Integration of Medical Publications into the Clinical Routine Using HL7 “Clinical Decision Support Context-Sensitive Information Retrieval”

Kristian Struck[a]; Sven Tiffe[a]; Michael Dahlweid[b]
[a]Agfa HealthCare, Healthcare Application Platform, Metatools, Austria
[b]Agfa HealthCare, Product Management, Germany

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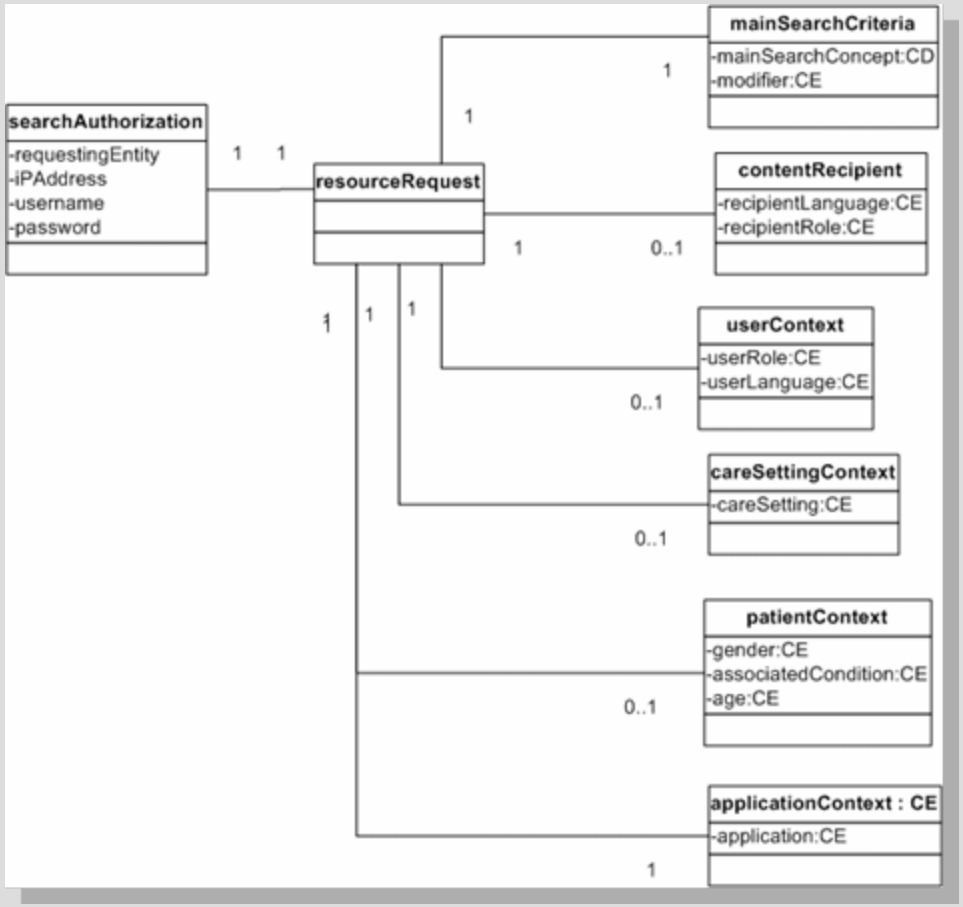
Rationale

Context-sensitive information retrieval to …

- serve the clinicians with latest medical publications directly in the application
- inform the patients about their treatment
- embed knowledge directly into the HIS
- detect lacks of knowledge in the hospital
- collect frequently asked questions or special fields of interest of the clinical staff

HL7 „Infobutton“ Approach

Parts of the „Infobutton“-request



User defined search criteria (ICD, full-text)

The Infobutton-Manager (IM) collects information about the current context.
That allows the e-resource to return the adequate information.

