

Towards systematic search quality improvement

opensourceconnections.com

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About me



- Director E-commerce Search at OpenSource Connections
- Worked in search for ca. 16 years
- Focus on e-commerce search, worked with some of Germany's top 10 online retailers
- Co-Founder/-Organiser of MICES - Mix-Camp Ecommerce Search (<https://mices.co>)
- Lucene, Solr, Elasticsearch
- Maintainer of Querqy, co-initiator of Chorus

Does this sound familiar?

Micromanaging / Pet Peeves

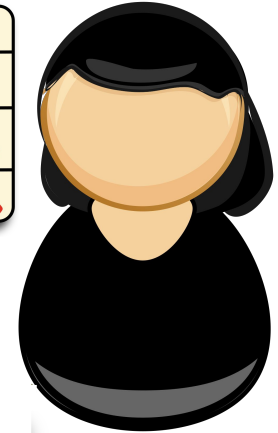
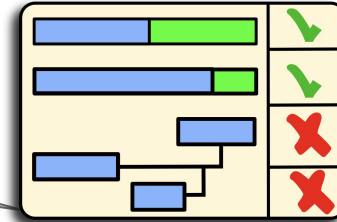


I ran this search, can you fix it?

Let me add it to the backlog...

This tech improvement seems like it would improve business

Turns out that's very difficult to accomplish with our tech/budget



Search Manager

Cool tech! But no better results



"The Business"

This cool whizbangtech will make rainbows and unicorns

But how will it impact the business?

Business? You need to get with the cool rock-star tech!



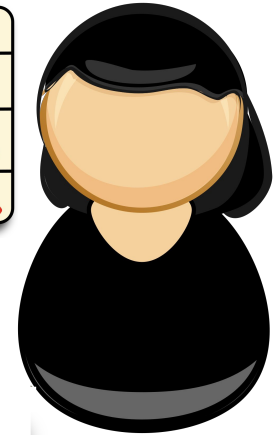
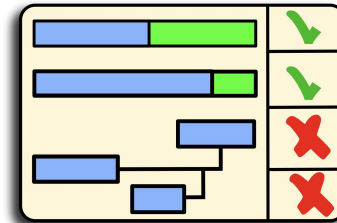
Moving towards KPIs



"The Business"

Business KPI: measure the value of the search process to stakeholders

- Relates to \$\$ and cents!
- Helps us make better decisions on tradeoffs
- Ideally something a non-search nerd understands



Search Manager

Good KPIs -> "Contract" negotiation



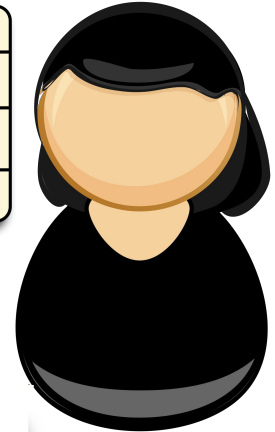
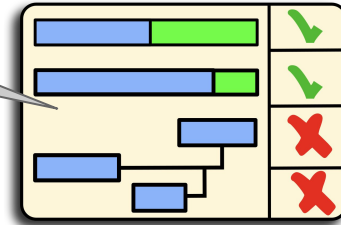
"The Business"

We can't do 5% increase with our team/budget/tech, but we can do 3%

Hmm... am I willing to spend \$X more if I get a 2% uplift?

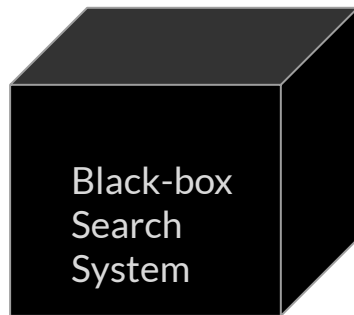


Negotiate specific metrics & goals



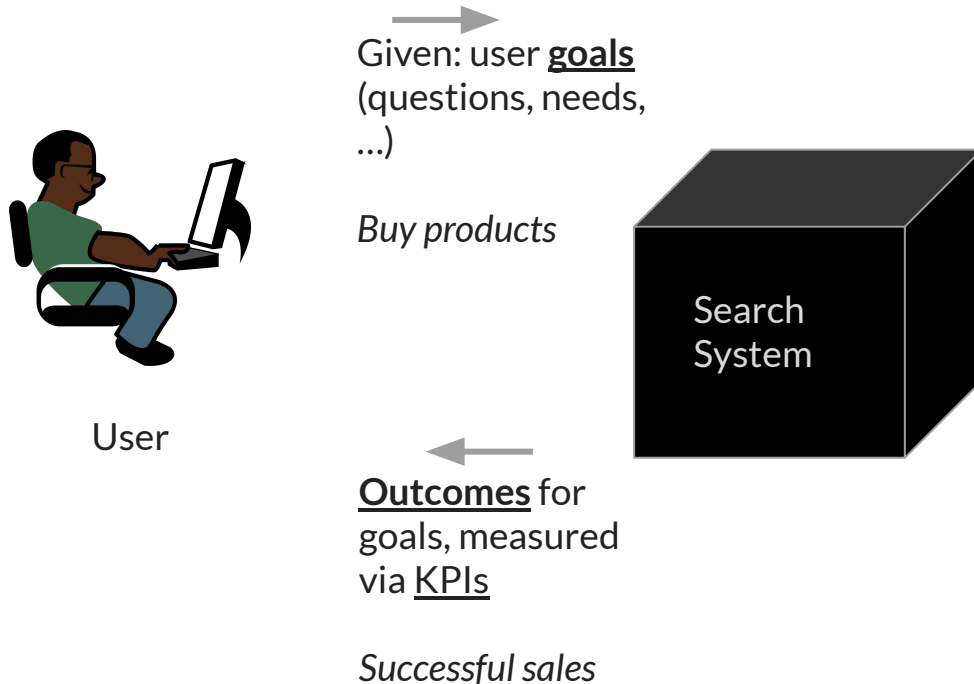
Search Manager

How do you arrive at good KPIs?



