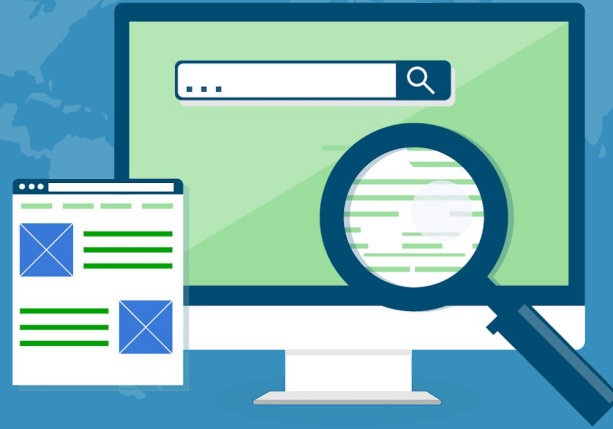


# Towards systematic search quality improvement

[opensourceconnections.com](https://opensourceconnections.com)

Station F, November 21st 2022

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# Does this sound familiar?

# Micromanaging / Pet Peeves

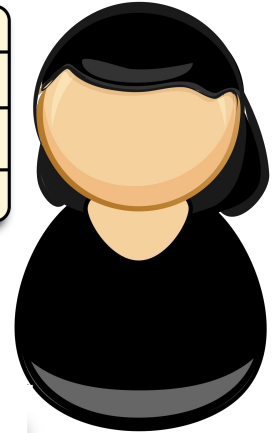
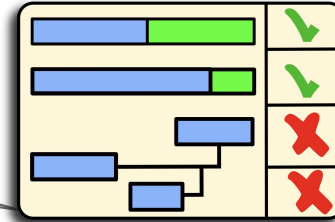


I ran this search, can you fix it?

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

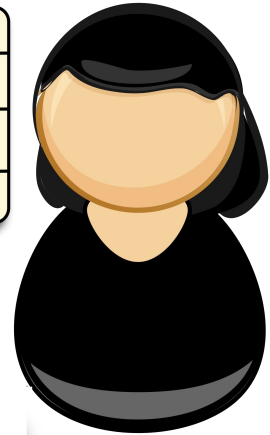
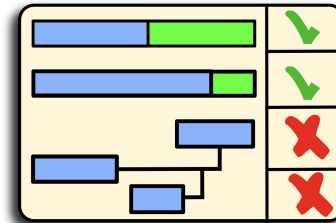
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"The Business"

**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



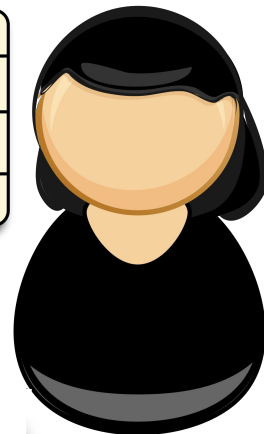
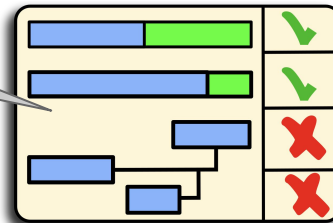
"The Business"

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?



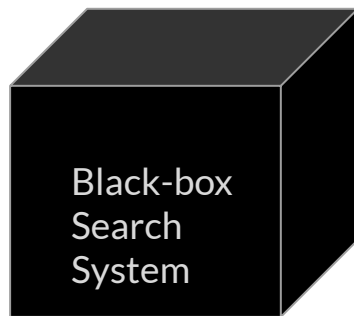
Negotiate specific metrics & goals



Search Manager

# How do you arrive at good KPIs?

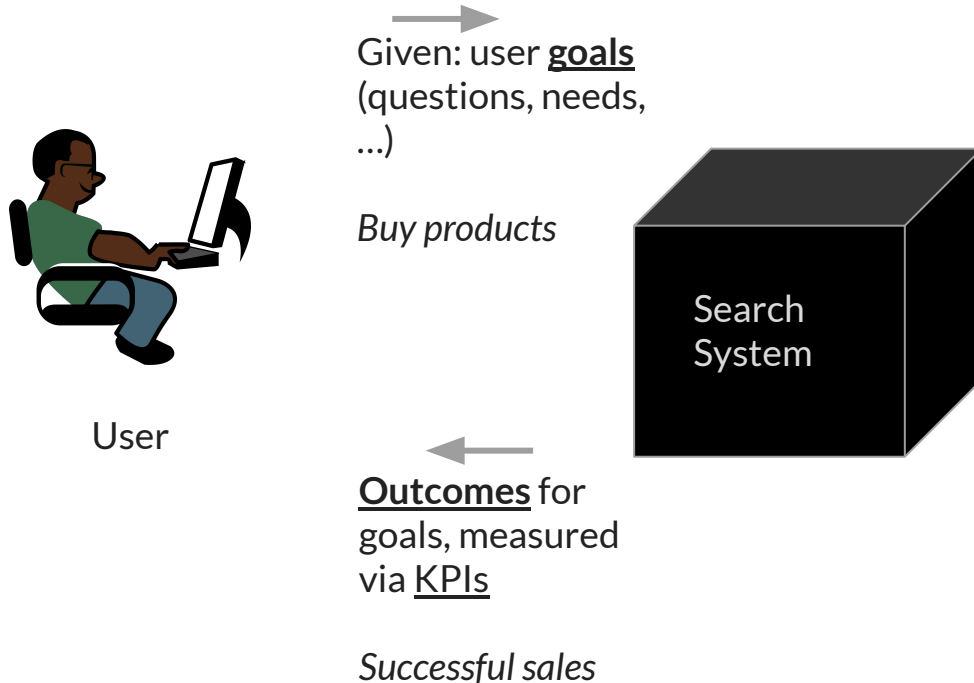
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If you're a business person, how do you know if this black-box search system (and team) is helping your search business?

