

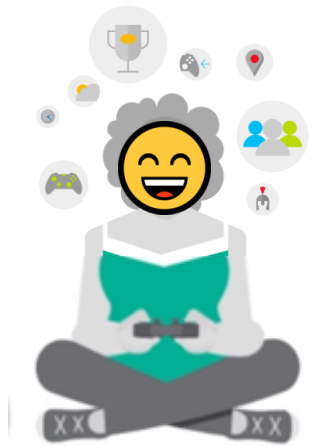
What is Personalizer ?

Rodrigo Kumpera

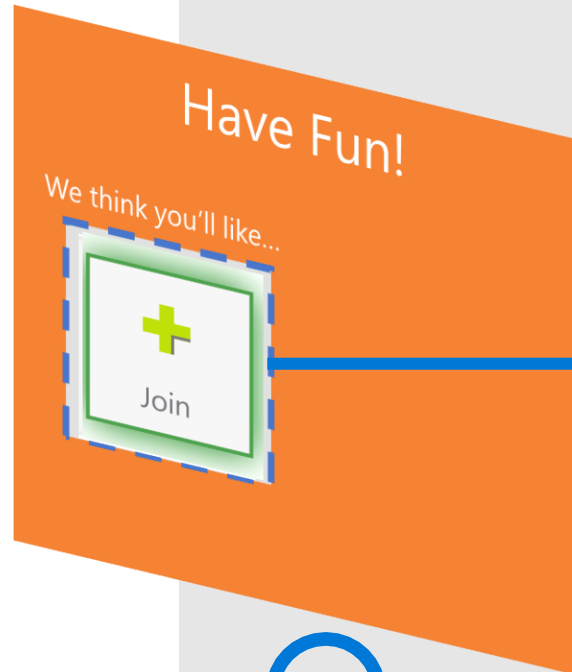
rokumper@Microsoft.com

@kumpera

Example..

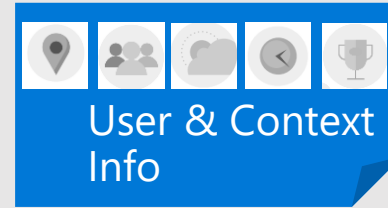


Your Users



Your business logic
observing & evaluating
user behavior

Your App



Action 1 info



Action 2 Info



Action 3 Info



Rank(..)

Reward(r)

Reward Score





Show me some code

Rank(..)

User& Context info

```
user = [{'age': 20}]
actions = [
    models.RankableAction(
        id = 'politics',
        features = [{'topic': 'politics'}]),
    models.RankableAction(
        id = 'sports',
        features = [{'topic': 'sports'}])]

request = models.RankRequest(
    context_features=user,
    actions=actions
)

response=client.rank(request)
```

Actions

Rank it!

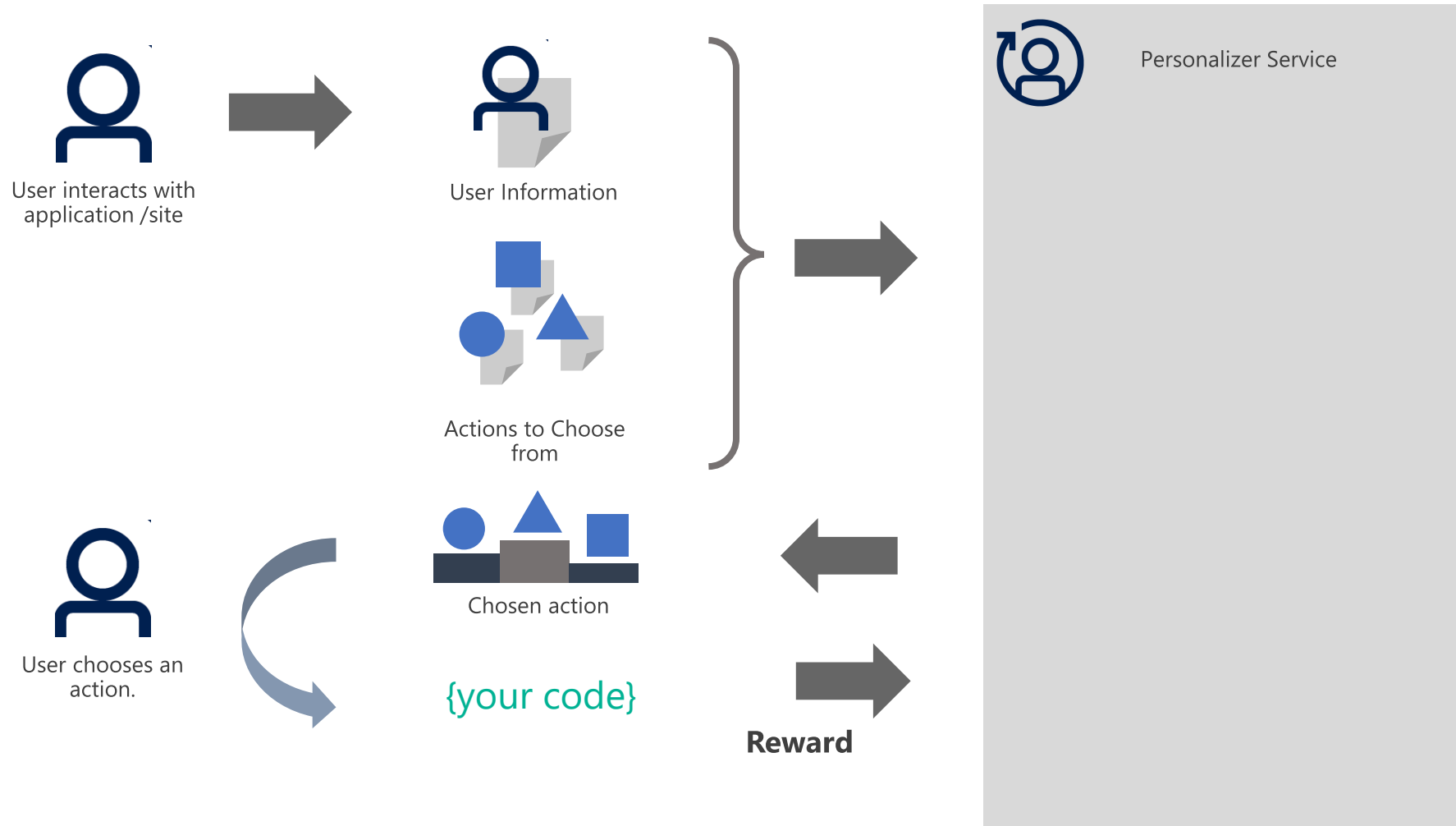
Now, the reward

```
reward = 0.3  
client.events.reward(event_id=event_id, value=reward)
```

