

The Use Case Perspective for Single Query Information Access

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ABSTRACT

The "entertain me!" workshop is intended to discuss information access for a complex task based on a single query. Such scenarios may occur for many reasons — a framework for a systematic discussion of differences and likenesses based on the notion of a use case is proposed.

Categories and Subject Descriptors

H.5 [INFORMATION INTERFACES AND PRESENTATION]: User Interfaces—*benchmarking, evaluation*; H.3 [INFORMATION STORAGE AND RETRIEVAL]: Information Search and Retrieval—*Search process, Selection process*

Keywords

Use cases, evaluation, validation, benchmarking, information access

1. "ENTERTAIN ME!" — AN EXAMPLE OF SINGLE QUERY INTERACTION

The most obviously interesting aspect of the topic of this workshop is its example of a single query being the nexus of a complex information access task. The simple request for entertainment is the proxy for a complex information need, one which is likely to require domain and task knowledge, awareness of various contextual constraints, knowledge about the user and the user community, and reasoning capabilities with explanatory power.

Discussing this single query allows generalisations to other complex access tasks and usage scenarios — and at the discussions of this present workshop we should try to keep in mind what sorts of family likenesses we are talking about, which parameters of variation we are moving along, and which we are attempting to keep constant.

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2. A FAMILY OF SCENARIOS

There may be many reasons for a single simple query being the most appropriate initiating action from the perspective of the user. Some examples might be:

lack of knowledge

Users may not know the domain of inquiry well enough but is seeking enlightenment. If a user learns enough from the first request, the interaction is likely to evolve into a different type of interaction.

lack of commitment or investment will

Users may not be committed to working towards a successful resolution of a session but is willing to give a system a try, or users may have little energy or attention to devote to formulate queries in view of other constraints on their momentary context.

lack of specificity

Users may not have a specific need in mind but is willing to indicate readiness to receive some entertaining or diverting material.

lack of bandwidth

Users may not have access to a high-throughput communication device and interaction is constrained to a substandard keyboard, a slow connexion or high cost. The system will be required to infer some information to enhance the informativeness of the query.

These different interaction situations are likely to require different designs for interaction and different requirements on the information provided by the system. In some of the cases under consideration in this workshop, we are considering cases where the system can provide *short-coding* of user input, where a less knowledgeable or less committed user can reduce their input to the system to acknowledging or rejecting system suggestions. In others, a system geared towards a success metric such as high recall or a system which provides results by facet or aspect analysis might be the most appropriate design.

We should at this workshop try to keep systematic differences between usage scenarios in mind — they will have effects on the solutions we will be discussing!

3. USE CASES — A FRAMEWORK FOR THINKING ABOUT USER-ORIENTED SERVICES

A *use case* is a relatively informal description of system behaviour and usage, which is designed to show how a *system* is

used by *actors* – stakeholders, consumers, other systems who act outside the system being described and which provides some value for the user [4, 5, 3, 8]. A use case is intended to capture all the ways a system is used by its environment, to describe all the services it offers and the entire relevant behaviour of the system and the actors engage in for some specific purpose of value for the actors. The use case is a tool for developing a system, and user actions as formalised in the use case — most often using UML, the Unified Modeling Language — are mapped onto system components and system development objects for the purposes of system development and evaluation.

Scenarios, which often are the inspiration for use cases, are not use cases but *instances* of them: often several scenarios are necessary to track the various paths through a given use case for a system. A scenario describes the actions of a user during the course of an interaction. For instance, one scenario based on the use case **search for a restaurant in a city of interest** for a image search engine could be a description of Marco typing names of foods and cuisines he knows into the query field of a web search interface at a public location in Canton to find a noodle restaurant in the vicinity.

While the notion of a use case has not been explored to any great extent in information access research¹, there is an implicit notion of retrieval being a topical and task-based activity for focussed, active, and well-spoken users. This implicit use case informs both evaluation and design of systems: recall and precision can be worked together to become a fair proxy for user satisfaction in that usage scenario, even when abstracted to be a relation between query and document rather than between need and fulfilling that need. When information access technology moves from its current prototypical domain of topical text retrieval, the implicit information retrieval use case becomes less useful as a backbone for evaluation.

Recent strands in the study of interactive retrieval have begun to move beyond the modelling of sessions as simple retrieval of items from a collection, emphasizing the importance of modelling context beyond the query itself in understanding the goals of the user (e.g. [6]) and during the course of the European CHORUS coordination action a number of Europe-wide and national research projects on information access were polled for their respective view of future usage of the technology solutions they proposed. The responses were aggregated and collated in terms of a *use case space* with the purpose of improving project-to-project cooperation. [2, 1, 7]

Use cases show promise to be a helpful tool to parametrise differences and likenesses between information access scenarios of various types, allowing the information retrieval research field to provide evaluation and benchmarking mechanisms for situations which are similar but not identical to previously known application scenarios.

4. USE CASE MODELS FOR FAMILY LIKE-NESS

What parameters of variation should we assume cut across

¹The term “use case” is frequently used in papers on information access technology, but usually it is used to refer to informal descriptions of how useful a certain system component might be.

the scenarios we will be discussing at this workshop? What distinguishes the scenarios we are discussing from others? How can we provide a framework from which we can generalise the results from our deliberations? Use cases are one potential vehicle to conduct this discussion with — but as they are not intended for this purpose, we will need to provide enhancements to them for this purpose.

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