If you're a business person, how do you know if this black-box search system (and team) is helping your search business?

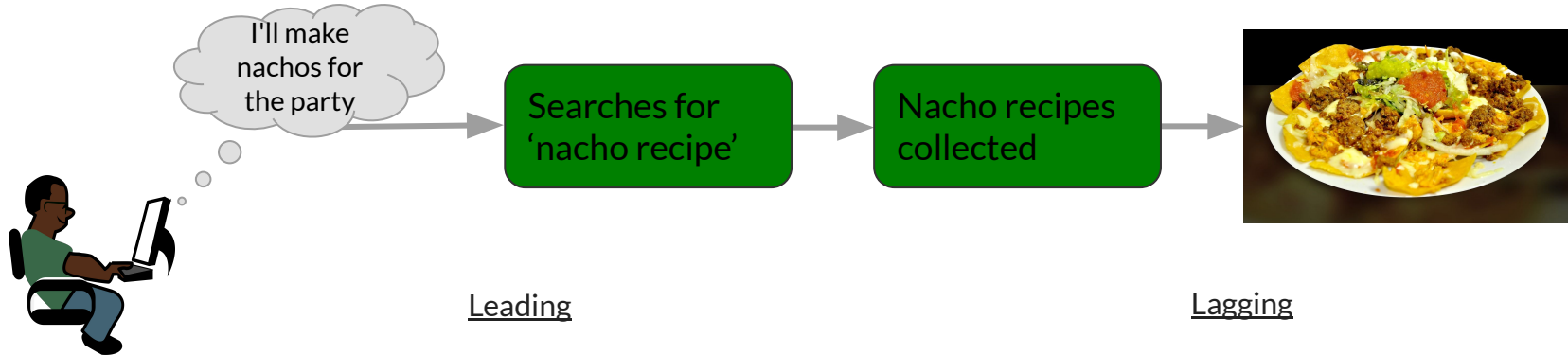
Modeling the Business Process



Big Questions:

1. How do we discover/understand our user's goals?
2. What outcomes do users/business want?
3. How do we measure those outcomes were met with easier to obtain leading metrics

Leading vs Lagging Business KPIs



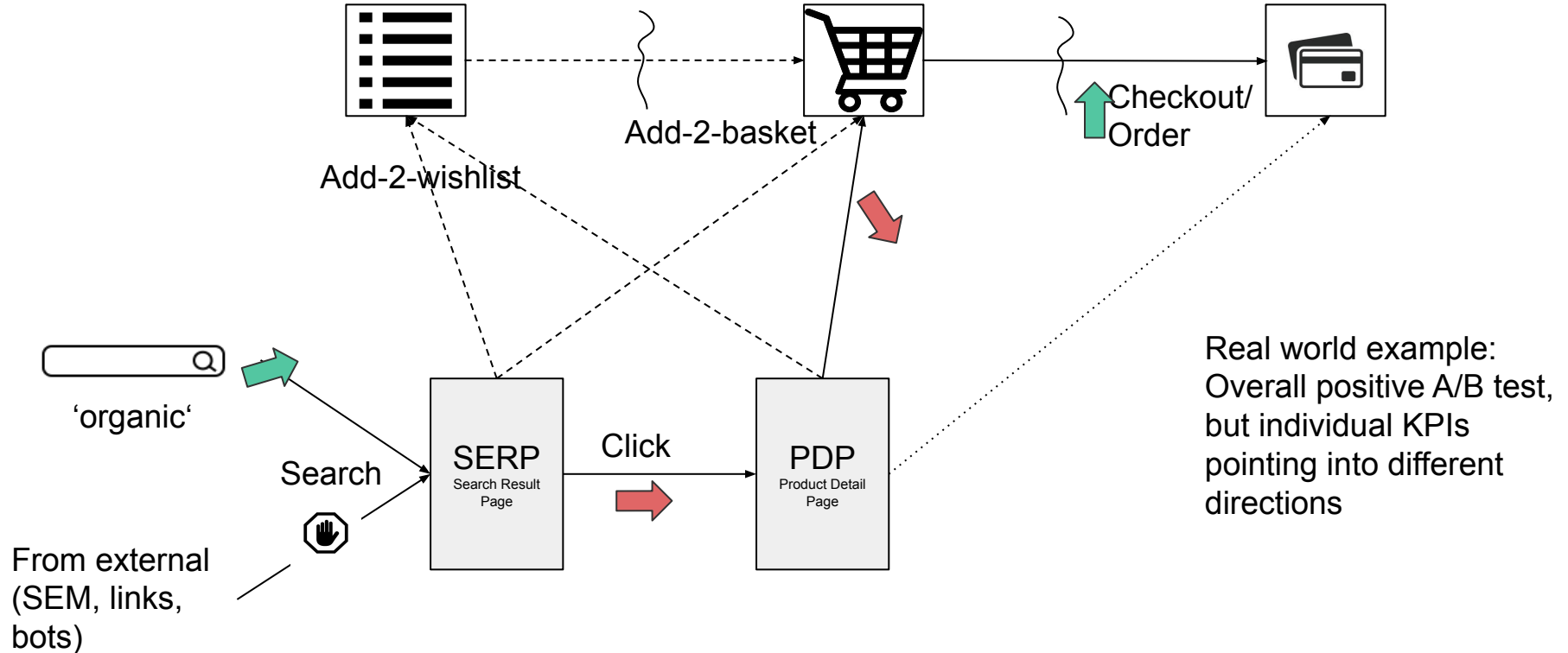
- Measure success finding recipes
- Can be measured early in the user's overall 'journey'
- Positively correlated with positive outcomes (ie 'lagging' metrics)

