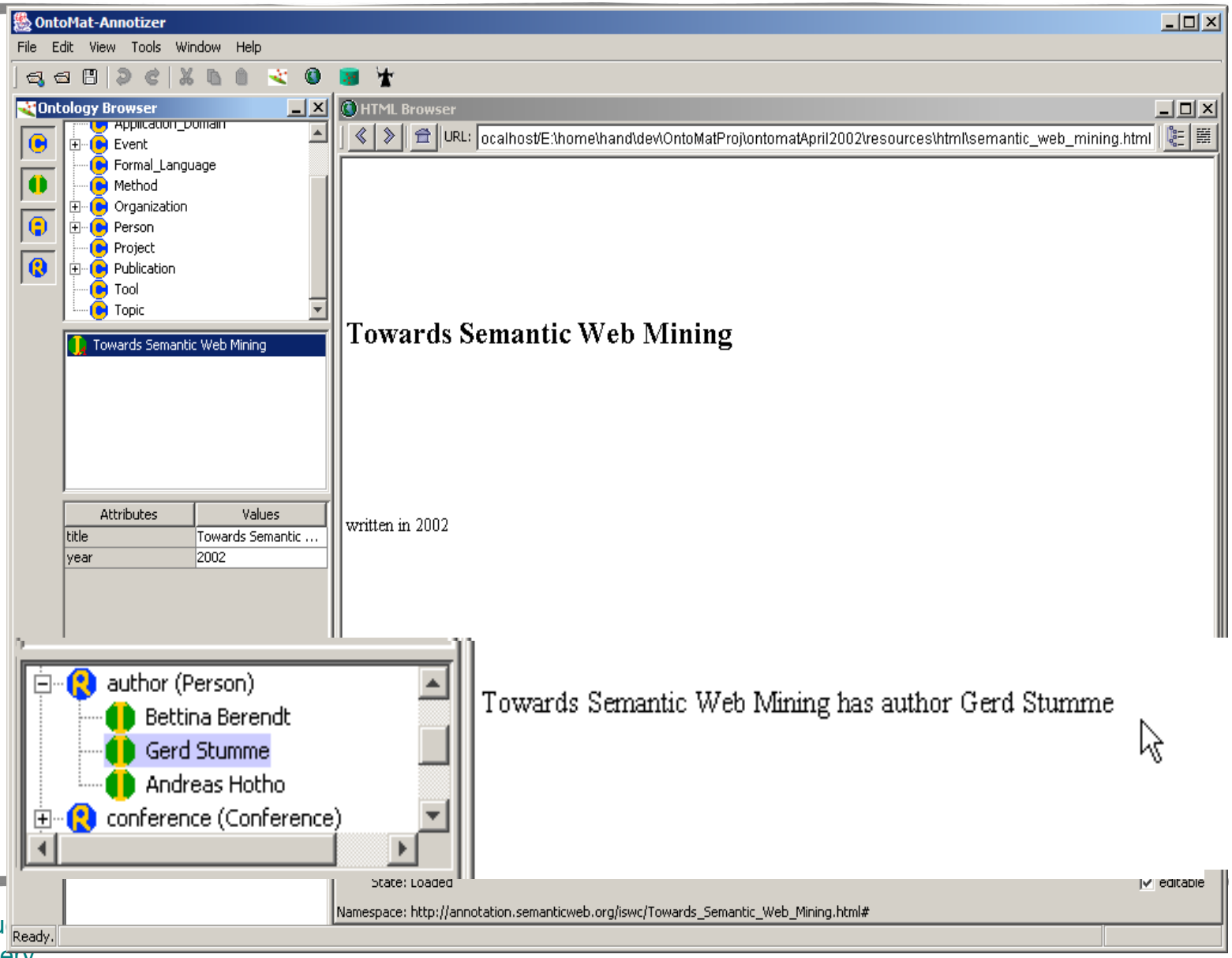


Towards Semantic Web Mining

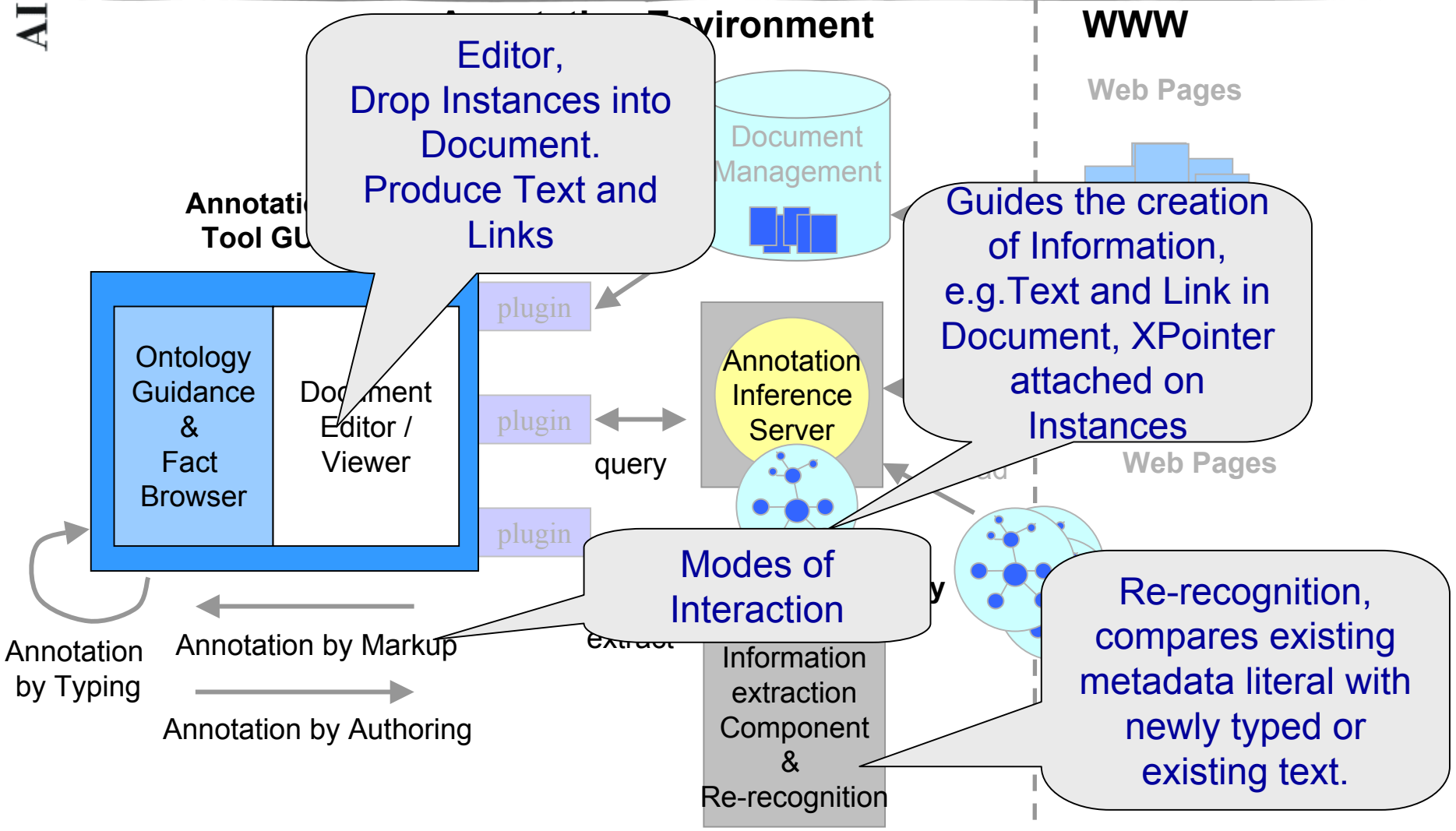
Authoring Attribute Instances



Authoring Relationship Instances

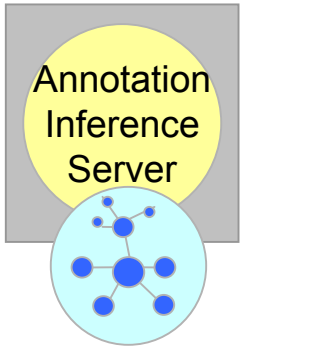


Design of CREAM



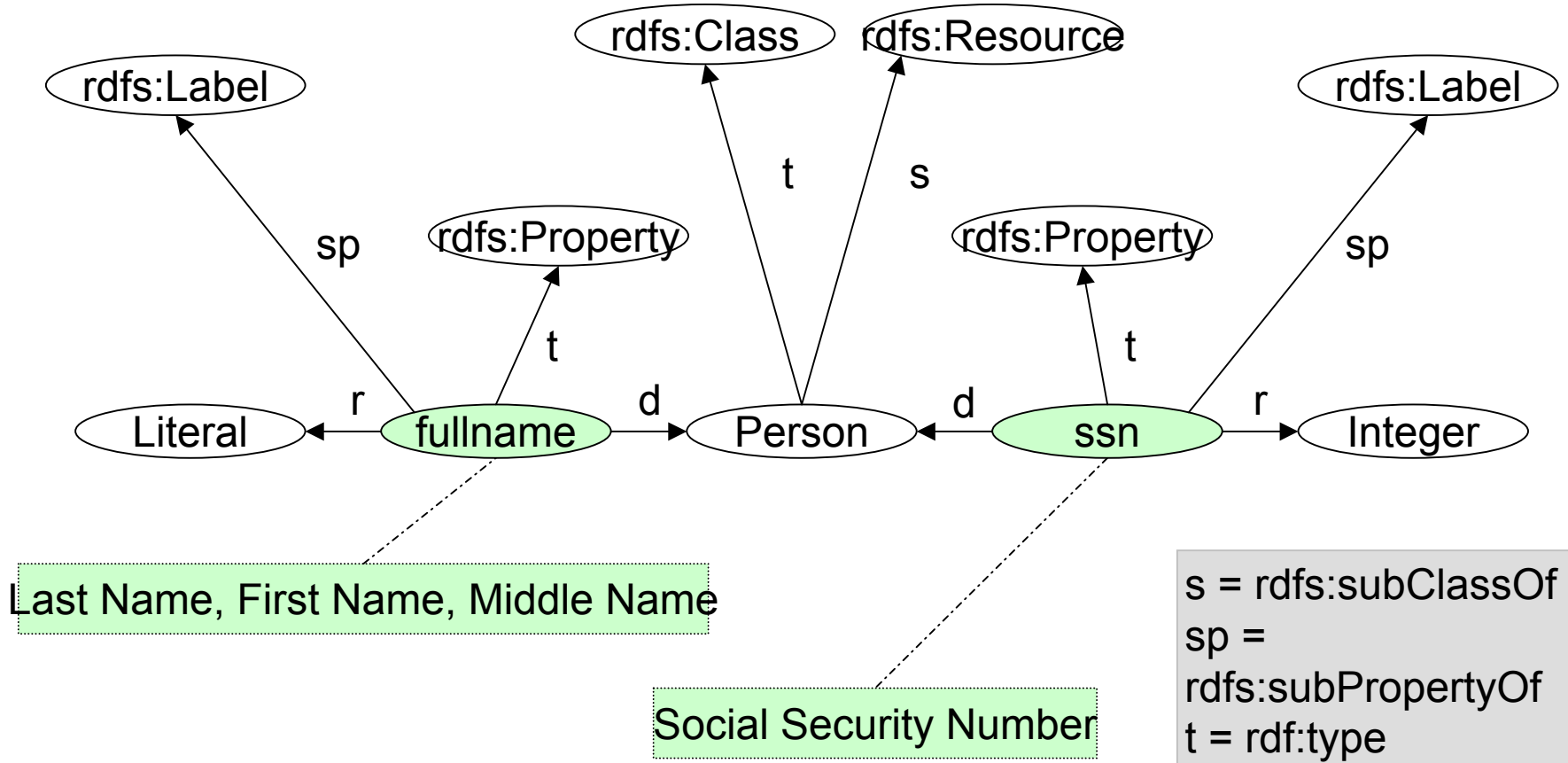
Meta Ontology

- **Modularization** of ontology development and use
- Describes how classes, attributes and relationships from the ontology should be used by the CREAM environment.
- The Meta Ontology supports the modes of interaction
- Meta Ontology characterizations:
  - Label
  - Default Pointing
  - Property Mode



Meta-Ontology

Meta Ontology - Label



Meta Ontology - Label

- Labels are used at (at least) two points of interaction
  - Instance Generation
    - RDF-API for a new URN as ID
    - Assign piece of Text with Attribute recorded as rdfs:label, e.g. fullname or ssn
  - Content Generation
    - Text is produces by rdfs:label, e.g. fullname or ssn

➔The connection is not objective.

