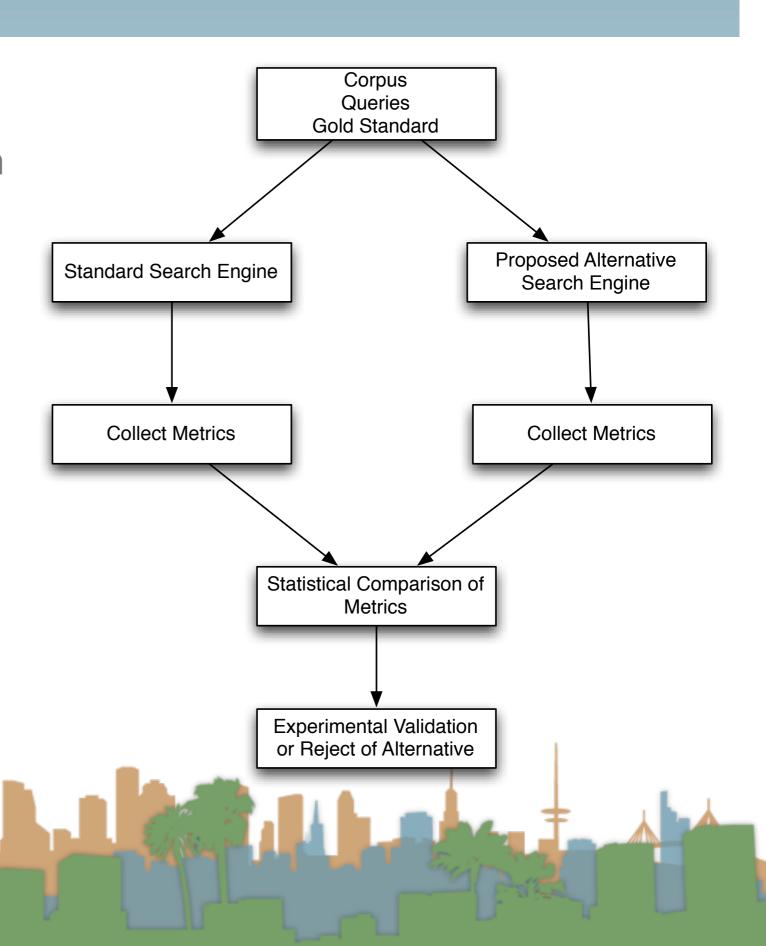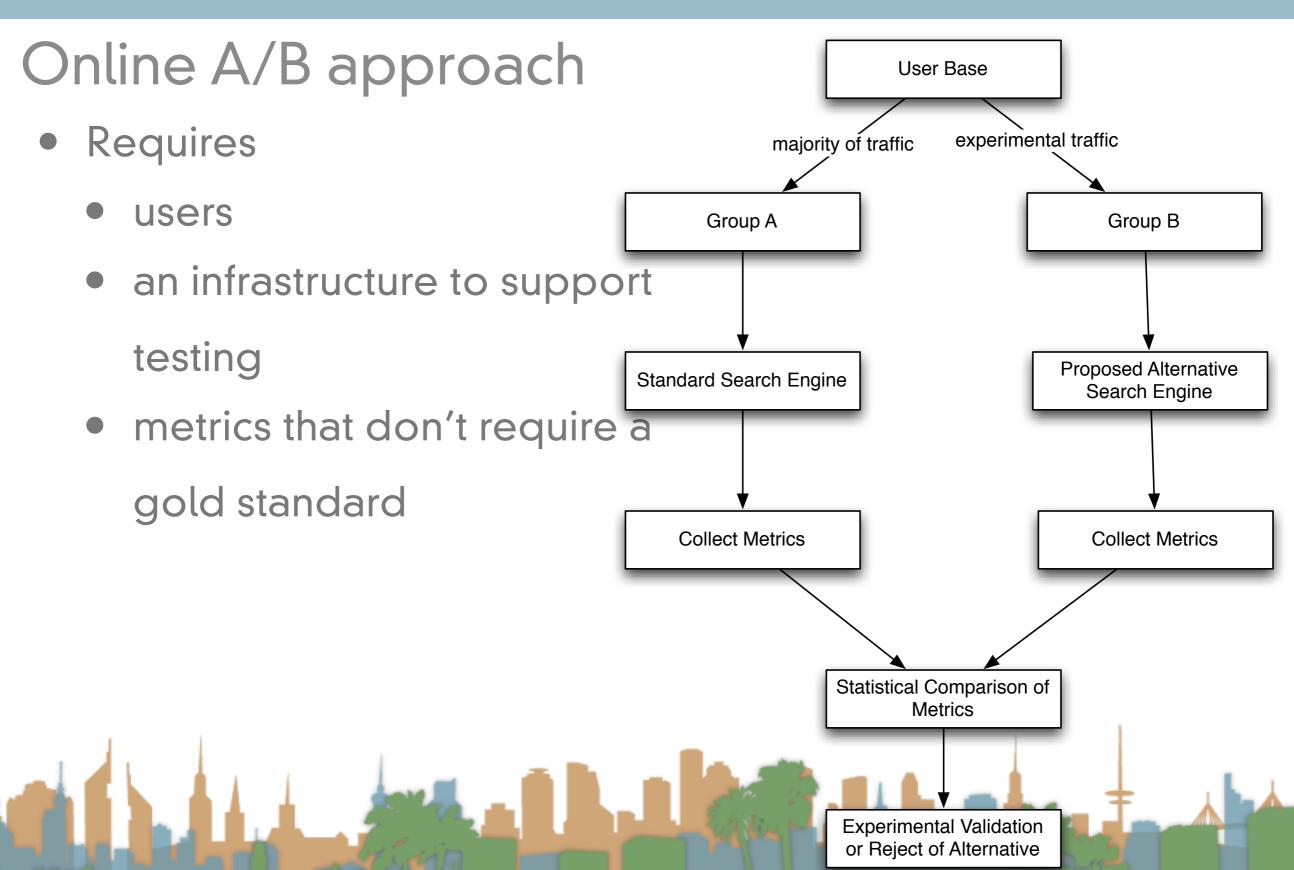# Refining a deployed system