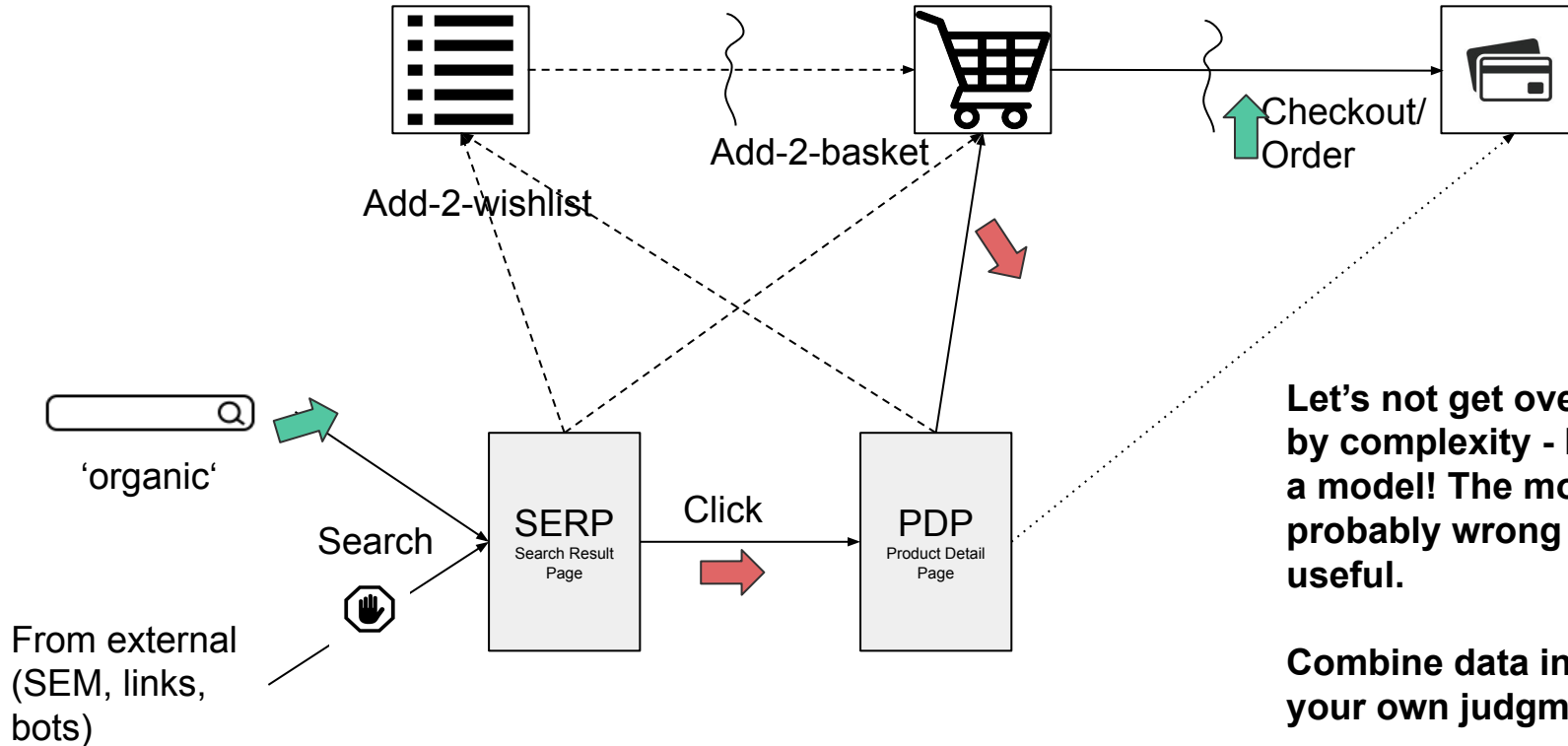
- IE made Nachos days later, they were yummy
- Outcome of the broader user journey
- Q2 Profit, user retention, user solving their problems

Transactional KPIs : Lead/Lag closely tied

Field	Leading KPIs	Lagging KPI	Long term Outcome
E-Commerce	Pre-sale events (website traffic, search result clicks)	Sales revenue, conversions	Happy return customers, Overall profit
Job Search	User inspects the job description	Applications per search session	Tenure at job position
Dating Search	Time spent on profile	Dates confirmed	Soul mates

(But beware, sometimes transactional teams become too focused on the leading indicator)





Let's not get overwhelmed by complexity - KPIs are just a model! The model is probably wrong but also useful.

Combine data insights with your own judgment!

Summary: Accountability of search

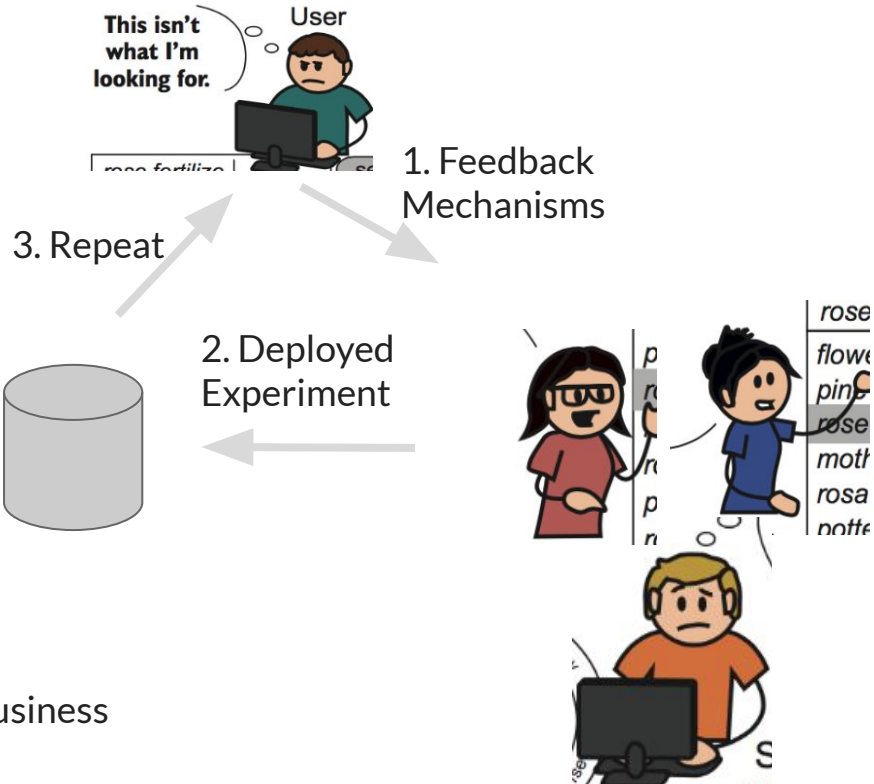
- Key Performance Indicators (KPI) associated with the performance of a search application are instrumental in making search accountable to the business and the stakeholders
- A negotiated contract between the Business and the search dev team create a common language for all parties, and help communicate commitments and deliverables throughout the organization
- Establishing good KPIs for search is not easy, and requires a deep understanding of the end-users' goals as well as the outcomes of their interactions with your site, either immediately or later on
- “Leading” and “lagging” tell different stories to pay attention to
- KPIs can support a hypothesis-driven development approach, where changes are deployed and measured in successive and on-going A/B tests

