Group Information Retrieval

A Meta Search Engine for User Adaptive Information Retrieval Interfaces for Desktop and Mobile Devices

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Overview

- Introduction
- The Information Retrieval Framework
- User Interface Design
- Conclusions

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Introduction (1/3)

- Standard keyword based search engines
  - no user oriented information presentation.
  - user has to analyze every document and decide which are the documents that are relevant.
- System assigns additional information to the retrieved documents (annotation)
  - User gets disambiguating information
  - Annotations can be used to structure results
- Additional information retrieved from, e.g.
  - Result sets, ontologies, user profiles

Introduction (2/3)

Problems:

- Currently available categorization techniques
  - Still difficulties in providing appropriate categories.
- Manually and automatically derived categories
  - Only consider the word distribution in documents
  - No different meanings of a term nor information from a user profile used (given underlying query).

Possible approaches:

- Automatically annotation of result set
  - based on user and query specific information.
- Use of user specified ontologies for disambiguation

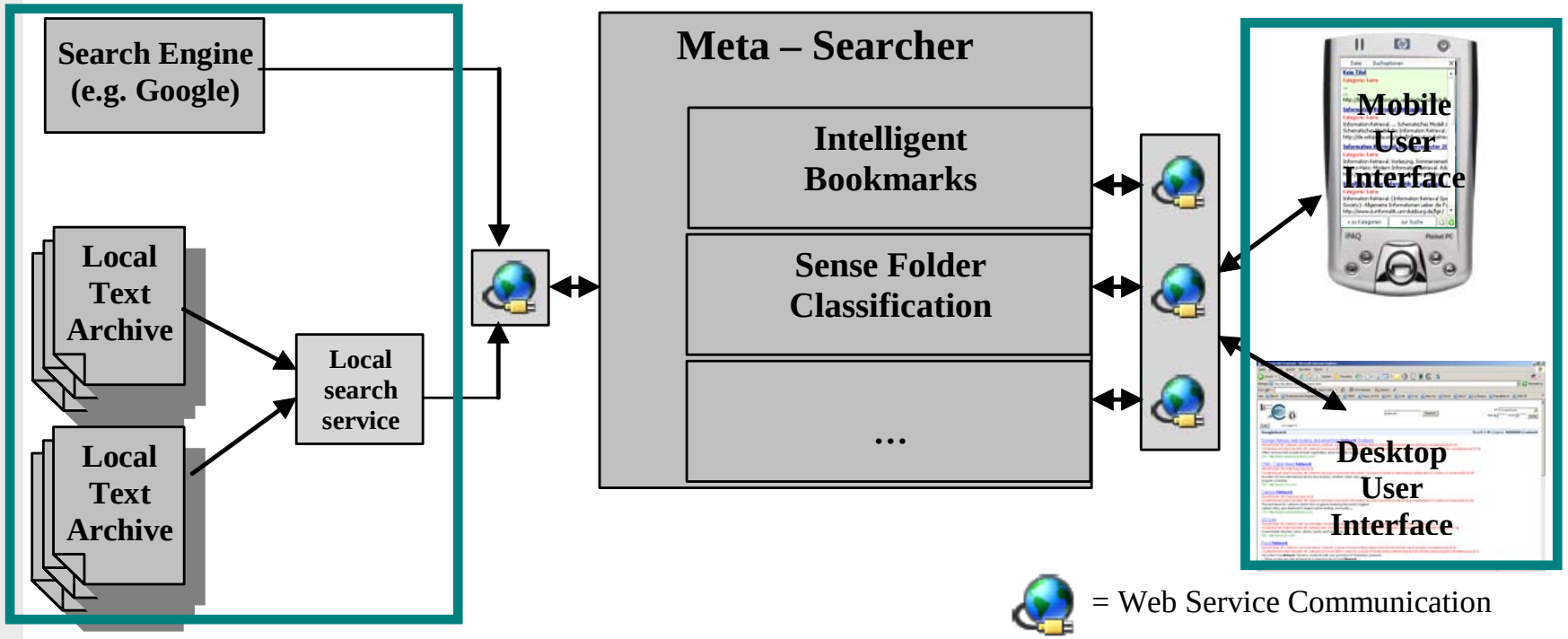
Introduction - Research Areas (3/3)