# Modeling the Business Process

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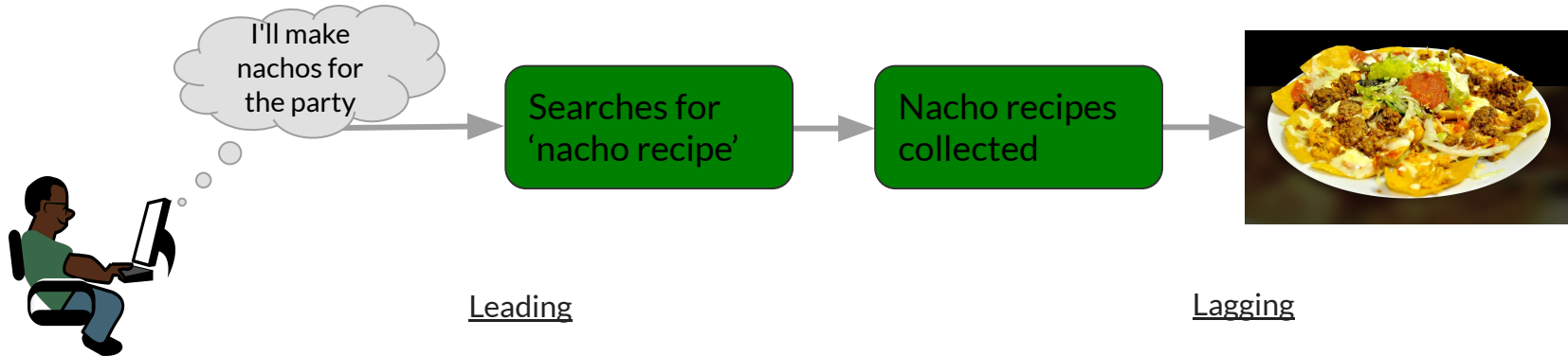


## Big Questions:

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



## Leading

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

## Lagging

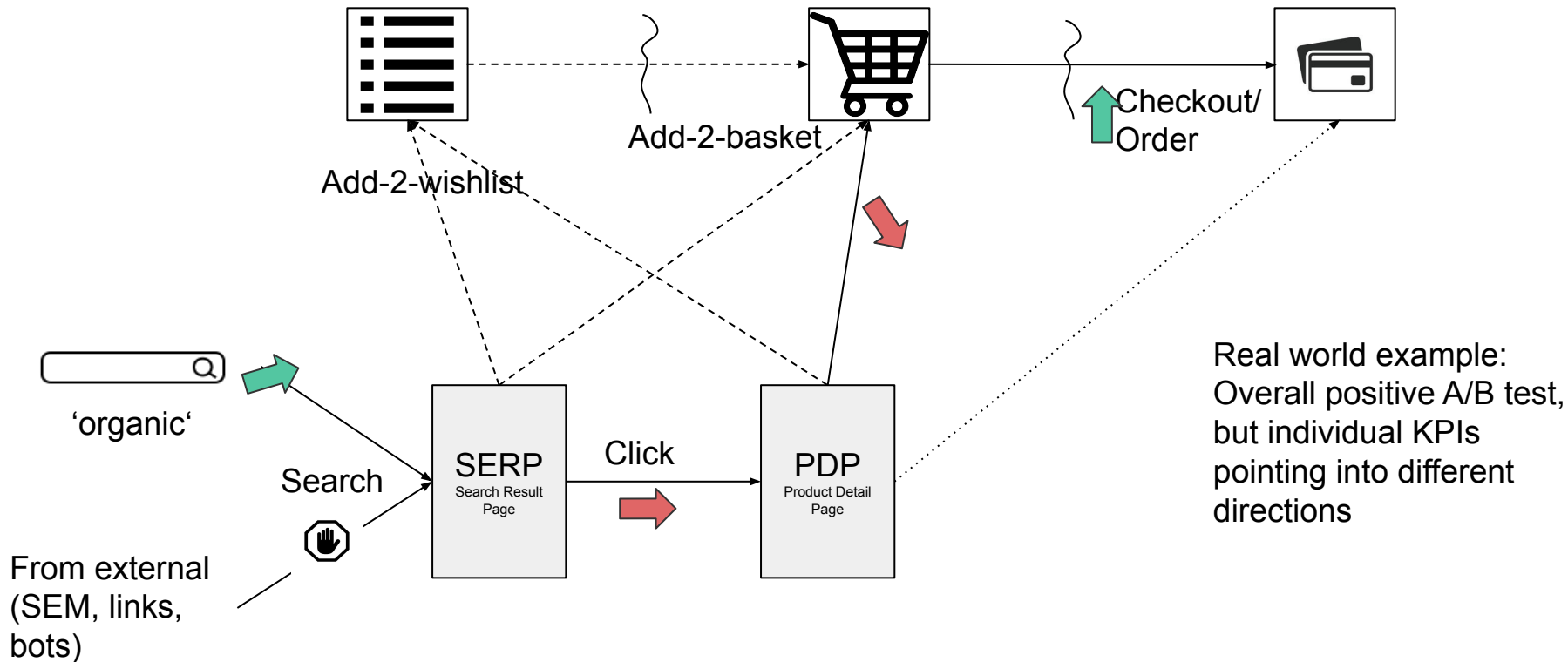
- IE made Nachos days later, they were yummy
- Outcome of the broader user journey
- Q2 Profit, user retention, user solving their problems