**Experimentation is at the heart
of search improvement work.**

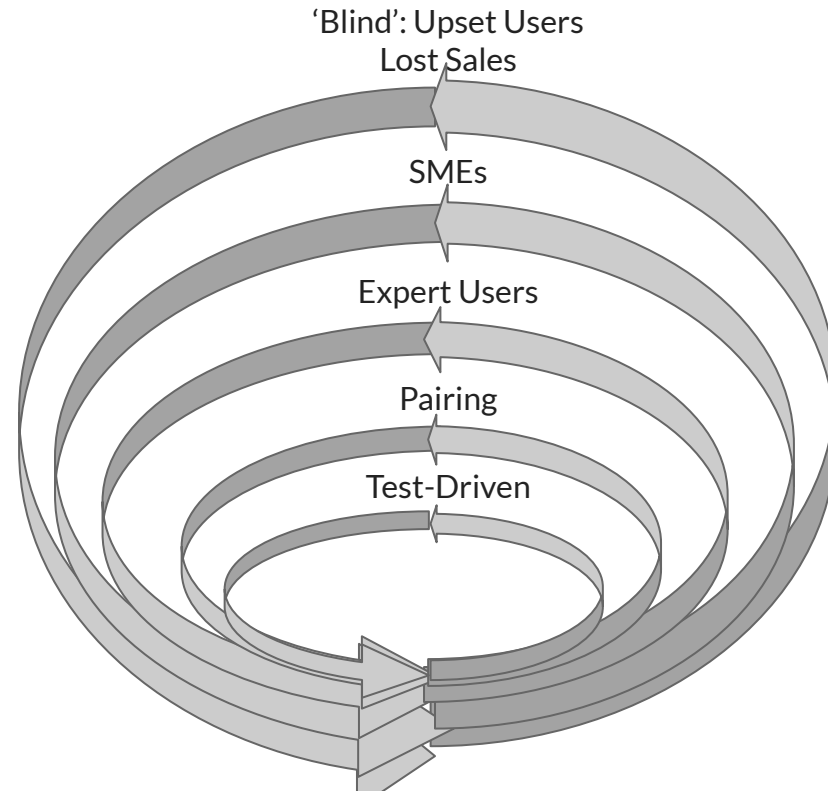
The Big Picture



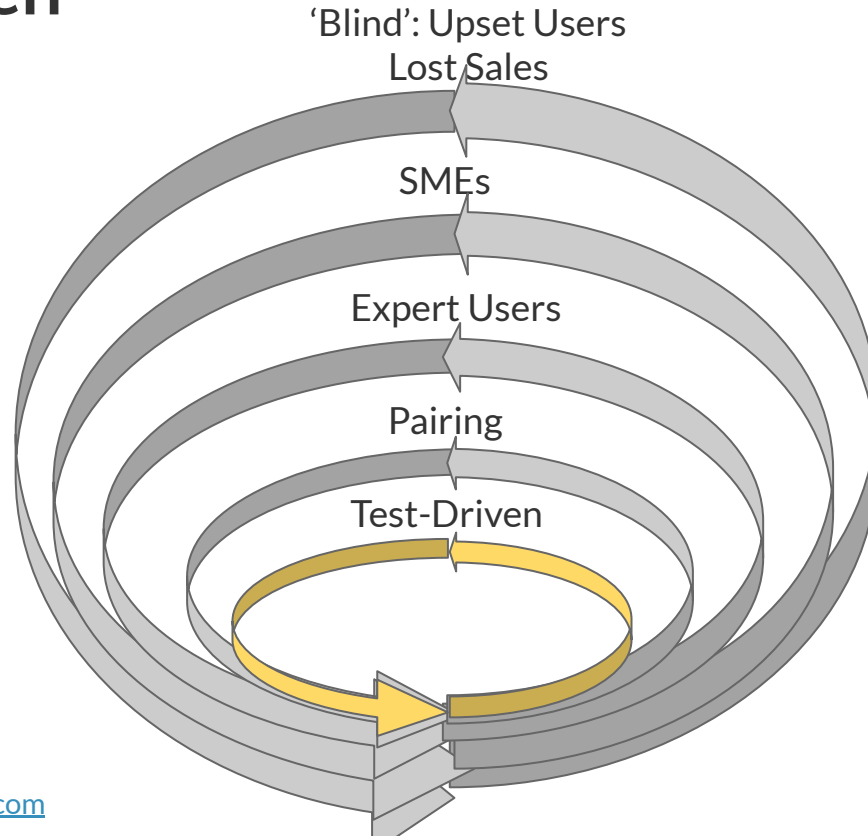
Contract:
Experiment meet business
outcomes?