„Infobutton“ – ICD-10 based information retrieval

- ICD-10 codes given as search criteria

```
<mainSearchCriteria>
   <mainSearchConcept code="A00.0" codeSystem="ICD-10">
     <qualifier>
       <name code="main" />
     </qualifier>
   </mainSearchConcept>
   <mainSearchConcept code="A00.1" codeSystem="ICD-10" />
</mainSearchCriteria>
```

- Multiple main search concepts allowed
- Qualifier labels the „main“ diagnosis

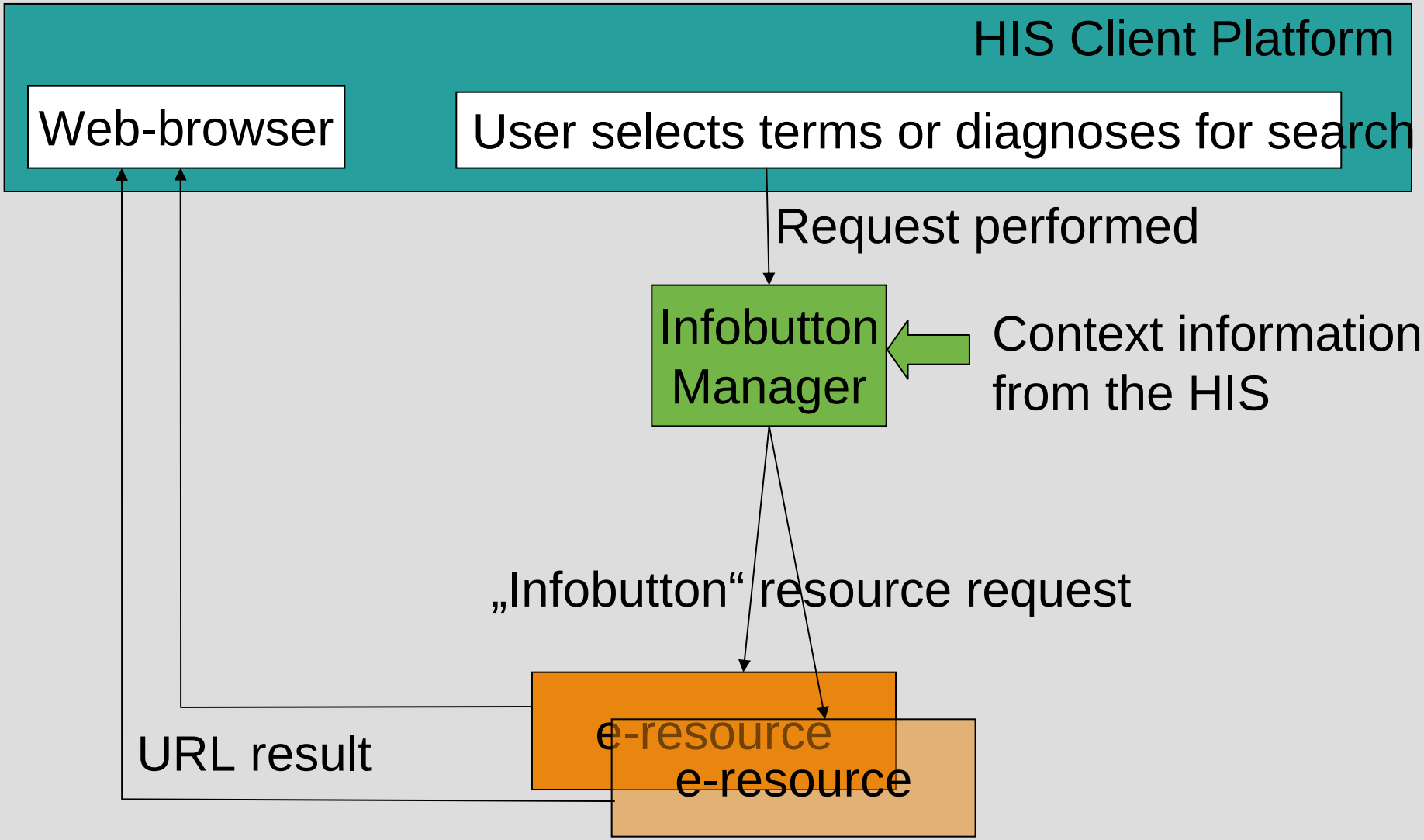
„Infobutton“ – Full-text information retrieval