➔Their linkage depends on usage in a particular scenario.

Meta Ontology – Default Pointing

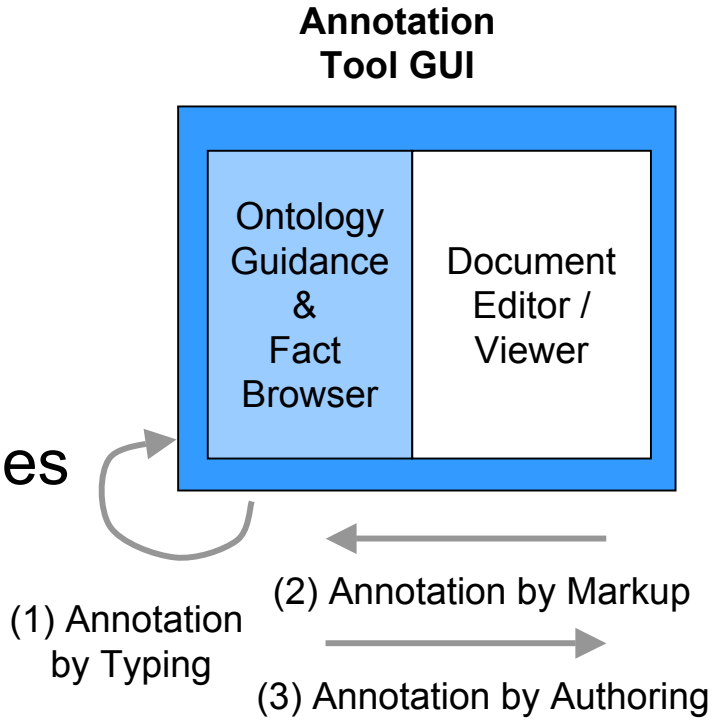
- Specify the default pointing behavior for class instances
- **Exploiting** the XPointer candidate recommendation: CREAM:UniqueDPointer, CREAM:AutoDPointer and CREAM:AutoUniqueDPointer
- **Instance-Generation** (Annotation by Markup):
  - CREAM:AutoDPointer or CREAM:AutoUniqueDPointer
- **Content-Generation** (Annotation by Authoring):
  - CREAM:UniqueDPointer or CREAM:AutoUniqueDPointer
- **Example**:
  - Person with properties hasHomepage (CREAM:AutoUniqueDPointer) and fullname (Label)

Meta Ontology – Property Mode

- Distinguishes between different roles
- **Reference**:
  e.g. refer to the current U.S. president at http://www.whitehouse.gov
- **Quotation:**
  e.g. “Bill Clinton" as president of U.S. in 1999 at http://www.whitehouse.gov
- **Unlinked Fact**:
  e.g. a fact-attributes may be filled with “Spanish Civil War“ for the reference pointing to the picture “Guernica“, http://www.grnica.swinternet.co.uk/guerni/ca.jpg.

Meta-Ontology & Modes of Interaction

1. Annotation by Typing Statements
   - rdfs:label
   - default pointer: AutoDPointer
   - property mode: unlinked fact
2. Annotation by Markup
   - rdfs:label
   - default pointer: AutoDPointer
   - property mode: reference, quotation
3. Annotation by Authoring Web Pages
   - rdfs:label
   - default pointer: UniqueDPointer
   - property mode: reference, quotation, unlinked fact



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Outlook – Future Topics

- Further Elaboration of
  - Template Generation
  - Provision of Metametadata (Author of Annotation)
- Annotation by Authoring – Creation of lists or tables from selected concepts
- Annotation by Authoring with the help of metadata re-recognition (needs information extraction)
- Creation of Relational Metadata in PDF, SVG and SMIL

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Summary

- CREAM Framework supports metadata creation during Web page authoring as well as by
  a-posteriori annotation
  - Meta Ontology
  - Modes of Interaction
- Reference implementation: **OntoMat-*Annotizer***
  OntoMat + annotation plugins
- A-Posteriori Version currently used for the ISWC annotation
- Make the Semantic Web vision realistic!
  http://annotation.semanticweb.org/ontomat