

A tool for enhancing the understanding of information retrieval system components for educational purposes

We present a web-based tool for learning the information retrieval process. An interactive approach helps students gain practical knowledge. Our focus is the arrangement and configuration of IR components and their evaluation. The incorporation of game mechanics counteracts an information overload and motivates progression.

General Idea & Motivation

An Information Retrieval System can be described as a pipeline of different components for indexing and retrieval like stemmers, search algorithms, and blind relevance feedback.

Experienced **researchers know which components work well together and which do not. Learners need to acquire this understanding** in a cumbersome process of trial and error.

Our web application enables learners to select, configure, and arrange these components. Using evaluation corpora learners can see the impact of their changes on the retrieval quality. Thereby, learners gain insight in the dependencies of retrieval components without writing any code.

System Overview

The system consists of three main parts:

1. Managing and inspection of collections,
2. Configuration and arrangement of components, and
3. Exploration of results.

As a **single-page web application** we rely on a RESTful API. We use Jersey (jersey.java.net) as backend and AngularJS (angularjs.org) as frontend. Students are able to use it with a modern web browser.

Gamification

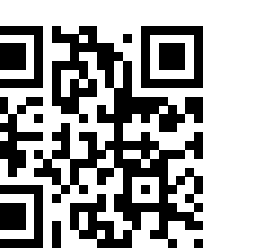
With **Leaderboards** users can track their performance. They show where a user stands in regards to other users. Categories like "best performing experiment" or "most achievements" can cover a single course or all participating universities.

Achievements are a virtual representation of having accomplished something, like the first experiment. They are also a representation of users experience with different IR components.

Achievements unlock new, more complex components, like in the **Cascading Information Theory**. Thus, newbies are not overwhelmed by all components and gradually gain access to them.