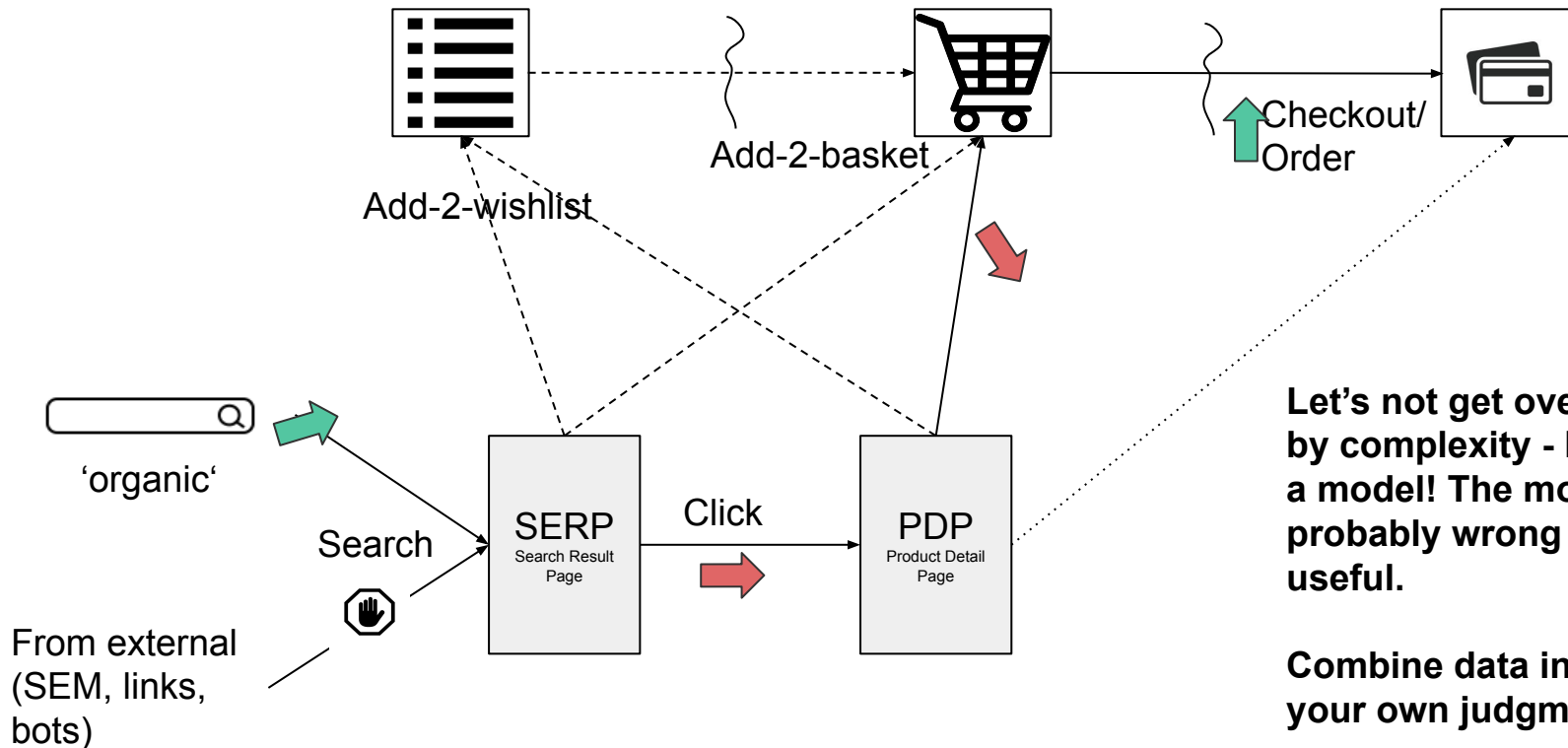
# Transactional KPIs : Lead/Lag closely tied