- Text classification, e.g.
  - Semantic classification
  - Categorization based on user specific information
- Ontologies
  - Creation of classes (*Sense Folders*)
- Adaptivity (HCI)
  - Division of content and presentation
  - Interface and system design

Overview

- Introduction
- The Information Retrieval Framework
  - Annotating Result Sets
  - Some Approaches:
    - The Intelligent Bookmark Approach
    - The Sense Folder Approach
- User Interface Design
- Conclusions

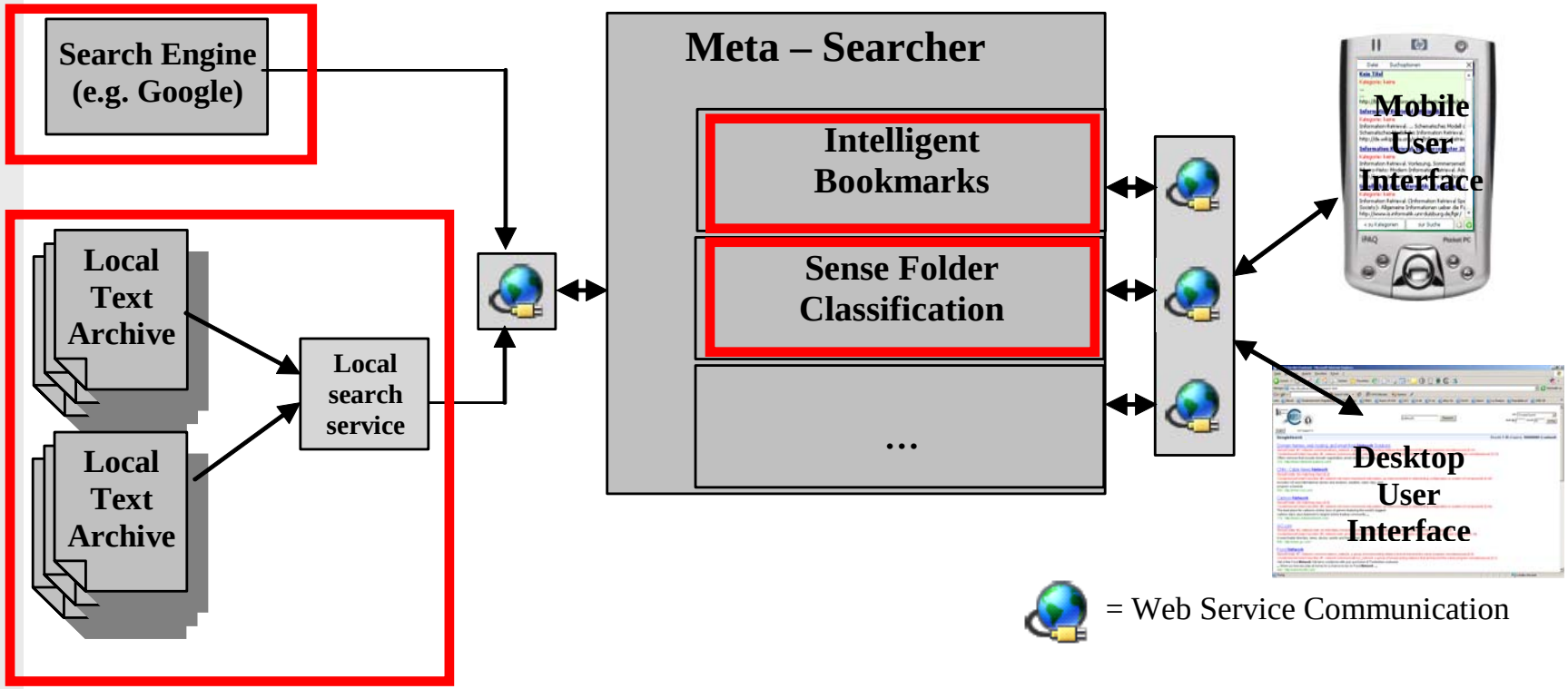
The Information Retrieval Framework



query results set processing
(the information to be presented)

the interface design
(information presentation)

Annotating the Result Sets



- IR system connected (web services) to **any search engine** (currently **Google**) or **local text archive**
- Semantic online classification
- Use of standardized ontologies as WordNet
- Use of user bookmarks, Web logs, etc.
- Possibility of different plug-in integration