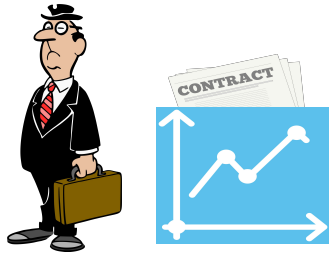
Relevance Feedback Tornado



Test-driven



Hypothesis-Driven Development



Contracts with the
business



User needs and
expectations

Kinda Crazy
Idea A

Kinda Crazy
Idea B

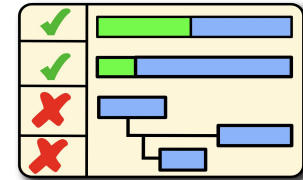
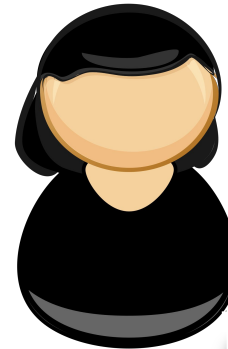
Kinda Crazy
Idea C

Kinda Crazy
Idea D

Mostly Crazy
Idea E

Really Crazy
Idea F

Maybe this
crazy idea
will work...



Which solution is best?

Hypothesis-Driven Development

Hypothesis-driven development

We believe *<this capability>*

Will result in *<this outcome>*

We will have confidence to
proceed when

<we see a measurable signal>

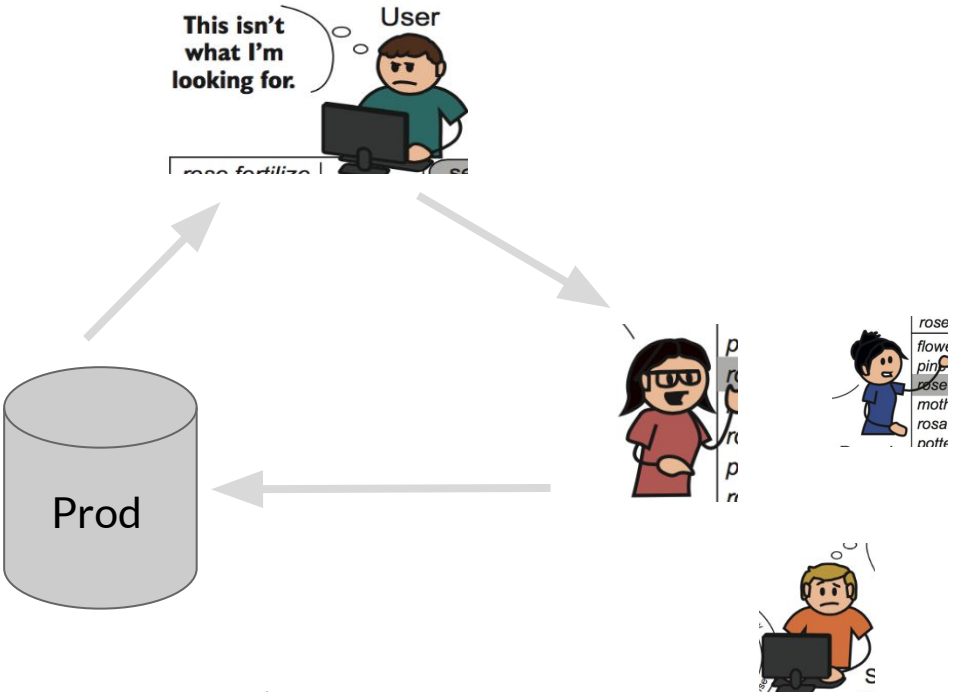
Hypothesis-Driven Development

Example:

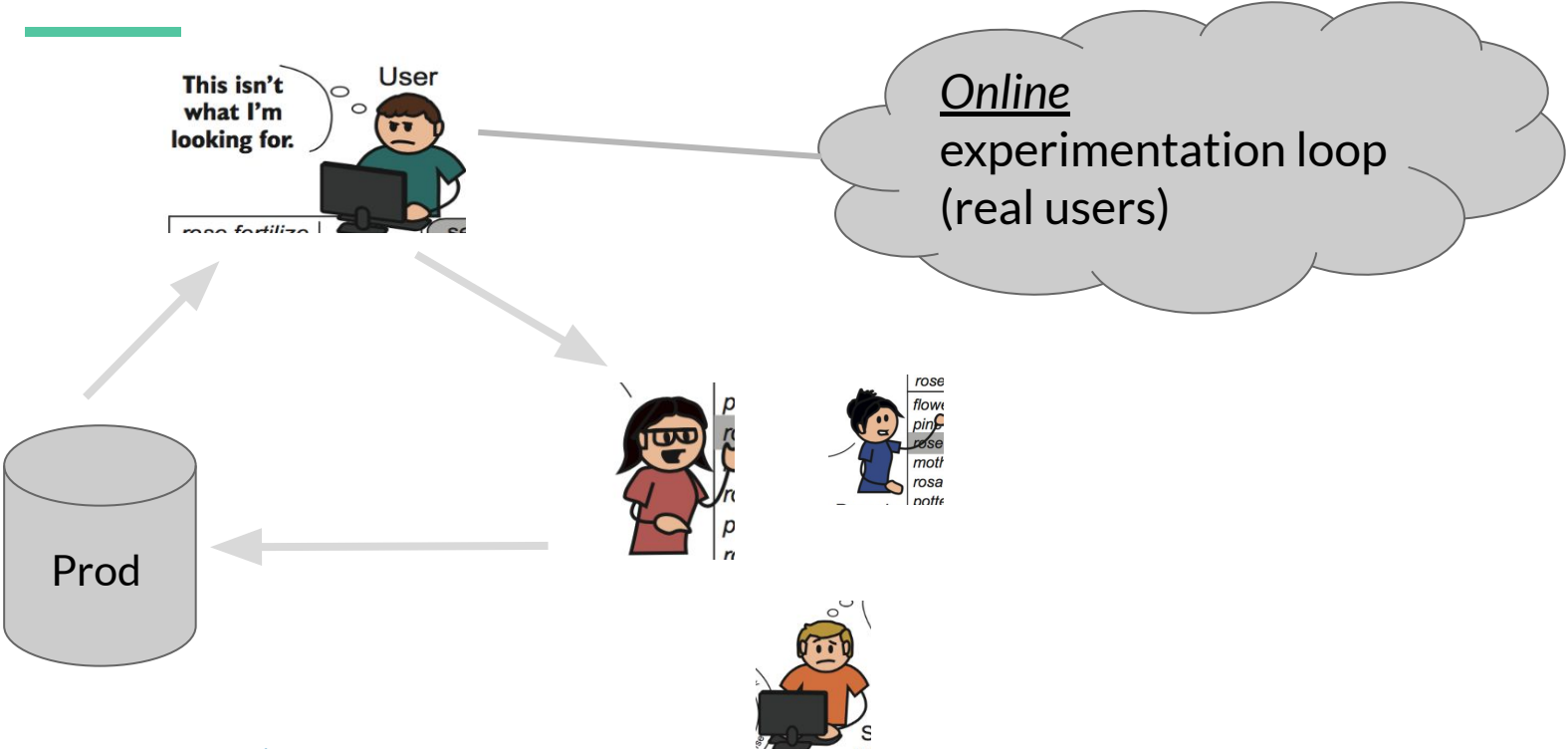
We believe that adding **British spelling as synonyms** will result in **fewer zero results found**.