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| Field         | Leading KPIs  | Lagging KPI                        | Long term Outcome                            |
|---------------|---|------------------------------------|--|
| E-Commerce    | Pre-sale events<br>(website traffic, search<br>result clicks) | Sales revenue,<br>conversions      | Happy return<br>customers, Overall<br>profit |
| Job Search    | User inspects the job<br>description                          | Applications per<br>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)





# Summary: Accountability of search

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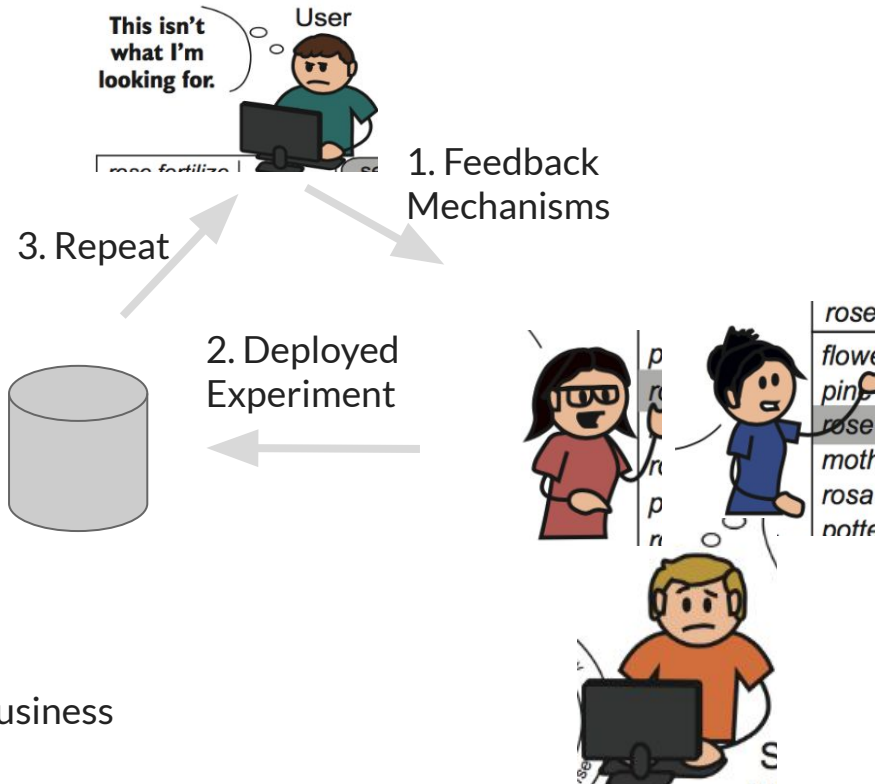
- Key Performance Indicators (KPI) associated with the performance of a search application are instrumental in making search accountable to the business and the stakeholders
- A negotiated contract between the Business and the search dev team create a common language for all parties, and help communicate 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.**

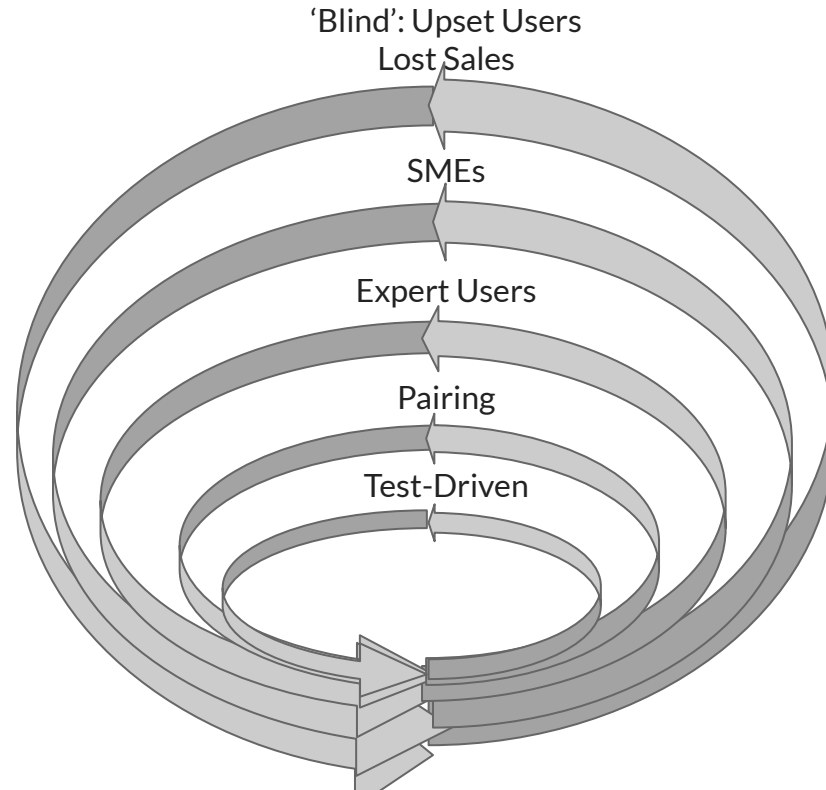
# The Big Picture



Contract:  
Experiment meet business  
outcomes?