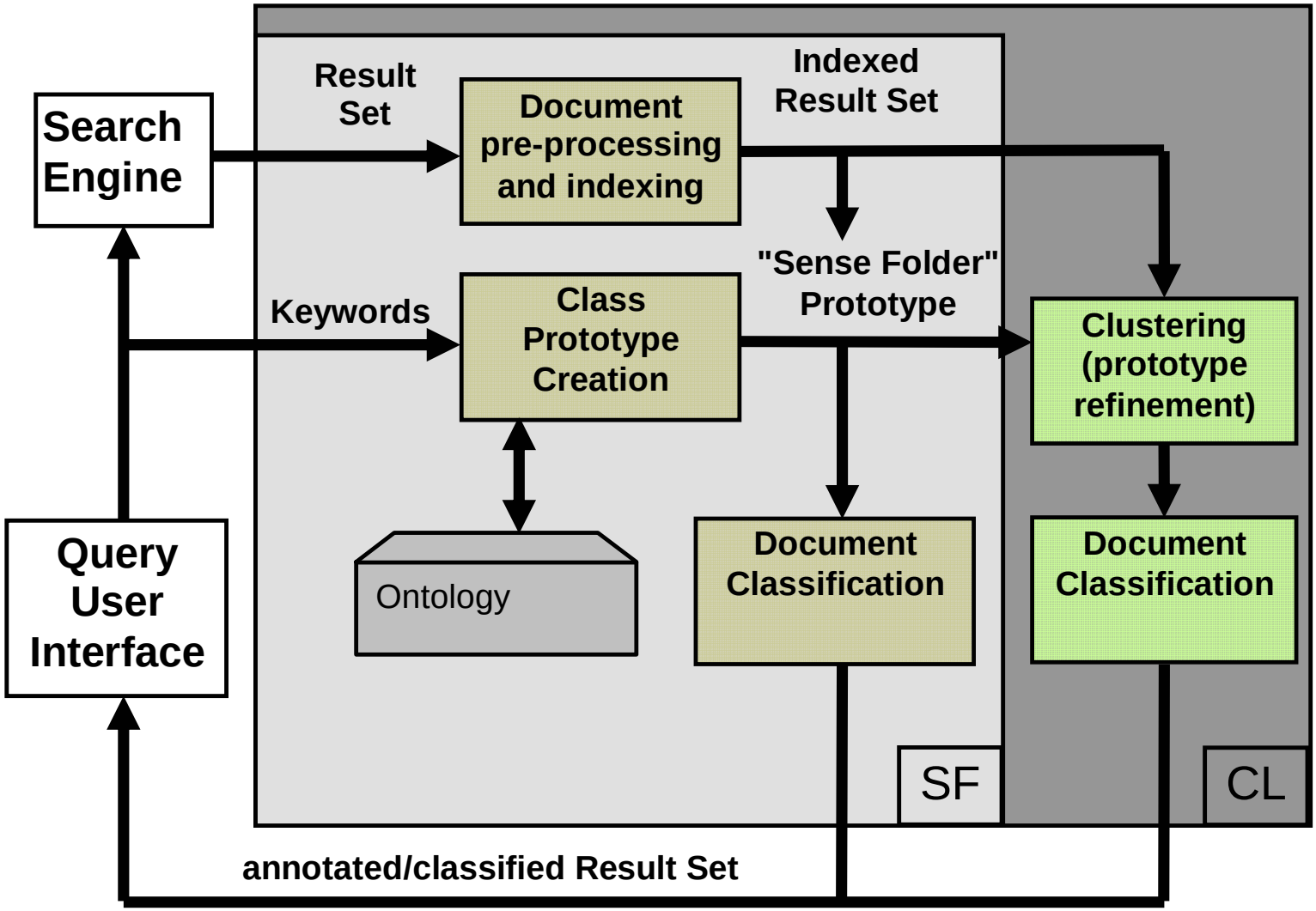
The Intelligent Bookmarks Approach

- Idea:
  Exploit information about the way a user is ordering, sorting or categorizing his documents in order to categorize so far unseen documents.
- Structural information stored by the bookmark hierarchy (tree structure).
- Based on web pages stored in bookmark structure
  - Classifier is trained, folder names as category labels
- More results stored and assigned to a category
  - The better the system learns something about the way a user is structuring information.
- No additional user feedback required

The Sense Folders Approach (1/2)

- Semantic disambiguation of query terms (used in the retrieved documents) using an ontology.
- Categorization of documents with respect to the meaning of a search term.
- Different linguistic relations (context of the searched word) in the ontology
  - To recognize the meaning of the user query.
  - To create *Sense Folders* for the different meanings of the query terms.