We will know we have succeeded when **we see our zero results return ratio drop from current 4% of all searches**.

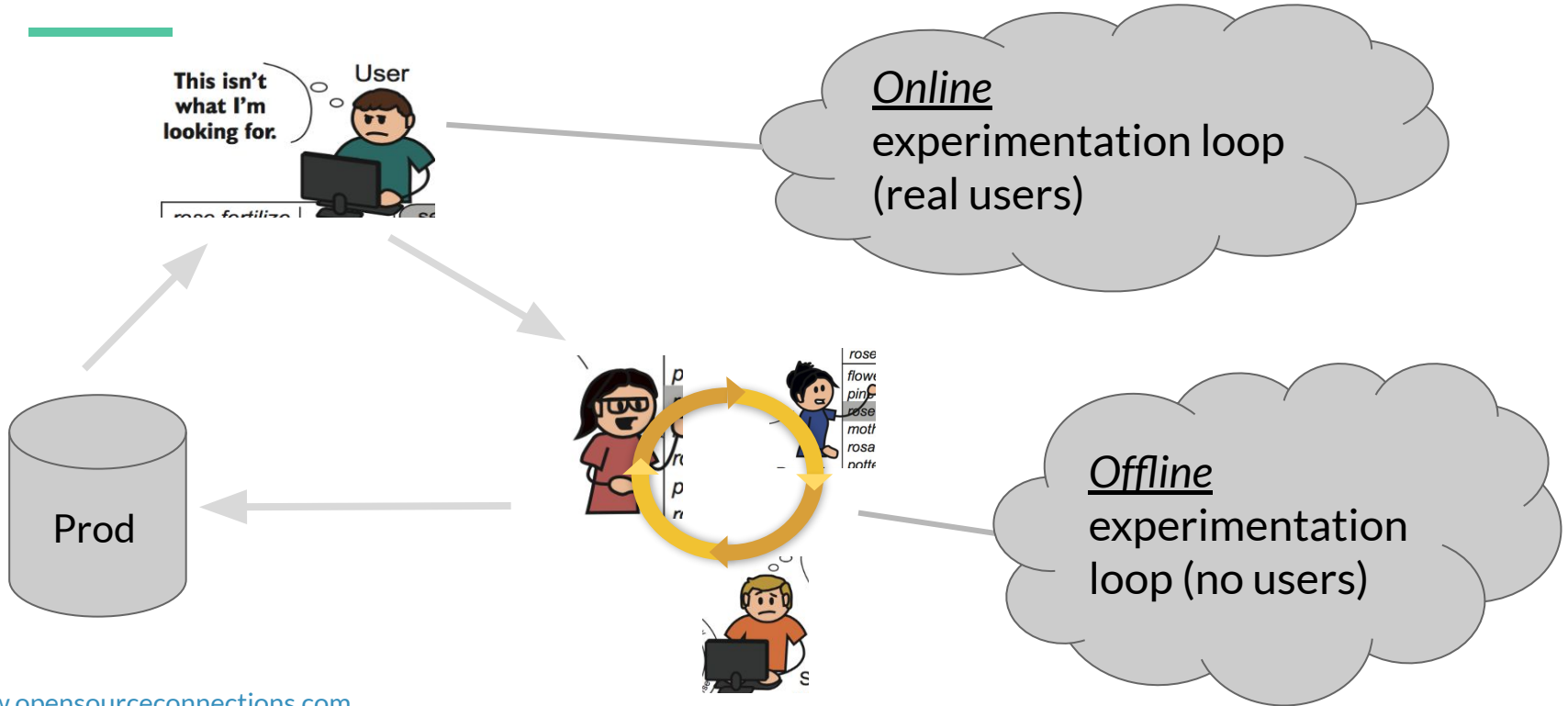
Feedback collection



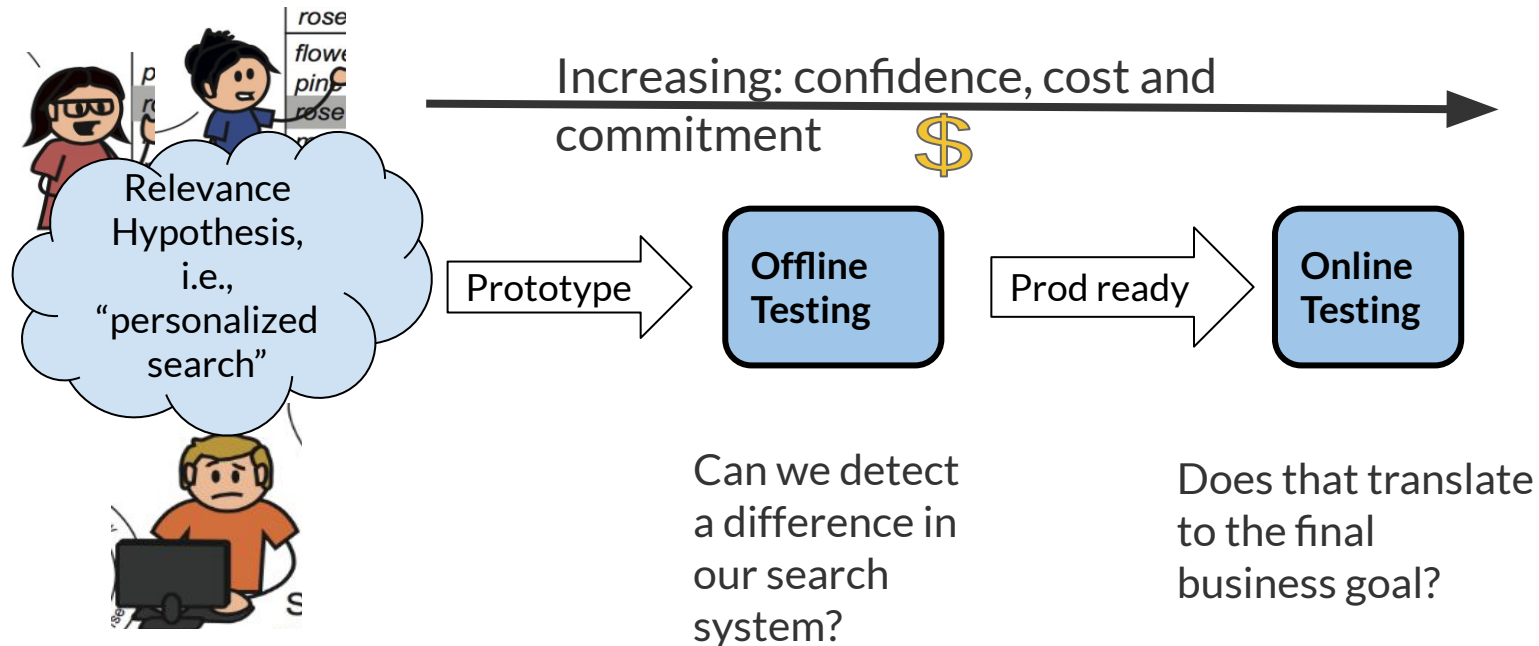
Deploy then test



Try before deploy