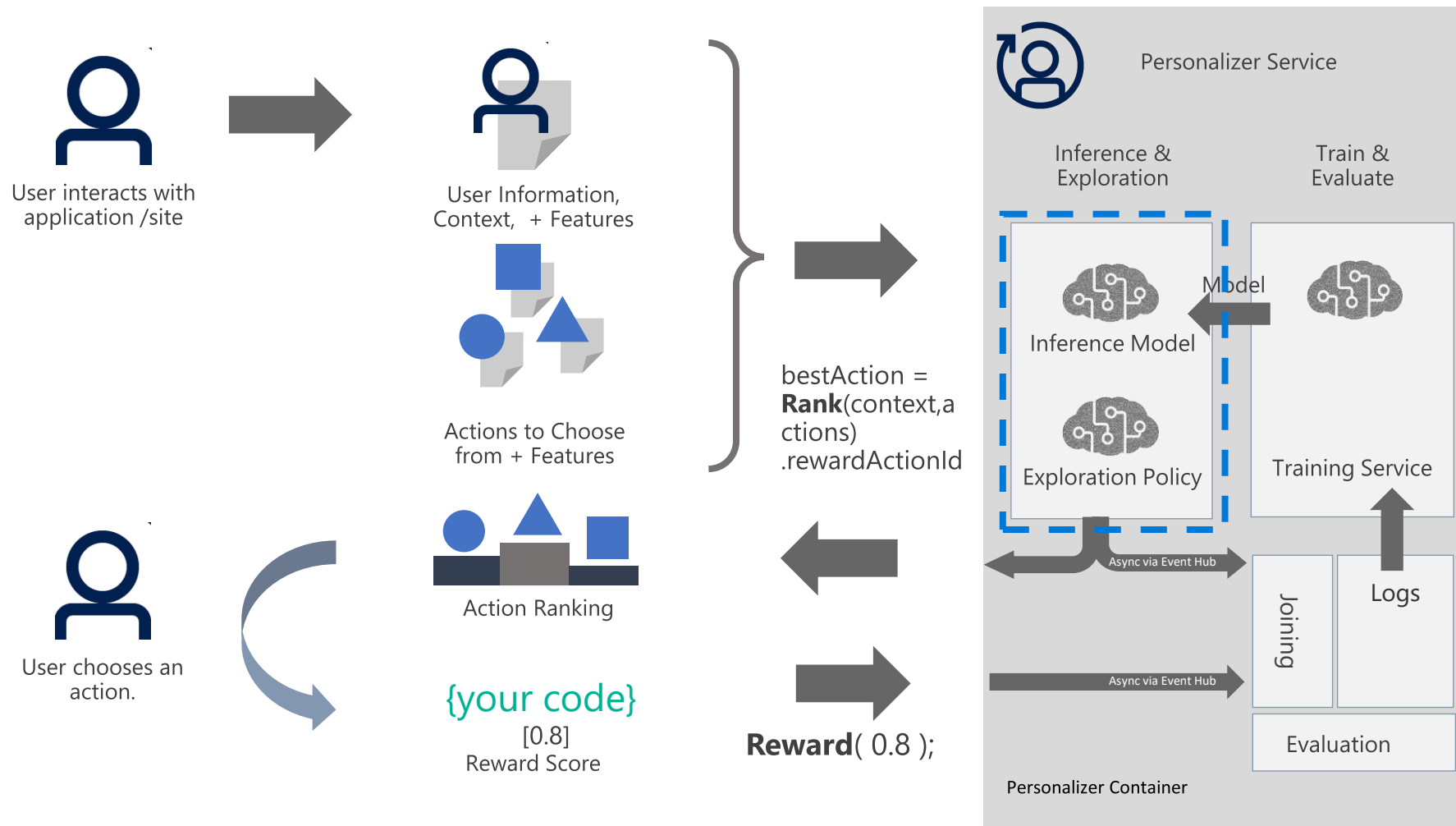


Yes, that's it.