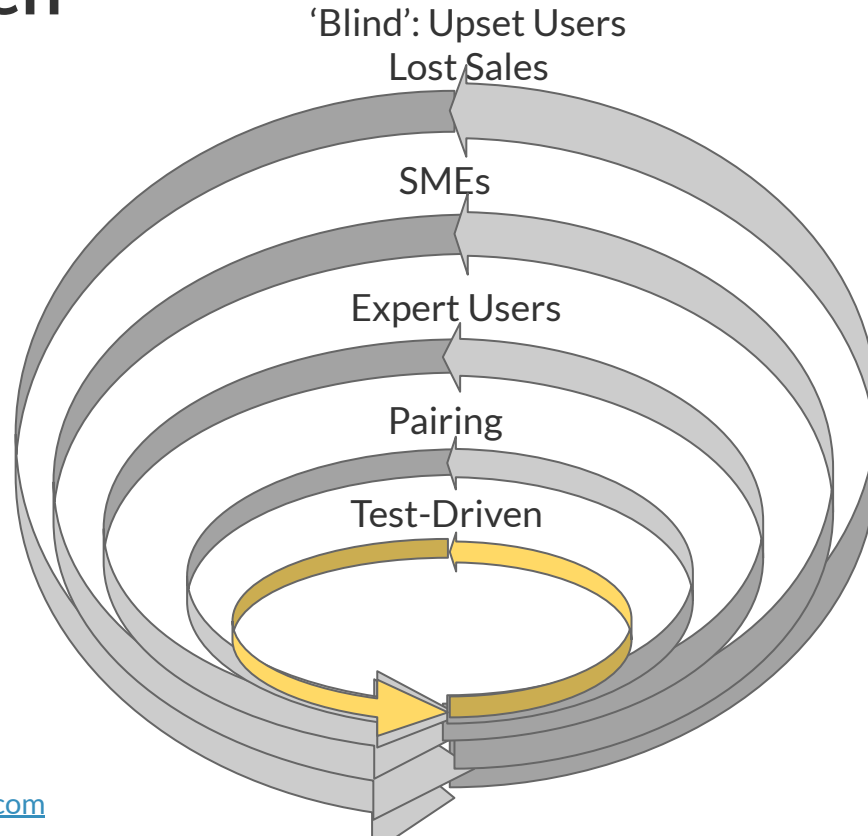
# Relevance Feedback Tornado



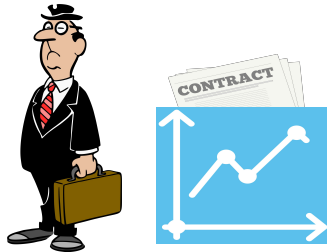


# Test-driven

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# Hypothesis-Driven Development



Contracts with the business



User needs and expectations

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Kinda Crazy  
Idea A

Kinda Crazy  
Idea B

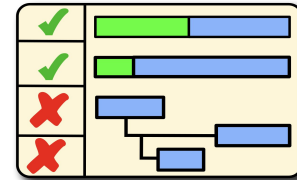
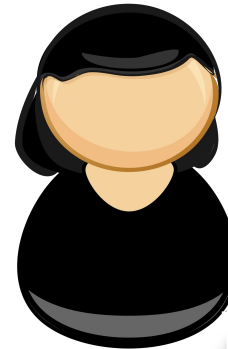
Kinda Crazy  
Idea C

Kinda Crazy  
Idea Dmnet

Mostly Crazy  
Idea E

Really Crazy  
Idea F

Maybe this  
crazy idea  
will work...



Which solution is best?

# Hypothesis-Driven Development

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## 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