- Full-text used as search criteria

```
<mainSearchCriteria>
     <mainSearchConcept displayName="colon cancer">
       <originalText>colon cancer adenocarcinoma</originalText>
     </mainSearchConcept>
     <mainSearchConcept displayName="adenocarcinoma">
       <originalText>adenocarcinoma</originalText>
     </mainSearchConcept>
   </mainSearchCriteria>
```

- Concatenation of the search string
  - AND
  - OR
  - NOT

Searching for Information



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Web-based Result Handling

- The e-resource returns an URL that is passed to the web-browser in the enquiring system
- We consider the web-browser as a black box
- Refining the search by adding or removing of search criteria is only possible within the browser session and is implemented by the webservice
- The e-resource is responsible for presentation
- Presentation and data is mixed

Structured Result Format

The proprietary result-XML contains meta-information of the document

- Title, authors and publication information
- The document‘s source (e.g. Cochrane, Medline Reviews, Medline Guidelines)
- Related concepts and categories, e.g.
  - Chemicals & Drugs: Cholera Vaccines, Vaccines, Toxines, …
  - Molecular Biology: Cholera Toxin, Evolution, …
  - Organisms: Vibrio cholerae, Bacteriophages, …

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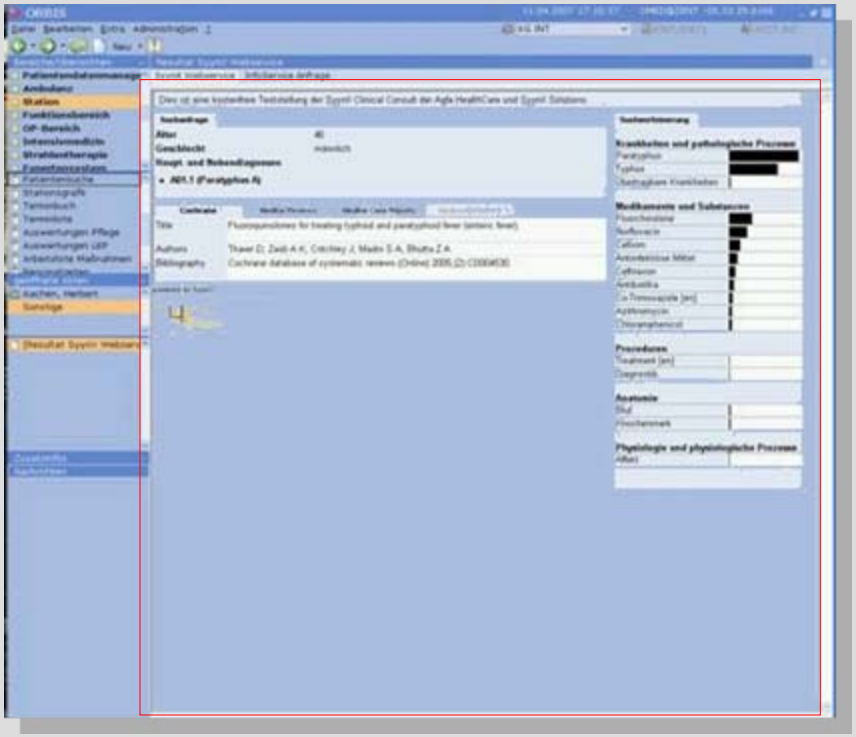
An Example – The Integrated Webbrowser

Agfa‘s HIS Orbis uses the embedded web-browser component to show the „Infobutton“-result in a convenient way.



Results and Conclusion

- The preferred way is the web-based retrieval
  - No development effort if the e-resource changes
  - All e-resources are treated in the same manner
  - Little time to connect new e-resources
- However, it is not possible to
  - Analyze the search- and refinement-process
  - Optimize the knowledge- / information management within the hospital

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Discussion

- A standardized „Infobutton“ result would be the solution for
  - A better integration into the clinical routine process
  - An easier use of new e-resources
  - Better knowledge management and knowledge sharing in the hospital
- But, how can different types of information (like literature, pictures, audio or video) be standardized in the same manner?

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Thank you

Address for Correspondence

Kristian Struck
Agfa HealthCare
Diefenbachgasse 35
A-1150 Vienna
Austria

Email: Kristian.Struck@agfa.com
Web: http://www.agfa.com/en/he/

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