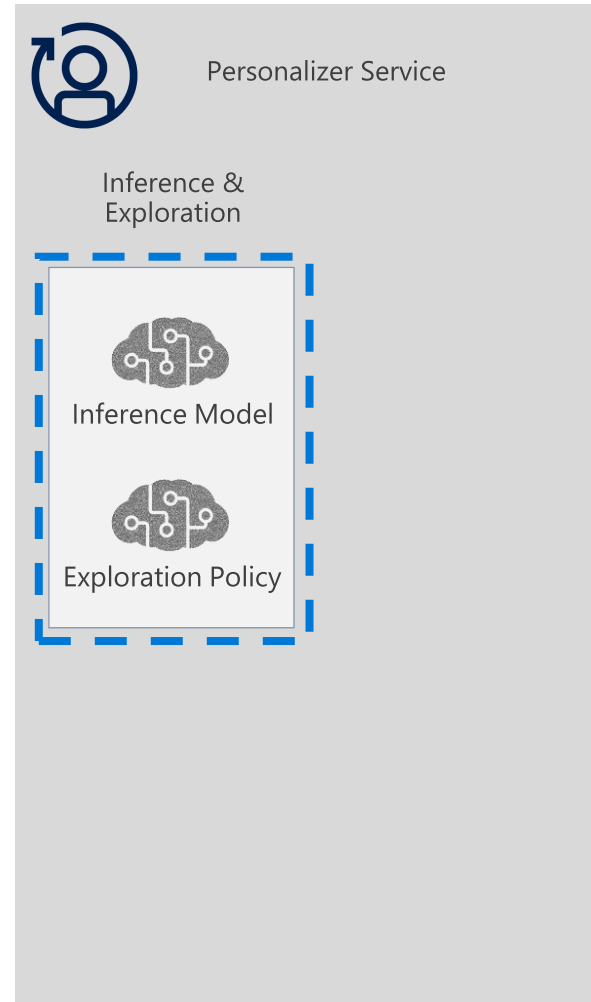
How does it look inside?



It's a complicated box...