- Once you have a system, with metrics, how do you consider changing the system to improve the metrics?

- A common approach is A/B testing.
  - This is done by Google for clients and Amazon for itself and probably many others.

- The idea:
  - Treat a small number of your users as experiments.
  - Have them use the different system.
  - Evaluate metrics on experimental group.

Evaluation in IR

- Gold standard approach

```
                    ┌─────────────────┐
                    │     Corpus      │
                    │     Queries     │
                    │  Gold Standard  │
                    └─────────────────┘
                       ╱          ╲
                      ╱            ╲
        ┌──────────────────┐   ┌──────────────────────┐
        │ Standard Search  │   │ Proposed Alternative │
        │      Engine      │   │    Search Engine     │
        └──────────────────┘   └──────────────────────┘
                 │                        │
                 ▼                        ▼
        ┌──────────────────┐   ┌──────────────────────┐
        │  Collect Metrics │   │   Collect Metrics    │
        └──────────────────┘   └──────────────────────┘
                  ╲                      ╱
                   ╲                    ╱
              ┌──────────────────────────┐
              │  Statistical Comparison  │
              │       of Metrics         │
              └──────────────────────────┘
                          │
                          ▼
              ┌──────────────────────────┐
              │  Experimental Validation │
              │  or Reject of Alternative│
              └──────────────────────────┘
```