The Sense Folders Approach (2/2)



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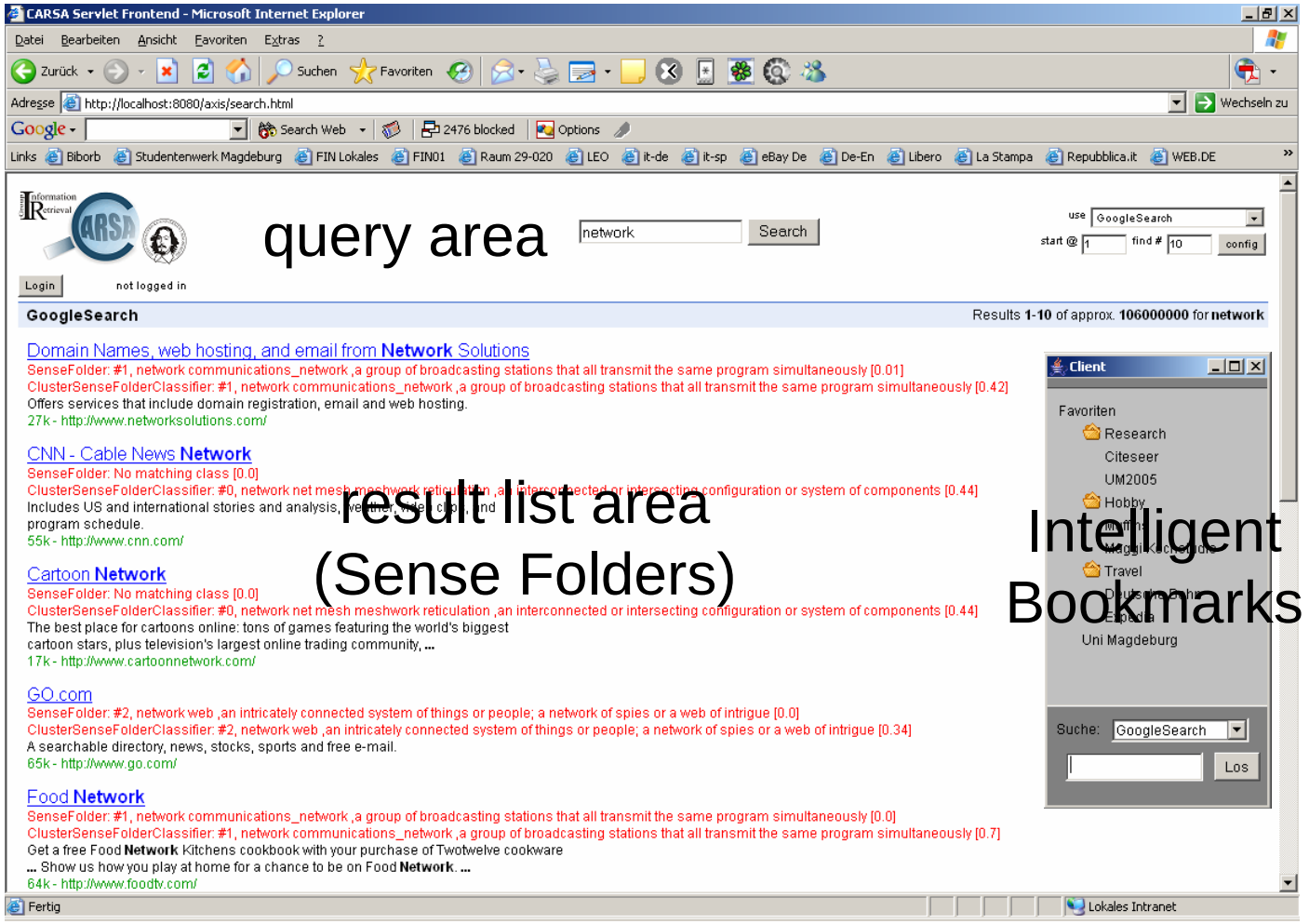
