

## The Use Case Track at INEX 2006

**Nils Pharo**

Oslo University College, Norway  
*nils.pharo@jbi.hio.no*

**Andrew Trotman**

University of Otago, Dunedin, New Zealand  
*andrew@cs.otago.ac.nz*

### Abstract

XML information retrieval in the INEX workshop series has, for a large part, focused on creating algorithms for testing against the test collections provided by the IEEE and Wikipedia. The use case track is a new track at INEX and represents an attempt at identifying examples of how XML IR systems can be exploited by end-users for various purposes. In the present article we present a summary of the discussions and findings of the track.

## 1 Introduction and motivation

The INEX workshop series has been running since 2002, the main target has been to lay the grounds for experimenting with XML for retrieval purposes. The first four years a test collection based on journals from the IEEE was used, in 2006 this was replaced by a collection of Wikipedia articles. Several tracks have been established as part of the workshop (relevance feedback, multimedia, heterogeneous, etc.), most of these using the test collection for traditional laboratory experiments. The interactive track was introduced in 2004 in order to do experiments on user interaction with the collection. In 2006 a use case track was introduced.

Until now the results of the INEX experiments have existed in a vacuum, from the experiments we can learn what factors are important for adding to our weights and improving our algorithms' performance, but we know little if nothing about how our systems are applicable for end users. The use case track was initiated from recent discussions challenging the procedure used in the laboratory tracks of the INEX experiments (Trotman, 2005). It was argued that knowledge about real users and of how such users might approach XML IR systems is necessary for creating such systems. Procedures for measurement cannot exist without a grounded user model either. The use case track was developed in order to identify possible uses of XML IR systems.

A use case describes the behaviour of an information system under various conditions, in particular how it responds to a user request (Cockburn, 2005). Use cases can be written in various ways, from a very formal style using for example the unified modeling language (UML), to the use of plain descriptive language.

## 2 Use case track organisation

The track was organised as a thought experiment with participants forming groups at their institutions for round table discussions. These discussions were brought to the track participants via the track mailing list. This was followed up with a discussion among all participants at the annual workshop in Dagstuhl.

Following the INEX 2006 call for participation there were in all 15 universities and companies that expressed interest in participating in the use case track:

- 
- University of Otago, New Zealand
  - Queensland University of Technology, Australia
  - University of Tampere, Finland
  - RMIT University, Australia
  - University of Amsterdam, Netherlands
  - Royal School of Library and Information Science, Denmark
  - Oslo University College, Norway
  - Kyungpook National University, South Korea
  - University of Helsinki, Finland
  - Oracle Corporation
  - Aogami
  - National Institute of Computer Science, Algeria
  - Dalhousie University, Canada
  - York University, Canada
  - Instituto Nacional de Astrofísica Óptica y Electrónica, Mexico

A core group of representatives of these institutions participated in the discussions on the email list. These, in turn, led to the formulation of two separate approaches to use case description:

1. The identification of use cases for the existing INEX *ad hoc* approaches
2. The development of a taxonomy for current and future XML IR use cases

In addition the use case track organised a practical experiment to measure and analyse inter-assessor consistency among INEX participants. These were, at the time, the only known XML IR users and it was unclear whether they had a consistent view on the meaning of XML IR and relevance within it.

### 3 Results of the track

#### 3.1 The application of use cases to existing *ad hoc* tracks

INEX initially identified only one *ad hoc* task, the thorough task. Subsequent rounds added the focused task, then the fetch & browse task (which became the relevant in context task). Finally the best in context task was added in 2006. In (Trotman, Pharo & Lehtonen, 2006) all these tracks are examined in order to identify the initial purpose of the track and to see if it is possible to find realistic use cases based on the approach. They were able to find relevant use cases for all four tasks based on their own (and others) experience. An example of a relevant-in-context use case is:

##### *The Relevant in Context (and Fetch & Browse) Use Case*

- *The user needs factual information to solve a dispute. Such was the original reason for the collection of facts now readily available as the Guinness World Records (but previously under different names).*
- *The user believes it is possible to obtain the information from a single source in a community built collection of facts (such as Wikipedia, or Guinness).*
- *They consult such a collection which provides a ranked list of information elements.*
- *The user browses and selects from the result list and views accompanied information.*
- *Knowing the facts are under dispute, the user chooses to verify the credibility of the information. The information system provides two methods for doing this:*
- *Either the user consults a discussion list associated with the information and uses their personal experience and judgment in following the postings*

- 
- *Or the user consults the context of the information and uses their personal experience to judge the reliability of the source and therefore the credibility of the information.*
  - *Sure of the facts and the credibility of the source, the user is finished*

Unexpectedly, some participants of the use case track contributed not only theoretical use cases for XML IR but also identified existing commercial applications. For example, book-search web-sites such as Books24x7 and Safari search and retrieve not only whole books, but chapters and sections from those books.

### **3.2 A taxonomy for XML IR use cases**

The second goal was to develop a way to describe possible use cases in the form of a taxonomy. A use case can have several dimensions or facets and it was discussed whether to create a faceted classification scheme or a hierarchical taxonomy. The taxonomy described in (Lehtonen, Pharo & Trotman, 2006) represents a hierarchical structure. The taxonomy takes into account dimensions such as degree of structure in the XML language, the content, the queries performed, the users information need and the presentation of search results.

There are three main classes in the taxonomy, based on the purpose of the XML mark-up: Class A describes use cases for “Layout-oriented document types”, Class B is used for “Content-oriented document types” cases, and Class C is for “Process-oriented document types”. We expect the taxonomy to develop further in future years.

### **3.3 Inter-assessor consistency at INEX 2006**

The use case track organisers arranged an experiment at the 2006 Dagstuhl workshop (Pharo, Trotman, Geva & Piwowarski, 2006). The goal of the experiment was to analyse the degree of inter-assessor agreement for a selection of topics. The topics selected had already been double assessed in the *ad hoc* track experiment. For this consistency experiment 15 topics were assessed by 2-4 additional assessors each. In addition the assessors were asked to fill out a questionnaire about various factors influencing their assessments, such as: text items of particular interest, preferred length of passage, whether they changed their minds during the assessment etc. The analysis of the experiment is not yet finished and will be published in a forthwith.

## **4 Conclusion**

In the first year of the use case track we have been able to identify use cases for all *ad hoc* tracks arranged in the INEX workshop, and in some cases an existing user base. We have also started the work of creating a taxonomy for developing future use cases. The two papers described above differ in their approach, one being an attempt at justifying the existing INEX experiments, the other laying the foundation for future work. We have shown that use cases are clearly of value for both purposes.

## **5 References**

- Cockburn, A. (2000). *Writing effective use cases* (1st edition ed.): Addison-Wesley.
- Lehtonen, M., Pharo, N. & Trotman, A. (2006). A Taxonomy for XML retrieval use cases. In *INEX 2006 Workshop pre-Proceedings*, pp.267-272
- Pharo, N., Trotman, A., Geva, S. & Piwowarski, B. (2006). Inter-assessor agreement at INEX 06. In *INEX 2006 Workshop pre-Proceedings*, pp.273.
- Trotman, A. (2005). Wanted: Element retrieval users. In *Proceedings of the INEX 2005 Workshop on Element Retrieval Methodology, Second Edition*, pp. 63-69.
- Trotman, A., Pharo, N. & Lehtonen (2006). XML-IR users and use cases. In *INEX 2006 Workshop pre-Proceedings*, pp.274-286.