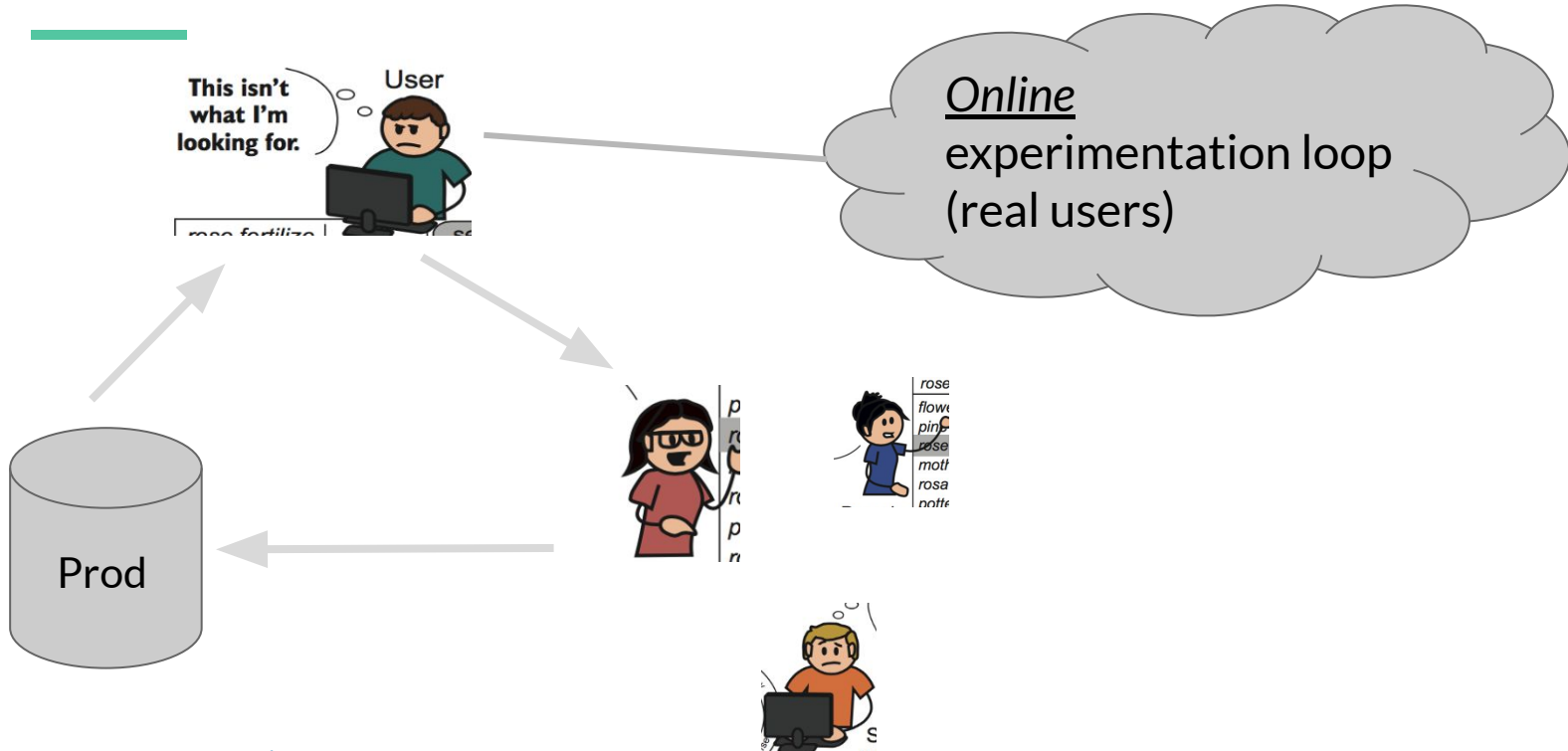
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## Example:

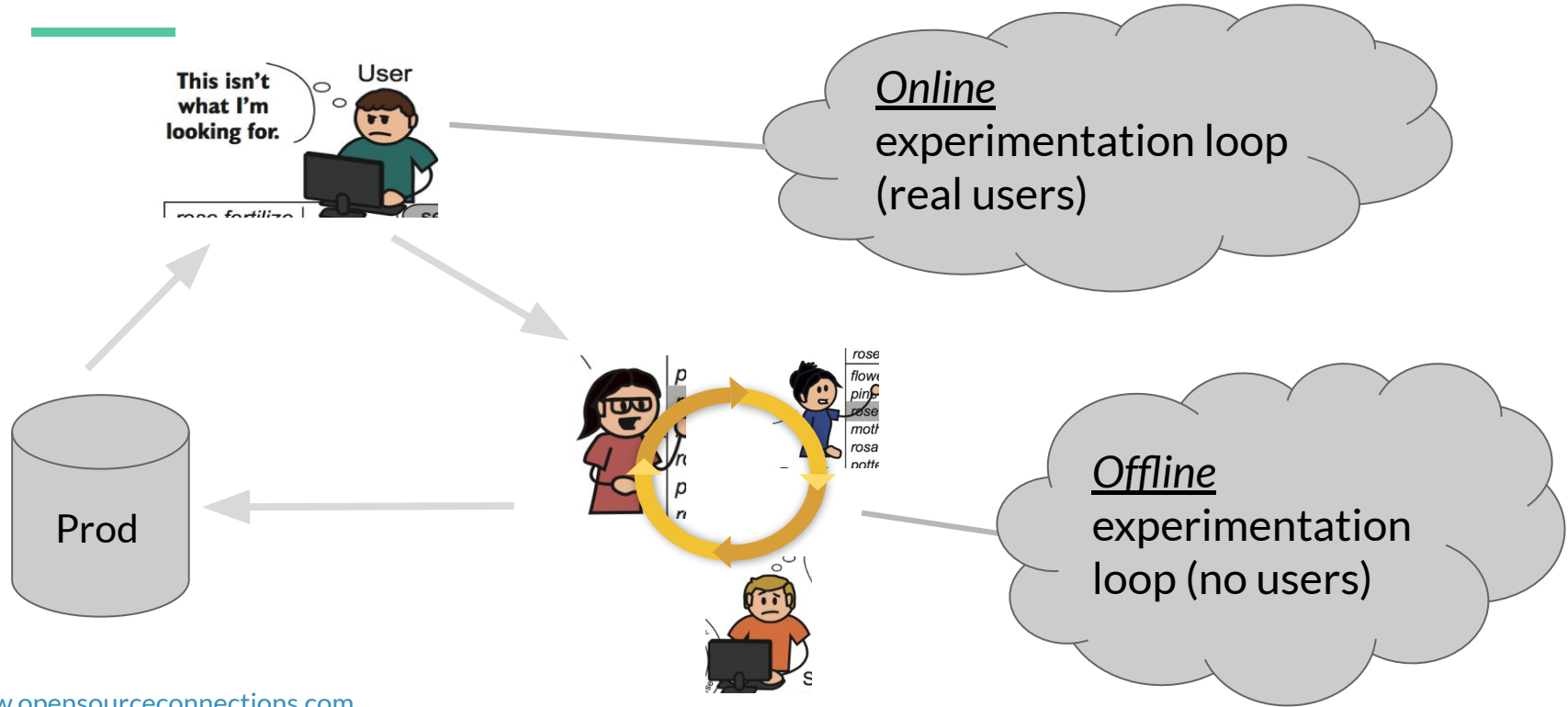
We believe that adding British spelling as synonyms will result in **fewer zero results found**.