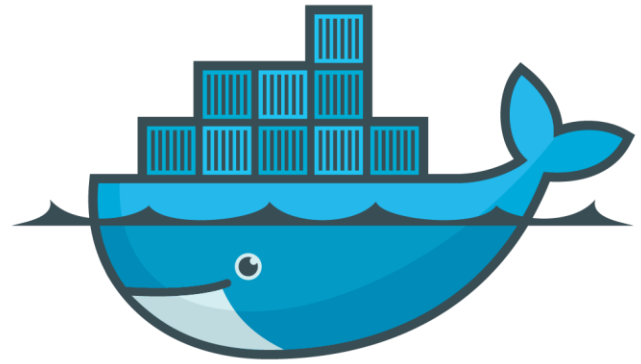
The brains



www.vowpalwabbit.org



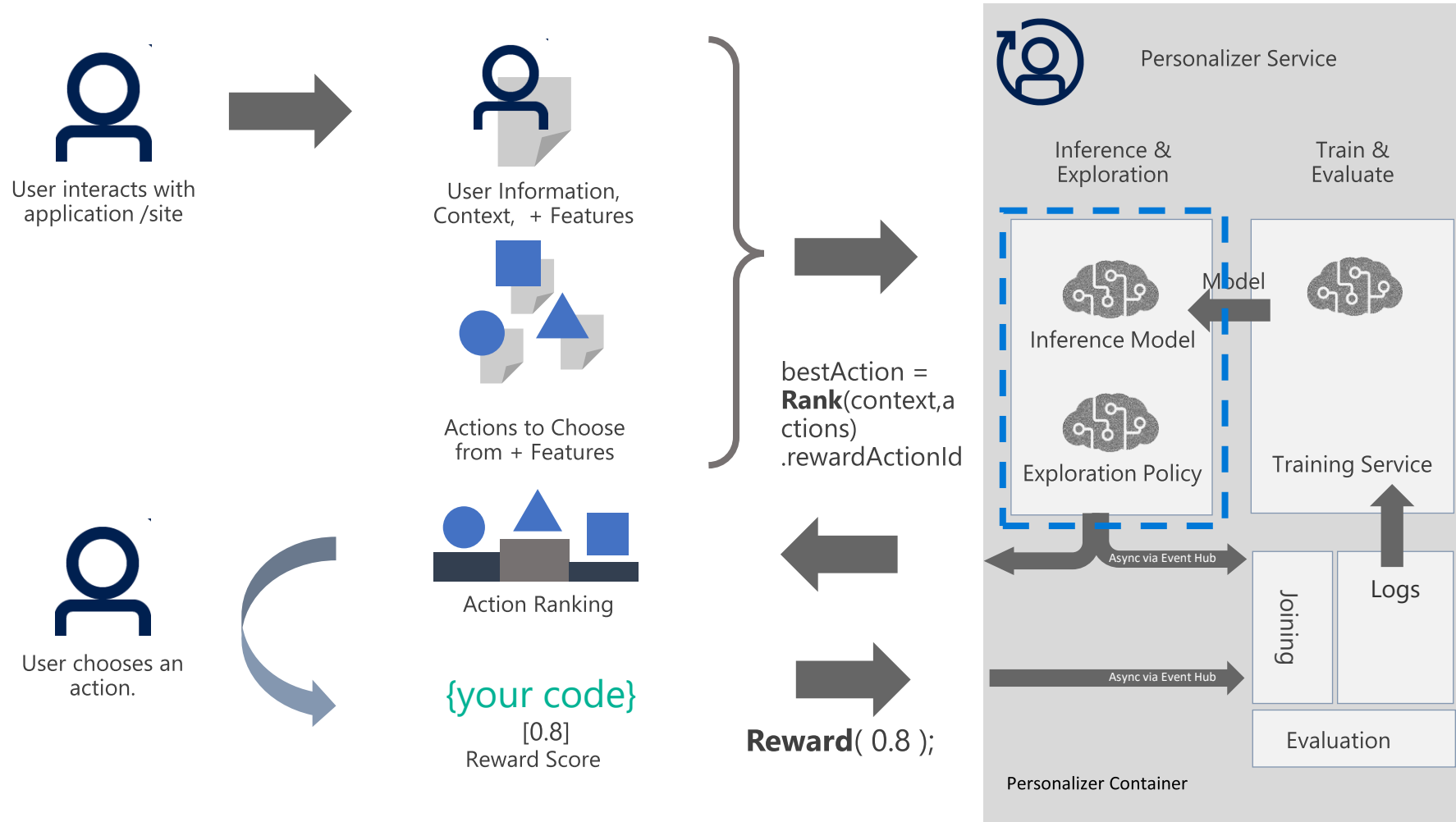
VOWPAL WABBIT



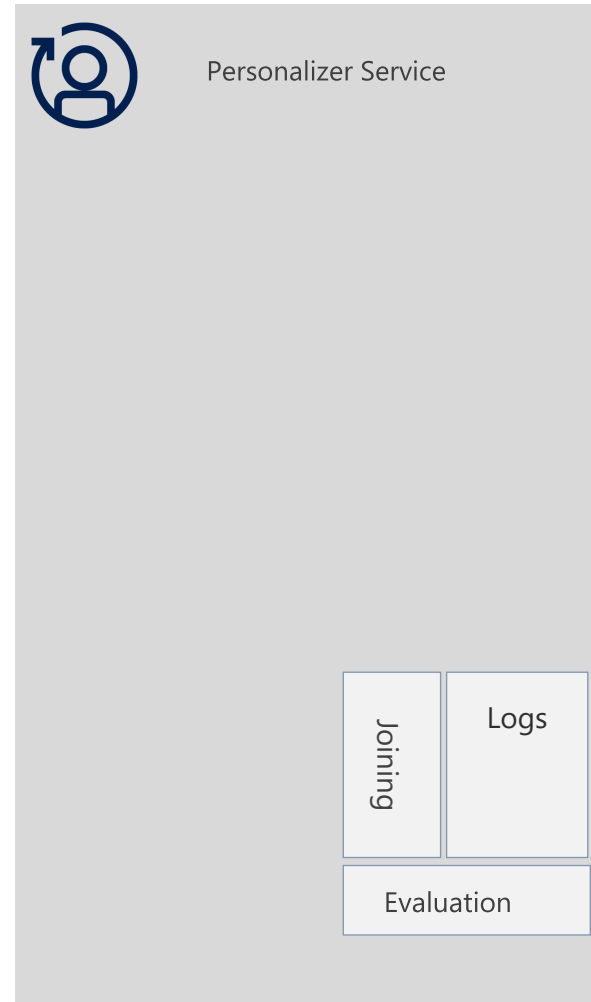
docker

Http service
wrapped in a
container

Logs & Joining

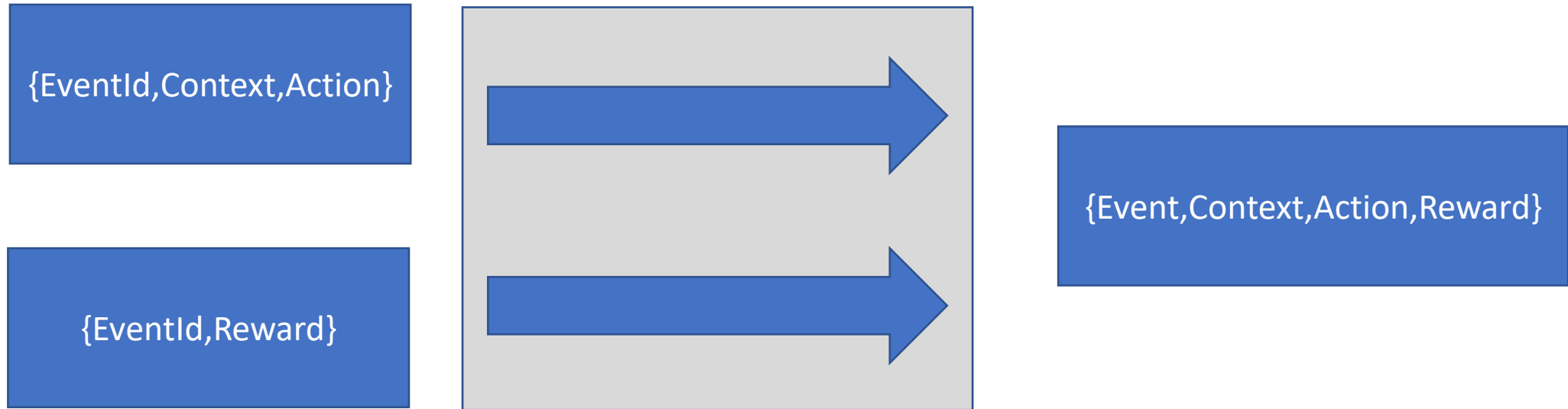


Logs & Joining

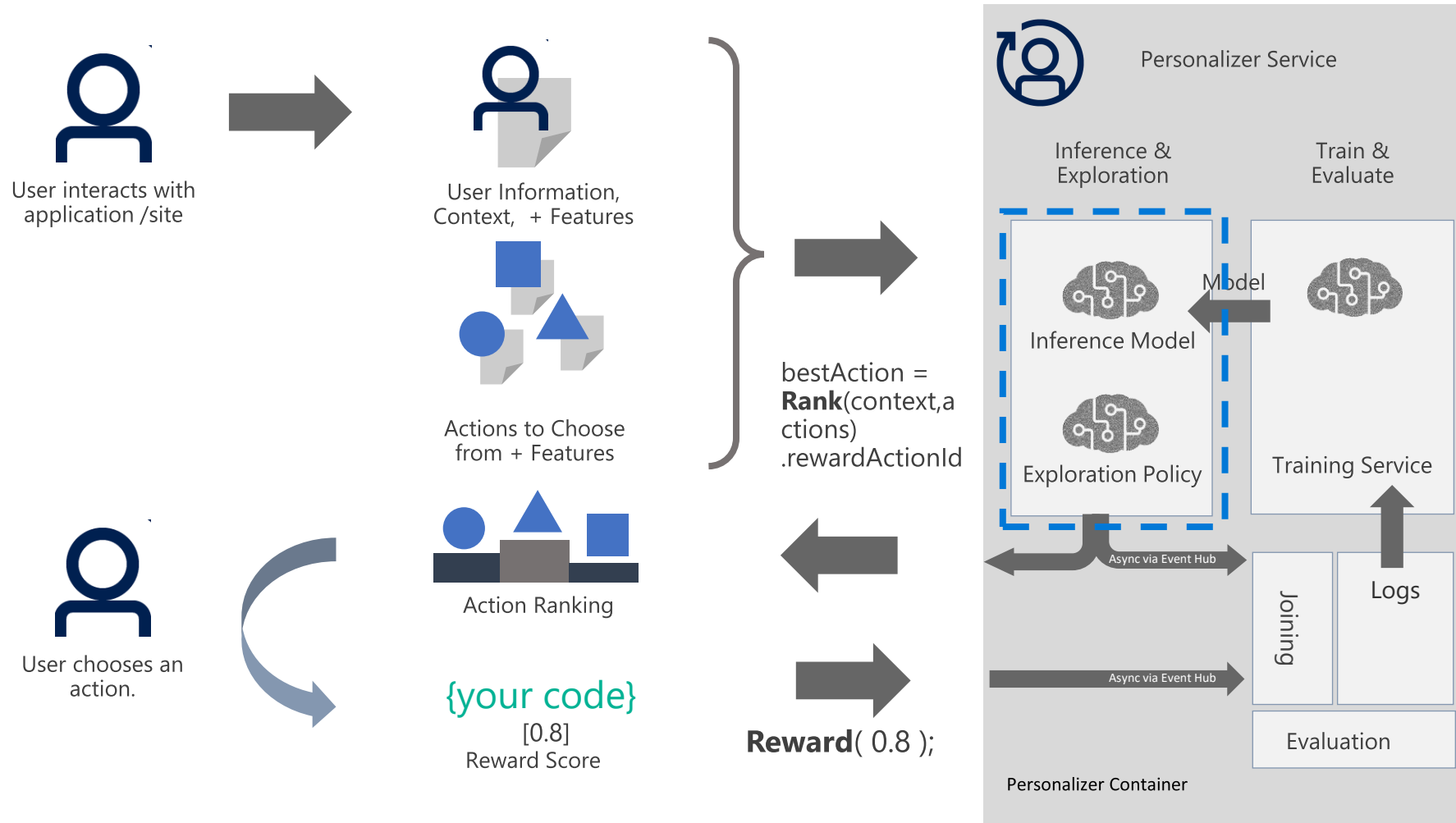


Logs & Joining

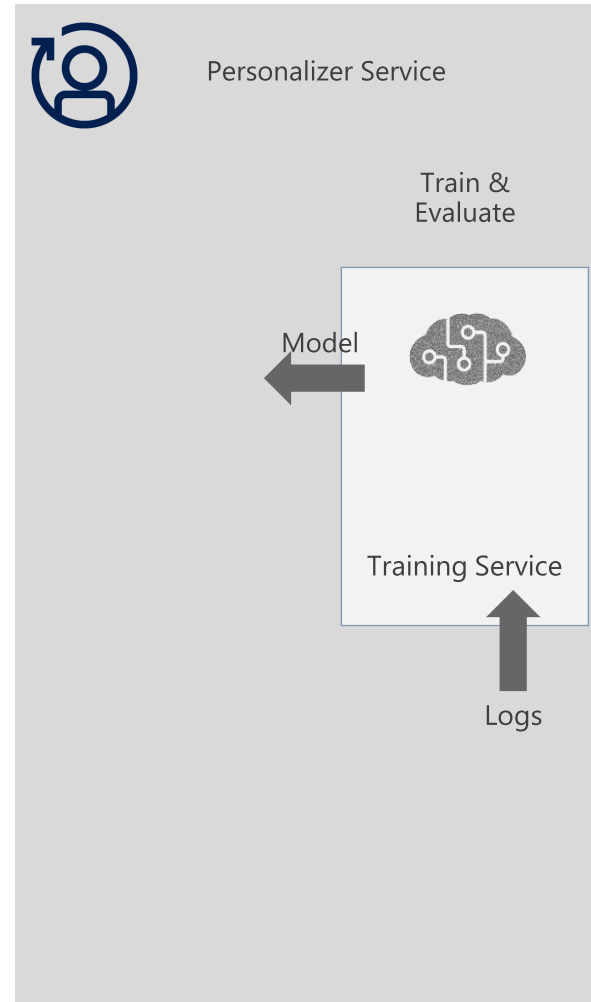
Joiner



Trainer



Trainer



Azure Portal

edjez-build-demo-eu - Settings

Cognitive Services

Search (Ctrl+J)

Save Discard Refresh

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

RESOURCE MANAGEMENT

Settings

Model and Policy

Evaluations

Keys

Quick start

Pricing tier

Billing By Subscription

Properties

Locks

Export template

Monitoring

Alerts

Metrics

Diagnostic settings

Logs

Support + troubleshooting

Rewards

[Read more about setting rewards.](#)

Rewards are sent by your application after a Personalization event to train the Personalization model event.

Reward wait time ⓘ

DaysHoursMinutesSeconds

00100

Default reward ⓘ

0

Reward aggregation ⓘ

Earliest

Exploration

[Reads more about choosing exploration proportion.](#)

Personalization is able to discover new patterns and adapt to user behavior changes over time by exploring alternatives.

% of Rank calls to use for exploration

20

Model update frequency

How often should the model be updated?

DaysHoursMinutesSeconds

0020

Data retention

Logs available from 5/7/2019-5/7/2019

How long should log date be retained? (days)

200

Search (Ctrl+J)

«

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

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Quick start

Pricing tier

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Support + troubleshooting

Evaluation results - Features

My Evaluation

Start date

3/2/2019

End date

3/12/2019

Feature effectiveness (high to low)