Demo

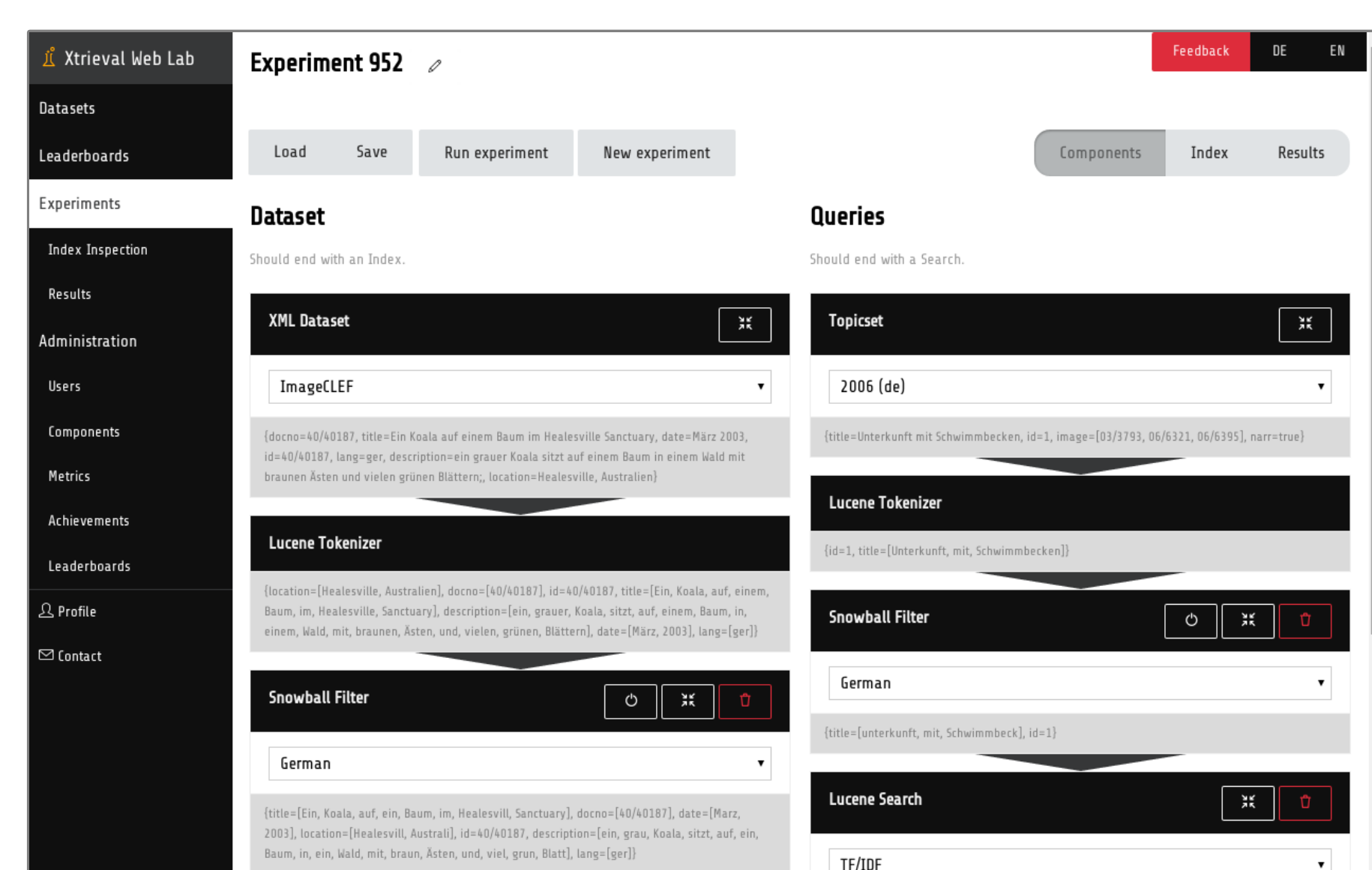
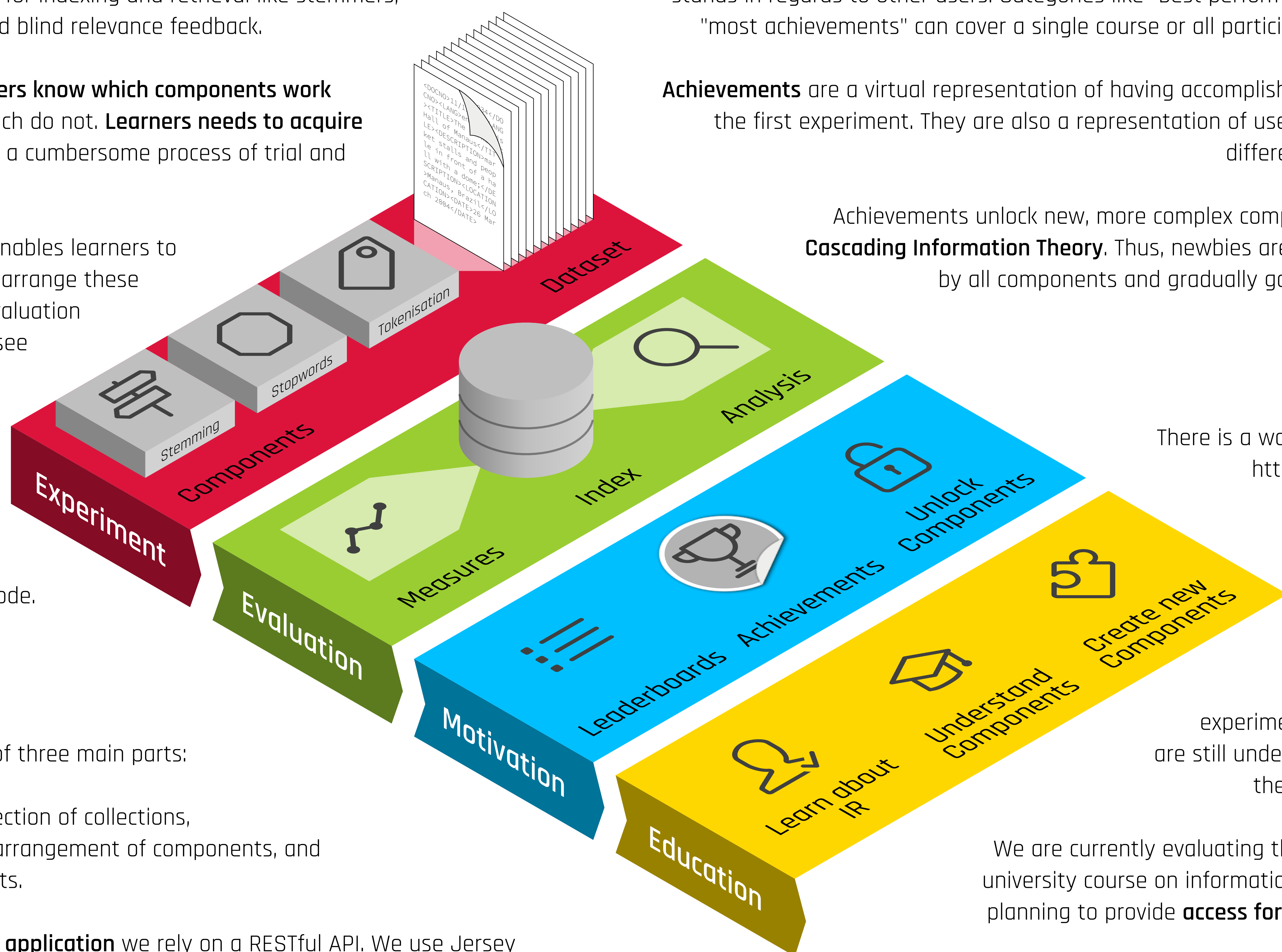
There is a working **prototype** at <http://mytuc.org/xdht>