Hypothesis-Driven Development Process



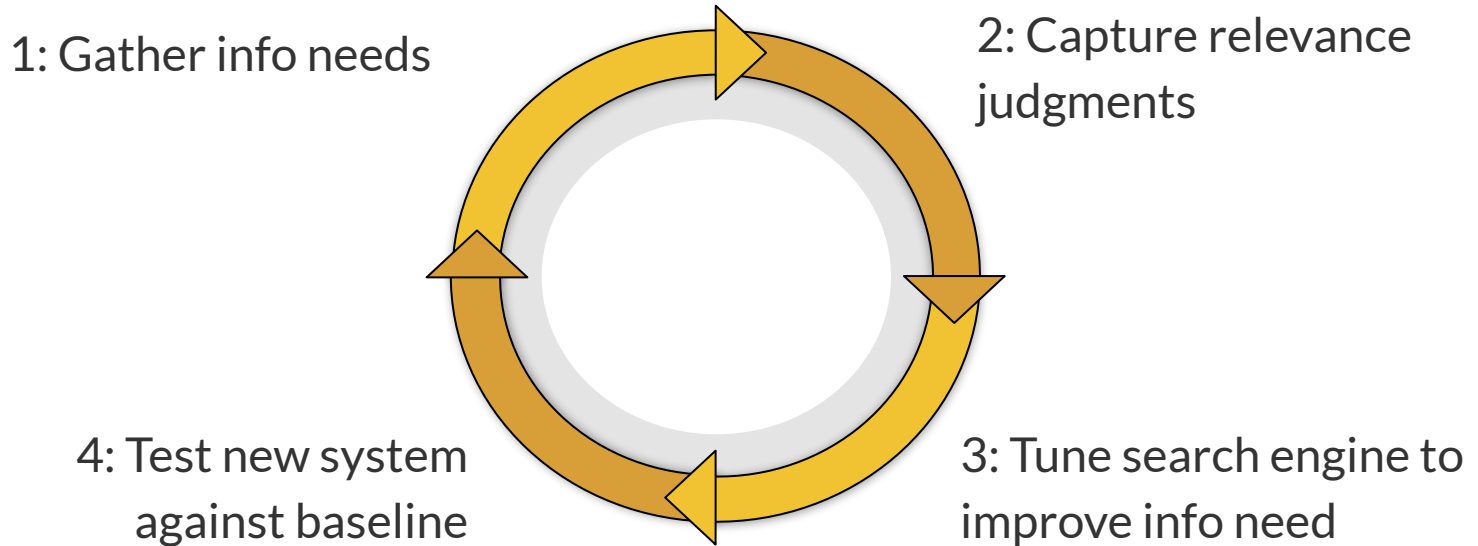
Quepid demo

Offline search relevance feedback collection and optimisation

<https://quepid.com>

<https://github.com/o19s/quepid>

Offline experimentation cycle



What is incorporated in feedback?