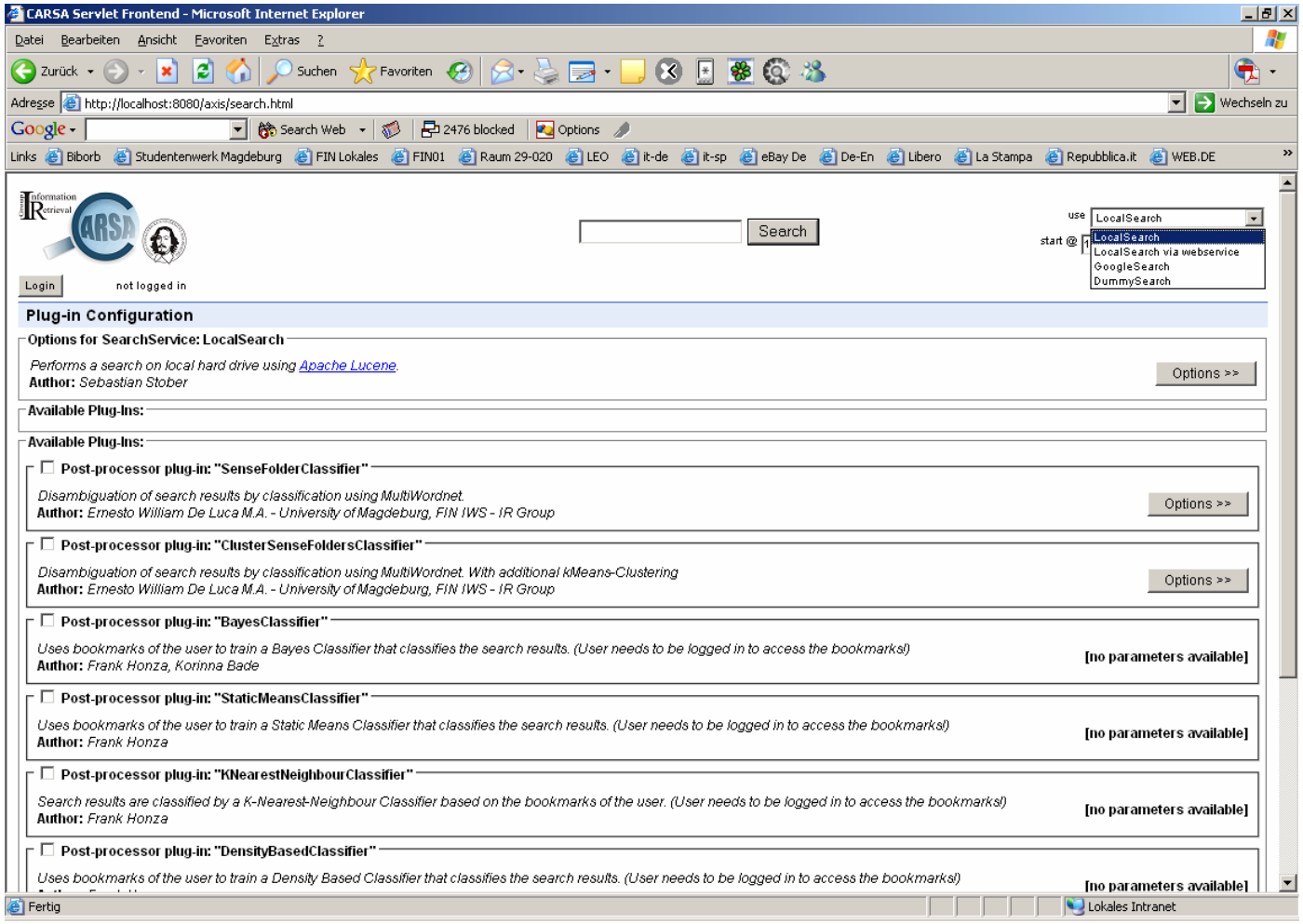
  - Desktop User Interface
  - Mobile User Interface
- Conclusions