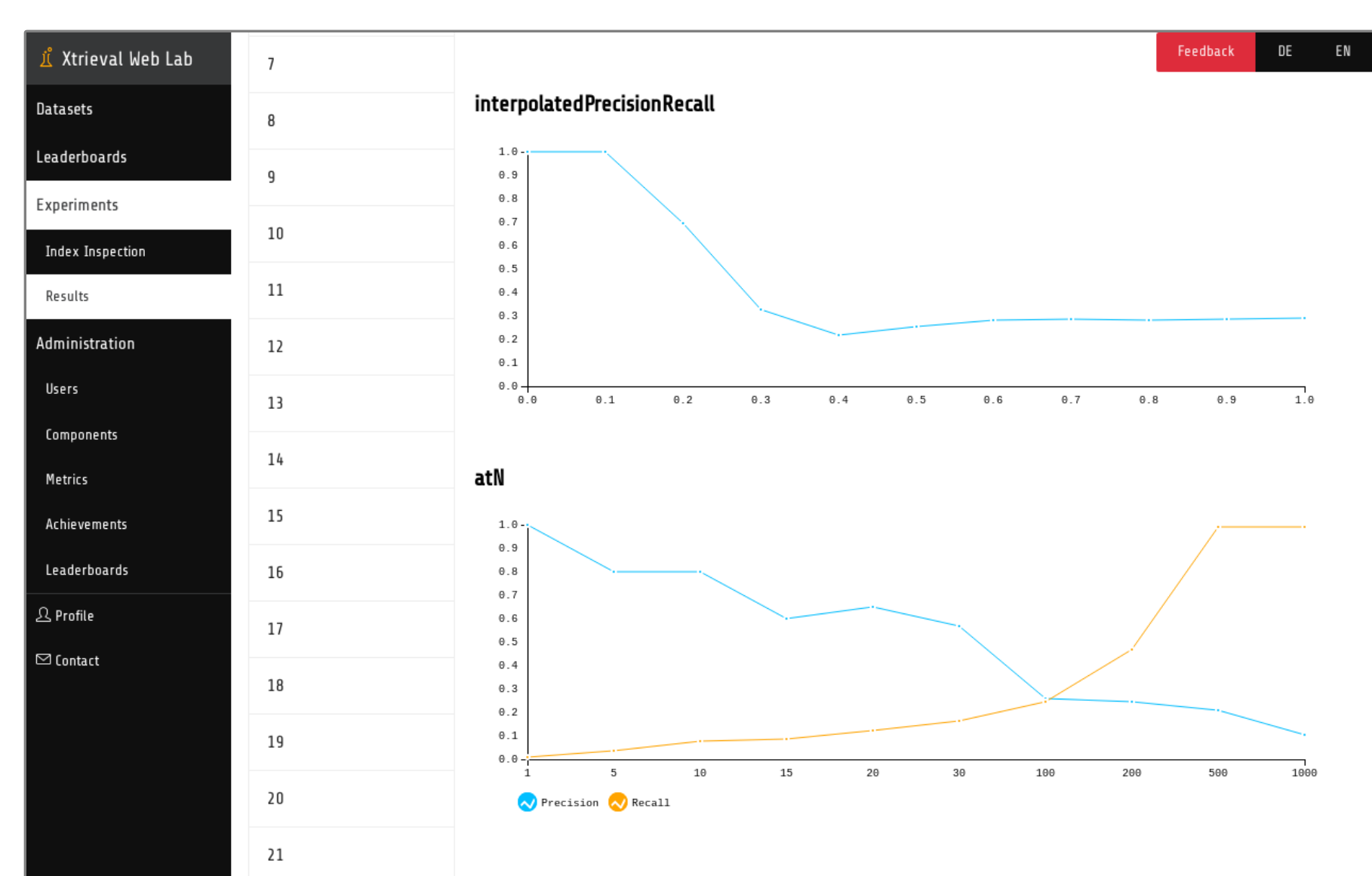
After signing up everyone can setup their own experiment. Some features are still under development and therefore unavailable.