v:videoLength

v:entities/celebrity

user:videoPreviouslyWatched

m:MobileBattery

t:timeOfDay

h:VideoPublishedYear

ua:BrowserType

v:videoIndexer/sentiment

h:mostViewedByUserType

t:dayOfWeek

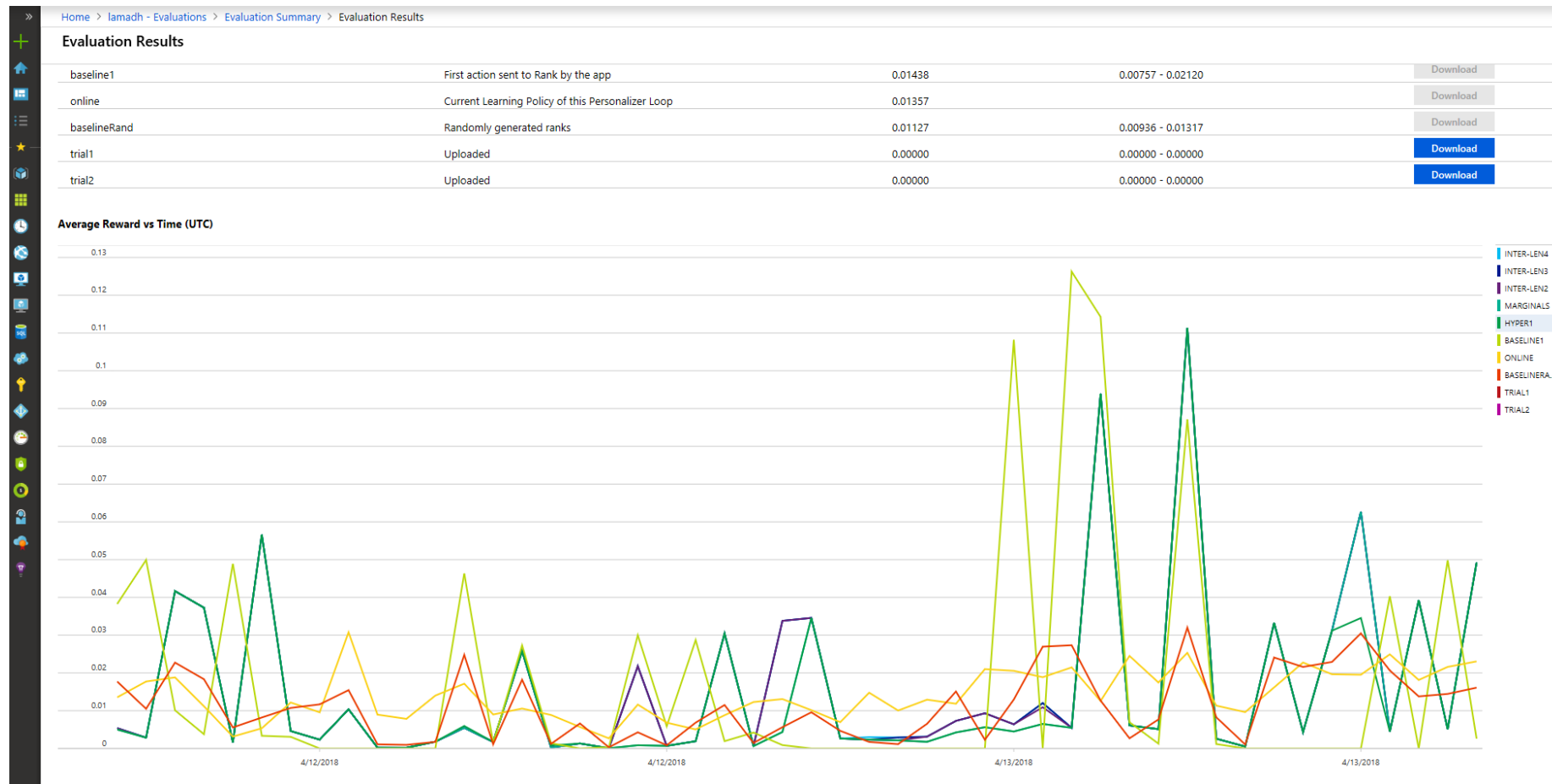
v:resolution4K


t:month

Read our [Responsible use guidelines](#) to understand the impact of using different features when personalizing experiences.

[Learn more about how Personalizer works with features.](#)

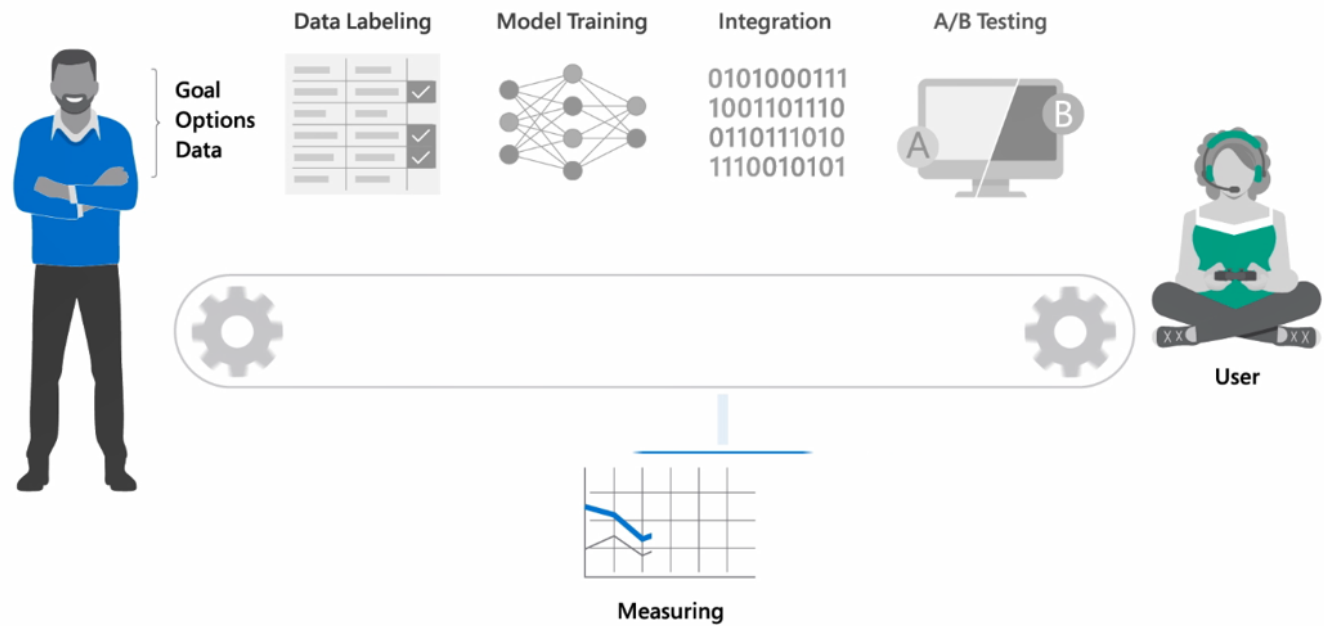
Model optimization





Top signs that you have a
Reinforcement Learning
Problem

Hard to collect,
measure or
label data



Need Right Signal for Right Answer



Is

interesting to Rodrigo



?