Search result quality

Relevance of
search results

Other result
quality criteria

Biases

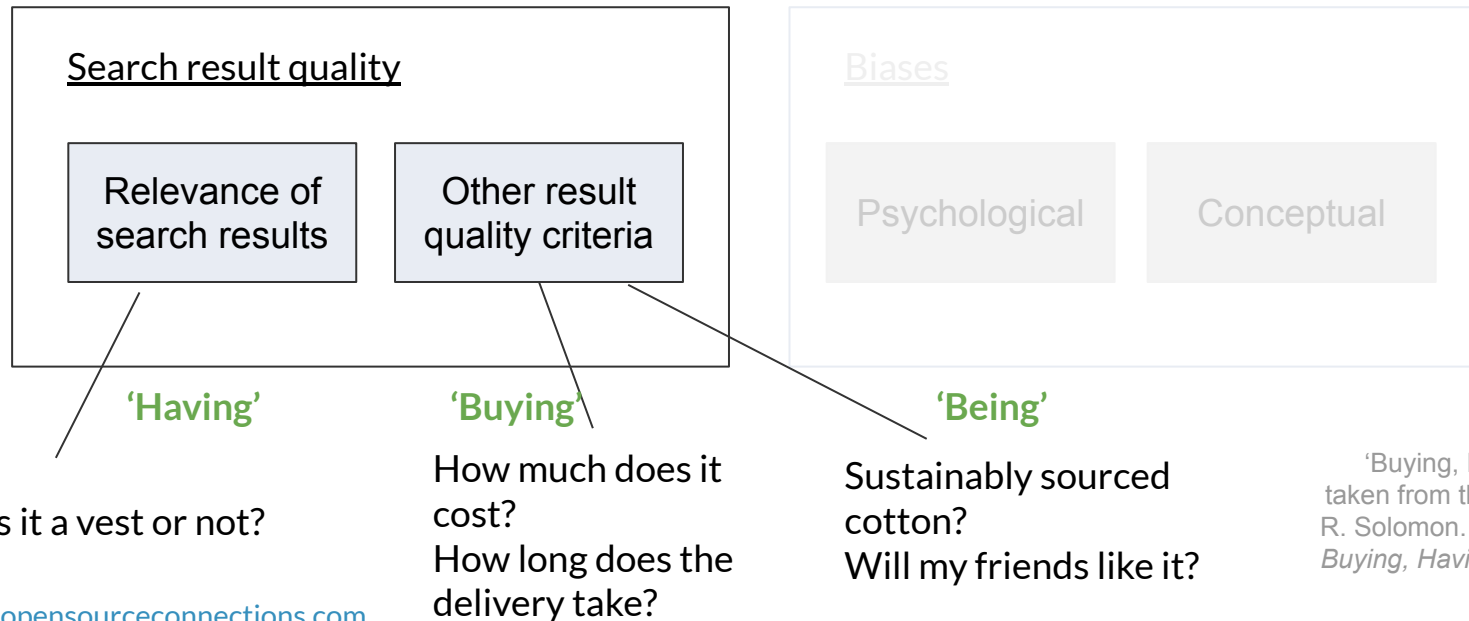
Psychological

Conceptual

... plus Noise

What is incorporated in feedback?

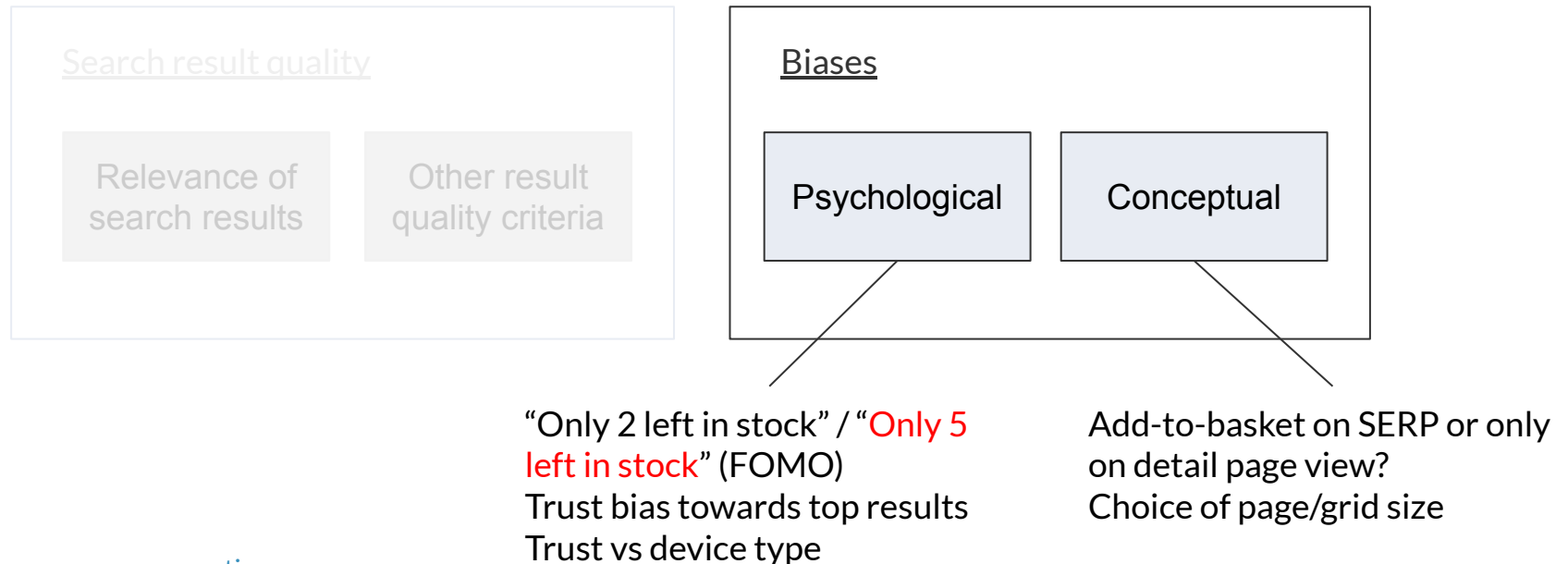
$q=vest$



'Buying, Having, and Being' is taken from the subtitle of Michael R. Solomon. *Consumer Behavior. Buying, Having, and Being*. 2006.

What is incorporated in feedback?

$q=vest$



What is incorporated in feedback?

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Psychological

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New training: Beyond Search Relevance: Understanding and
Measuring Search Result Quality, 27th & 28th April

... plus Noise

Towards systematic search quality improvement

Foundations

- Accountability
- Experimentation
- User understanding, feedback collection and analysis
- Team structure and processes

Thank you.



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