We are currently evaluating the system within a university course on information retrieval and are planning to provide **access for other universities**.

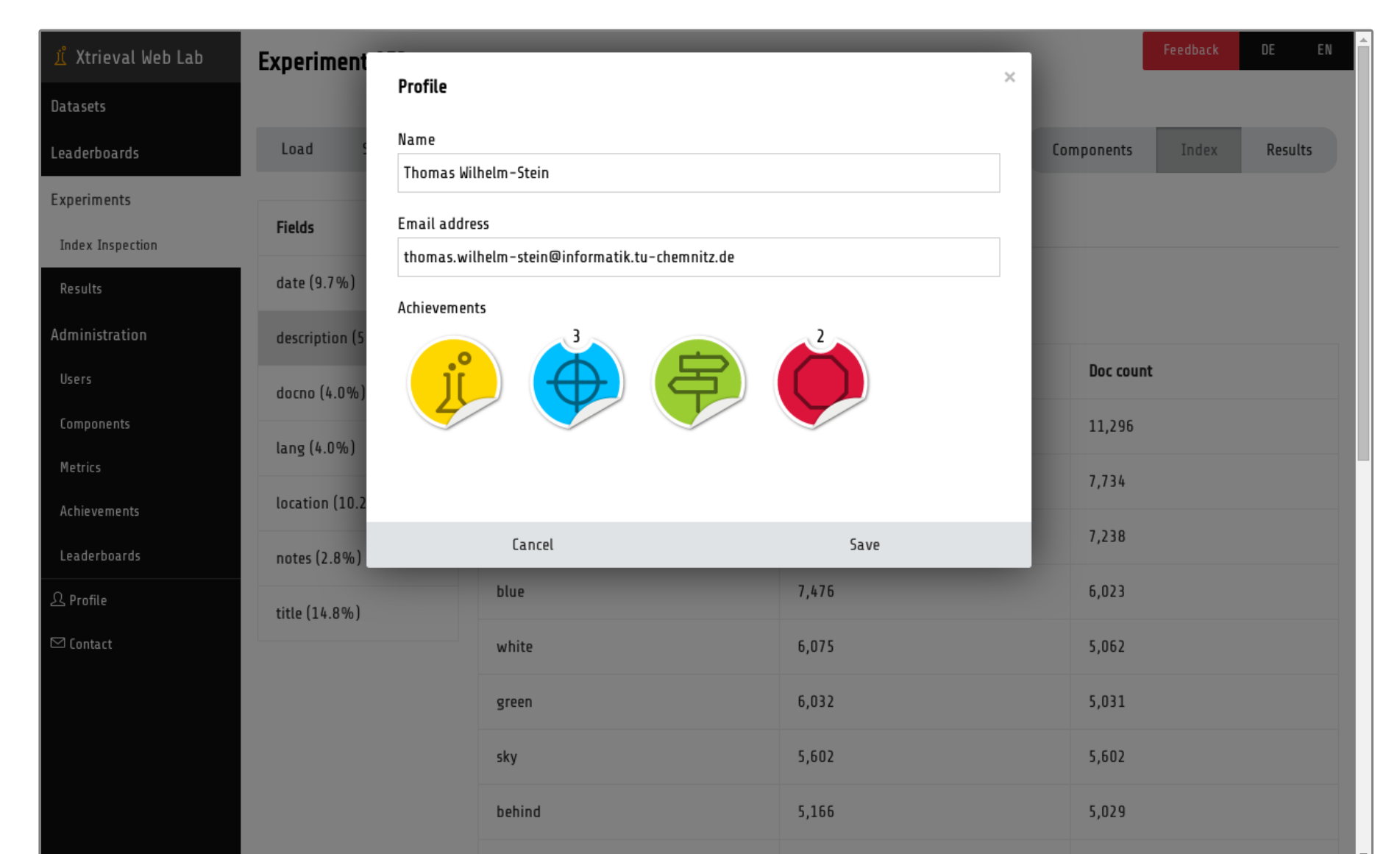
Feedback is highly appreciated and will help us to improve our web application.



Experiment / Components configuration



Evaluation view - Recall-Precision-Graph



User profile with achievements