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

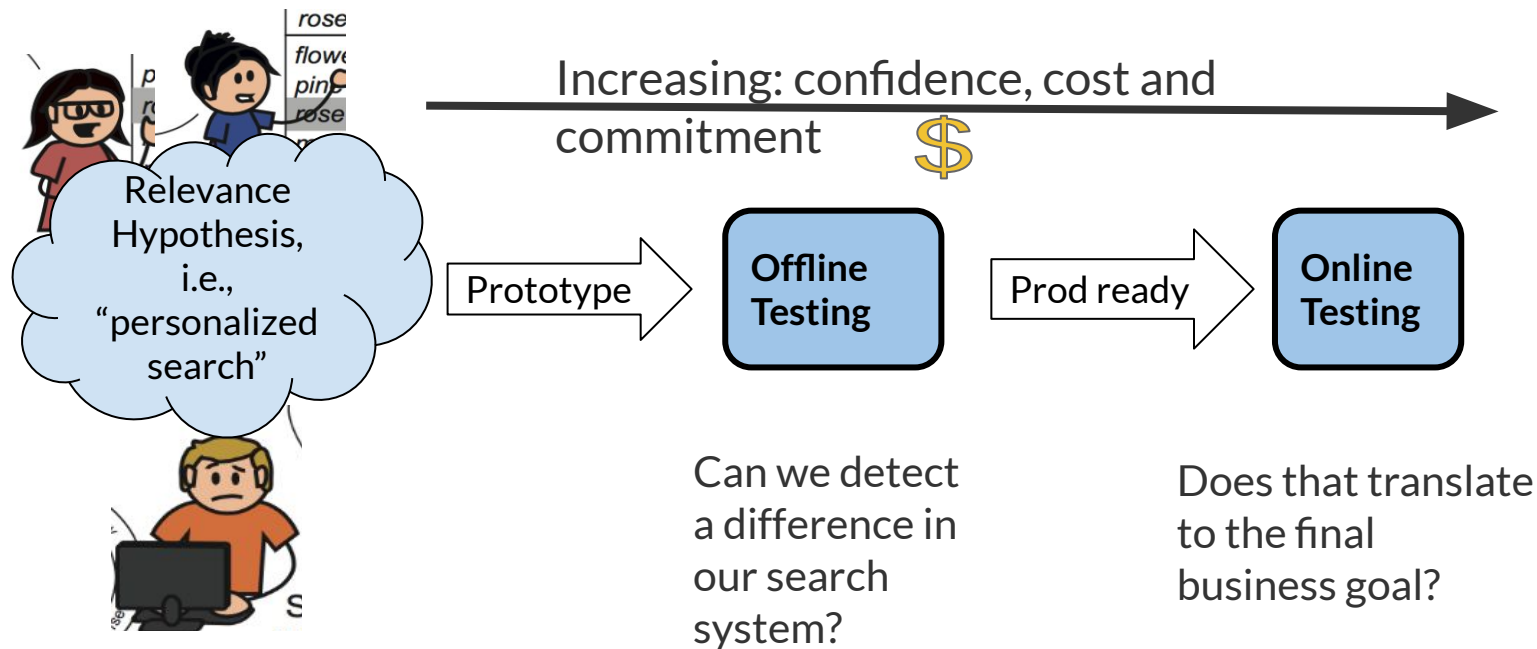
# Deploy then test



# Try before deploy

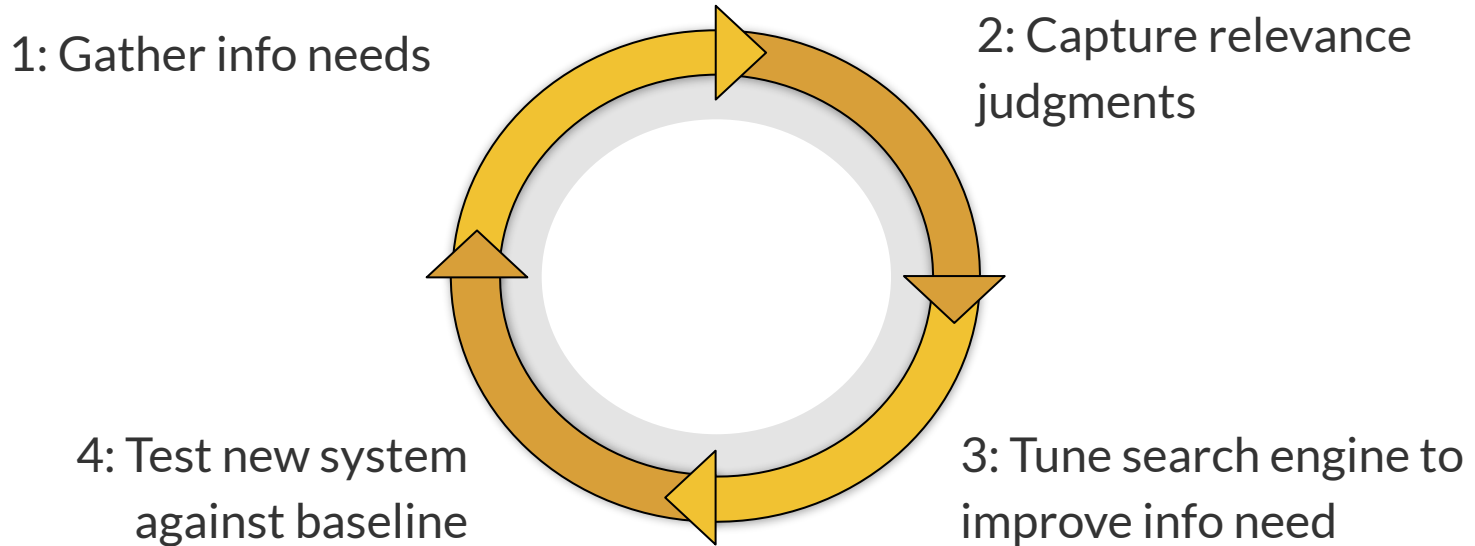


# Hypothesis-Driven Development Process



# Offline experimentation cycle

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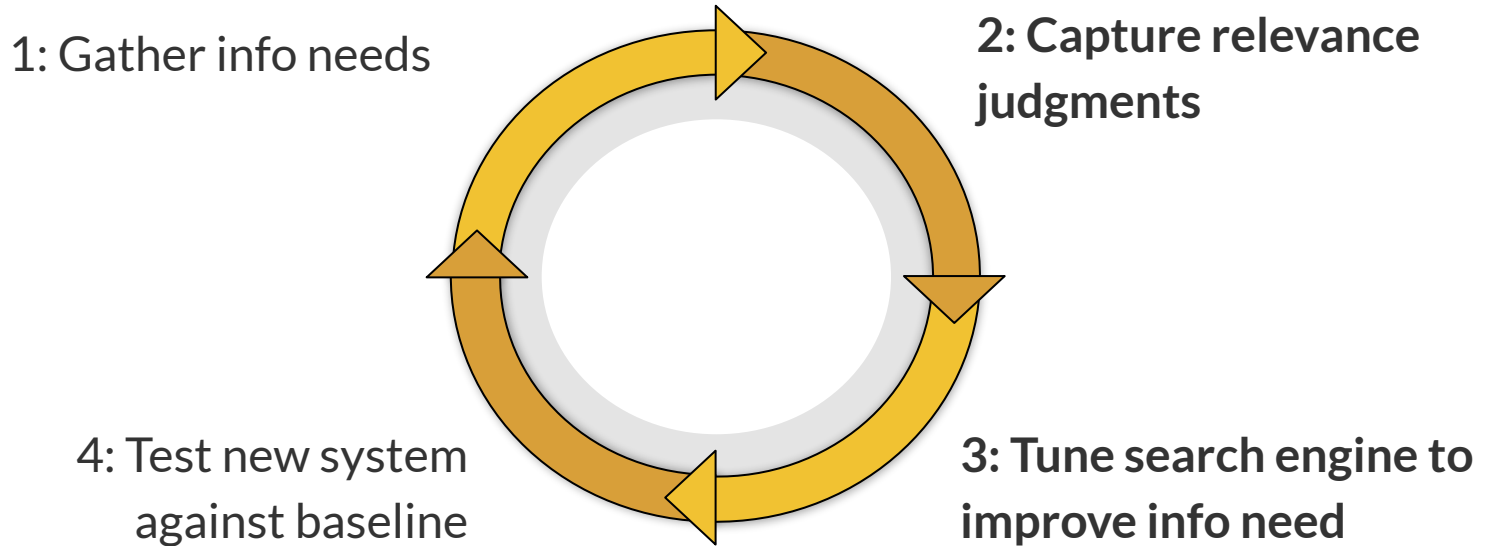


# Quepid demo



# Quepid demo

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# Towards systematic search quality improvement

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## Foundations

- Accountability
- Experimentation
- Analytics and tracking
- Team structure and processes

# Thank you.



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