Training data doesn't generalize

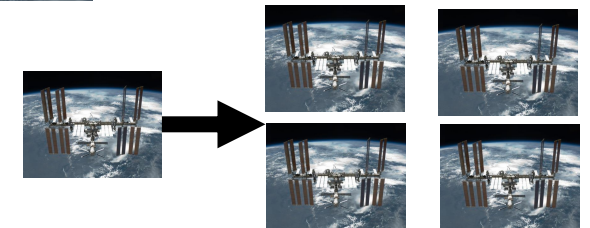
What is the probability of click on a food article



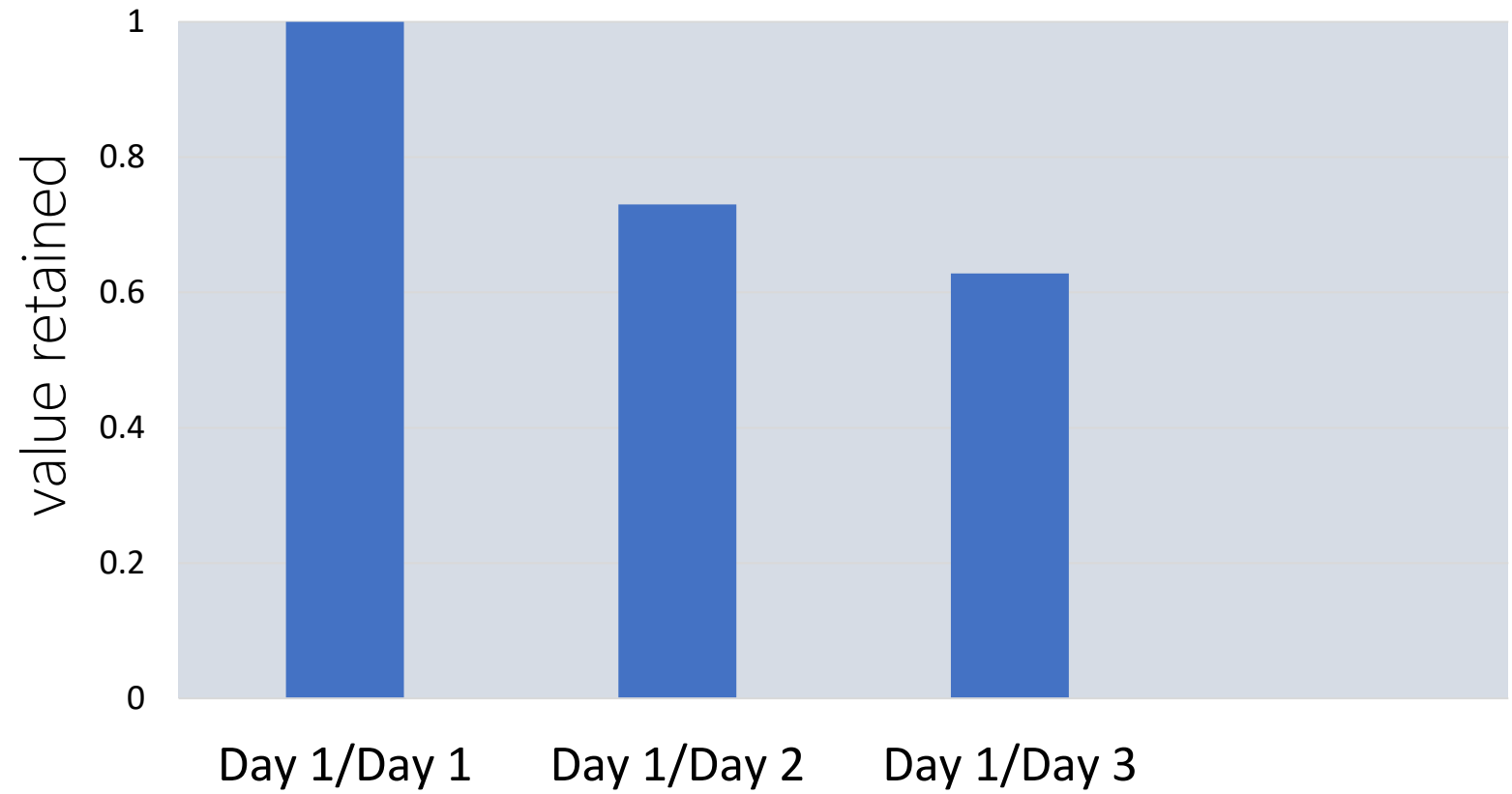
If you only display a space article?



We must avoid "self-fulfilling prophecy"



Model performance degrades fast



The world changes!

Questions?

Thank you!

Azure Portal

<http://aka.ms/personalizer>

Feedback in UserVoice

<http://aka.ms/personalizer-uservice>

Research Tutorial

<http://hunch.net/~rwil>

ML underpinning: Vowpal Wabbit

ML innovations: Conditional contextual bandits