Online A/B approach

- Requires
  - users
  - an infrastructure to support testing
  - metrics that don't require a gold standard

```
                            ┌─────────────┐
                            │  User Base  │
                            └─────────────┘
                     majority of traffic    experimental traffic
                    ┌─────────┐              ┌─────────┐
                    │ Group A │              │ Group B │
                    └─────────┘              └─────────┘
                         │                        │
              ┌──────────────────────┐  ┌──────────────────────┐
              │ Standard Search Engine│  │  Proposed Alternative │
              │                       │  │     Search Engine     │
              └──────────────────────┘  └──────────────────────┘
                         │                        │
                 ┌───────────────┐        ┌───────────────┐
                 │ Collect Metrics│        │ Collect Metrics│
                 └───────────────┘        └───────────────┘
                              │           │
                        ┌─────────────────────────┐
                        │ Statistical Comparison of│
                        │         Metrics          │
                        └─────────────────────────┘
                                    │
                        ┌─────────────────────────┐
                        │ Experimental Validation  │
                        │  or Reject of Alternative│
                        └─────────────────────────┘
```

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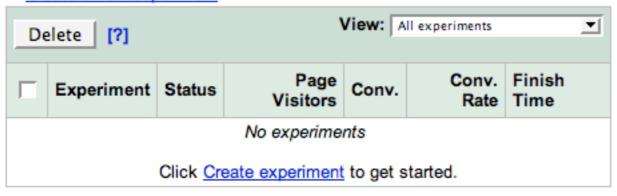
Campaign Summary | Tools | Conversion Tracking | Website Optimizer

Search

Tools > Website Optimizer

Website Optimizer (beta): Experiment List

✓ **Congratulations!** You've signed up for Website Optimizer and are ready to create your experiment. As you move through the steps, your information will be saved.

+ Create a new experiment

Delete [?]			View:	All experiments		

	Experiment	Status	Page Visitors	Conv.	Conv. Rate	Finish Time
	No experiments					

Click Create experiment to get started.

My Client Center User Access [?]

➡ Tell us about Website Optimizer.   Take a survey

Common Questions

- How do I create an experiment?

- Do I need my webmaster's help?

Helpful Links

- Website Optimizer Help

- Website Optimizer Demo (Flash - English Only)

- Website Optimizer User Guide (Flash - English Only)

- Quick Start Guide

- Installation Guide

- Testing Guides and Strategies

- Discussion Forum

- Website Optimizer Home Page

- Send Us Feedback

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Snippets

- Little bits of text that summarize the page

Informatics - Wikipedia, the free encyclopedia
Informatics includes the science of information, the practice of information ... **Informatics** studies the structure, behavior, and interactions of natural and ...
en.wikipedia.org/wiki/**Informatics** - 35k - Cached

- They function as an implicit tool for users to rank the results on their own (among those visible)

- The user does the final ranking

- Users are still biased by presented order though.

Snippets

- The goal of snippet generation is
  - present the most informative bit of a document in light of the query
  - present something which is self-contained
    - i.e., a clause or a sentence
  - present something short enough to fit in output
  - be fast, accurate (where are the snippets stored?)
- Challenges
  - Multiple occurrences of keyword in document
  - Poor English (or other language) grammar

Snippets

- Snippets can be static
  - A snippet for a web page is precompiled and always the same.
- Snippets can be dynamic
  - Depends on the query
  - "informatics"

  Informatics - Wikipedia, the free encyclopedia
  Informatics includes the science of information, the practice of information ... **Informatics** studies the structure, behavior, and interactions of natural and ...
  en.wikipedia.org/wiki/**Informatics** - 35k - Cached

  - "informatics definition"

  Informatics - Wikipedia, the free encyclopedia
  Usage has since modified this **definition** in three ways. ... broader **definition** at the launch of its School of Computing and **Informatics** in September 2006. ...
  en.wikipedia.org/wiki/**Informatics** - 35k - Cached

Snippets

- Snippets may contain
  - A few sentences from the web page
  - Meta data about the page
    - Author, Date, Title
  - Output of a text-summarization algorithm
    - Advanced technology that attempts to write snippets
  - Images from the document