Desktop User Interface (1/3)



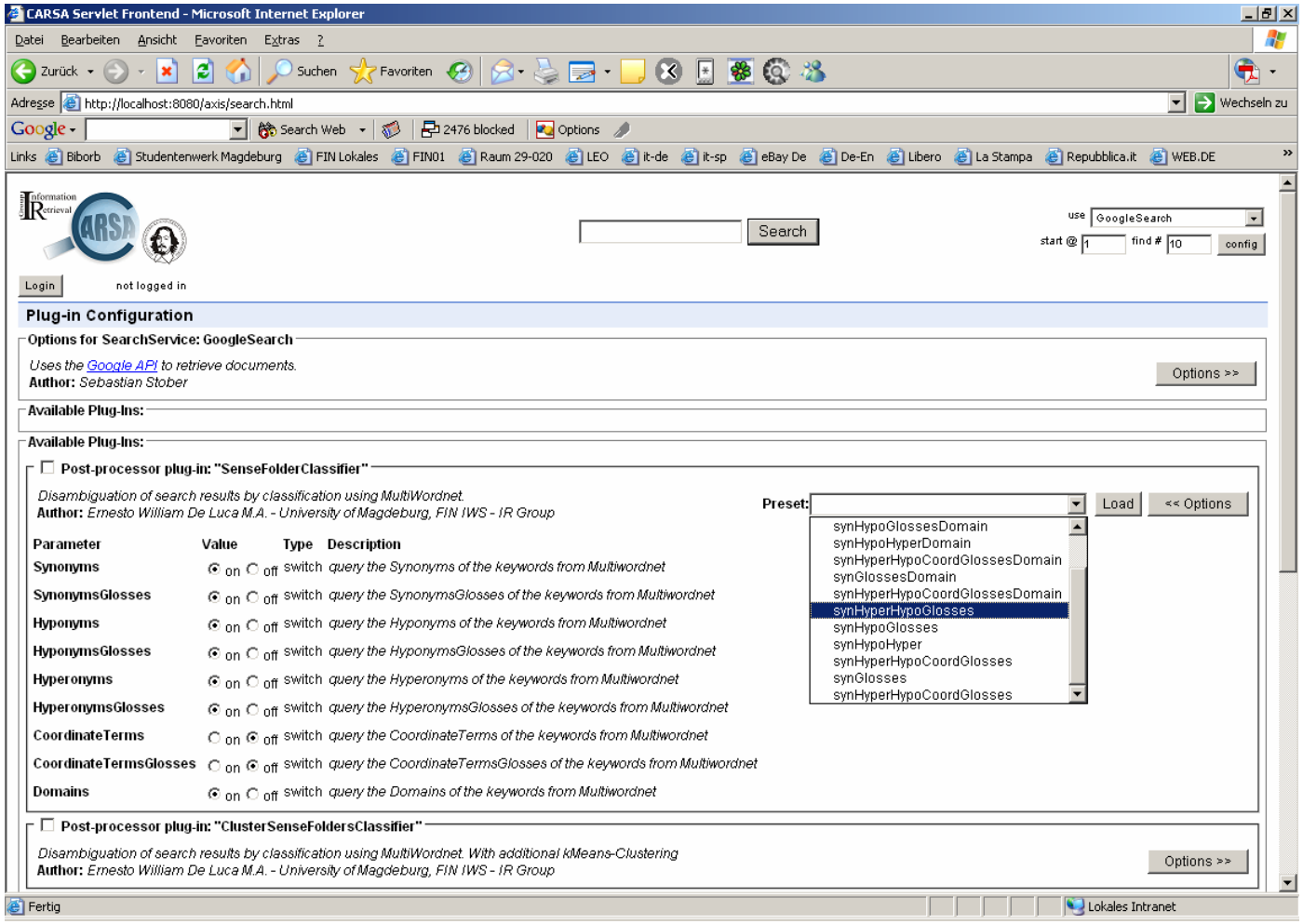
Screenshot of the desktop user interface

Desktop User Interface (2/3)



Screenshot of the search engine configuration

Desktop User Interface (3/3)



Screenshot of the presets configuration

Mobile User Interface - Problems(1/2)

- Limited display size
  - Screen area very small
  - Data view, navigation and manipulation difficult
- Different interaction methods/devices
  - By using mouse and/or keyboard vs. pen
- Limited performance
  - Pre-processing and pre-structuring more important than for desktop devices

Mobile User Interface (2/2)

Screenshot of the mobile user interface

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Conclusions

- Meta search engine presented for desktop and mobile interfaces
- So far, two types of annotations implemented:
  - *Intelligent Bookmarks* and *Sense Folders*
- Advantages of dividing
  - query results set processing (information)
  - from the interface design (information presentation)
- Web services → retrieval systems for different devices
- GUI for desktop and mobile devices presented
  - But deeper evaluation needed
- Visualization of the semantic categories:
  - **Query** and not collection **oriented**

Thank You!

Questions?