

What is Personalizer ?

Rodrigo Kumpera

rokumper@Microsoft.com

[@kumpera](#)

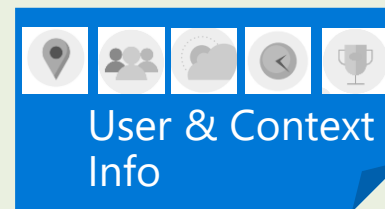
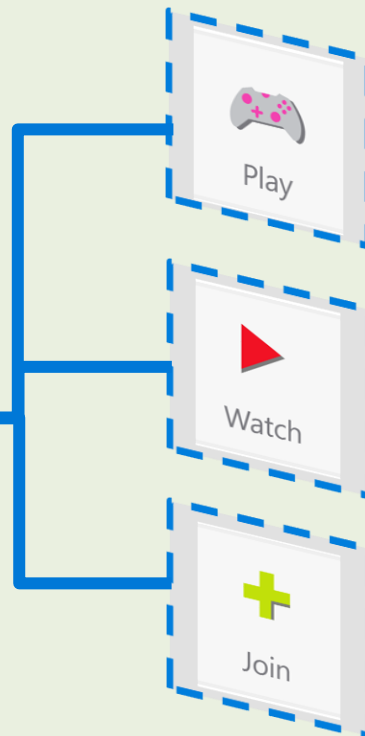
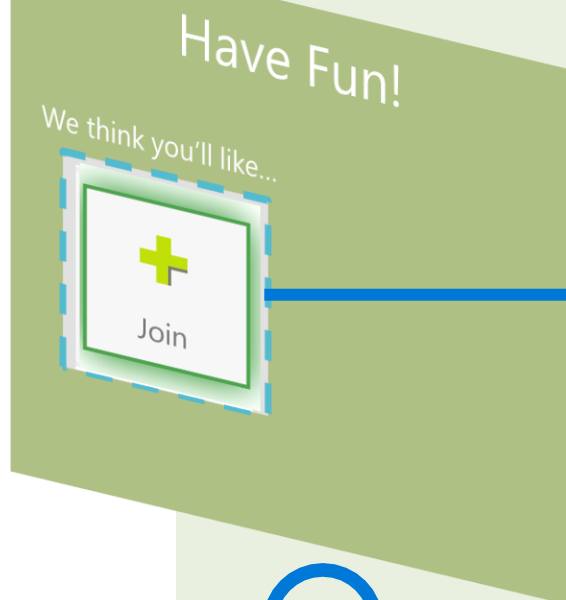


Example



Your Users

Your App



Action 1 info



Action 2 Info



Action 3 Info

Rank(..)



Personalizer Service

Reward(r)



Your business logic
observing & evaluating
user behavior

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!

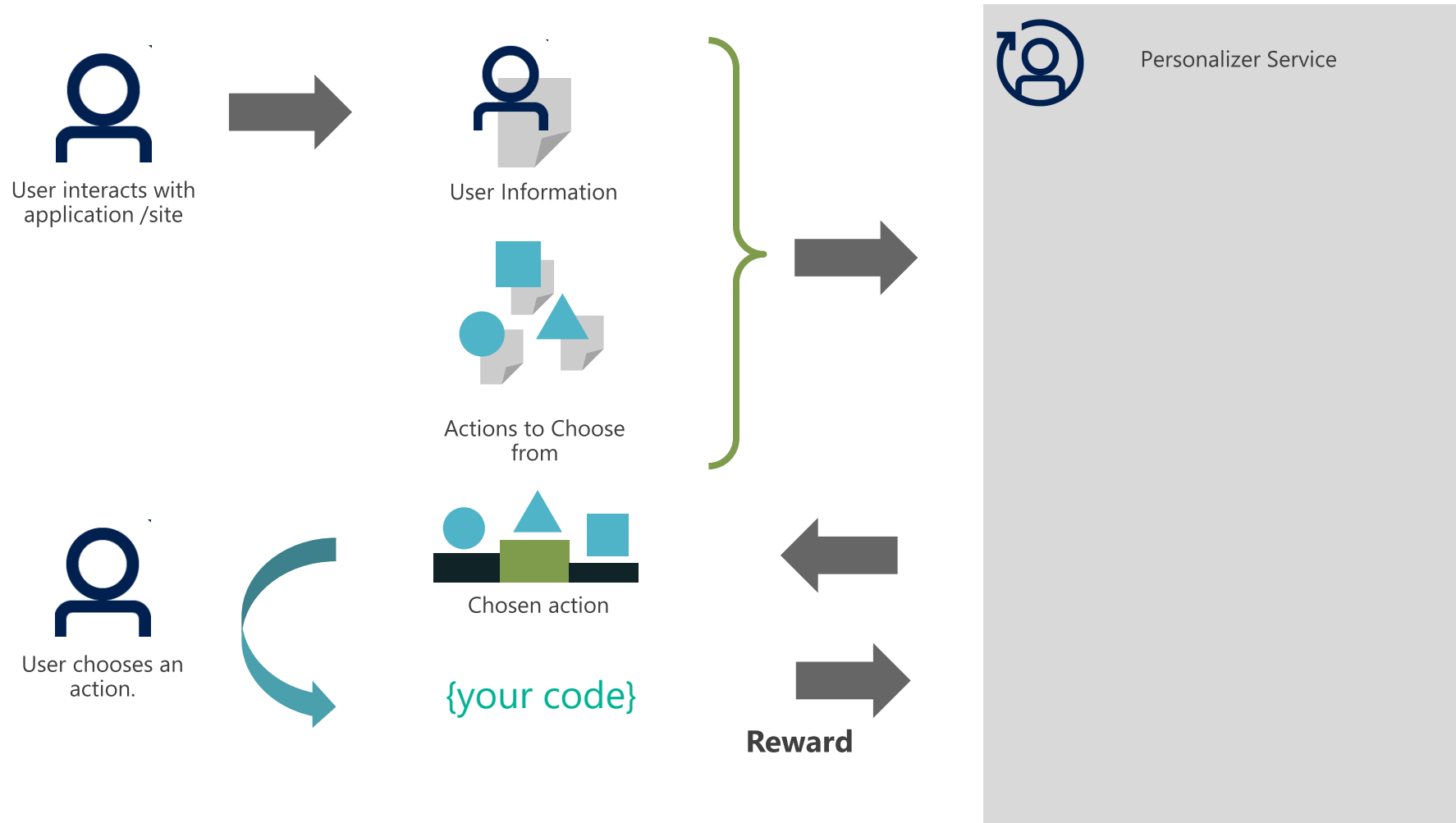
Now, the reward

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

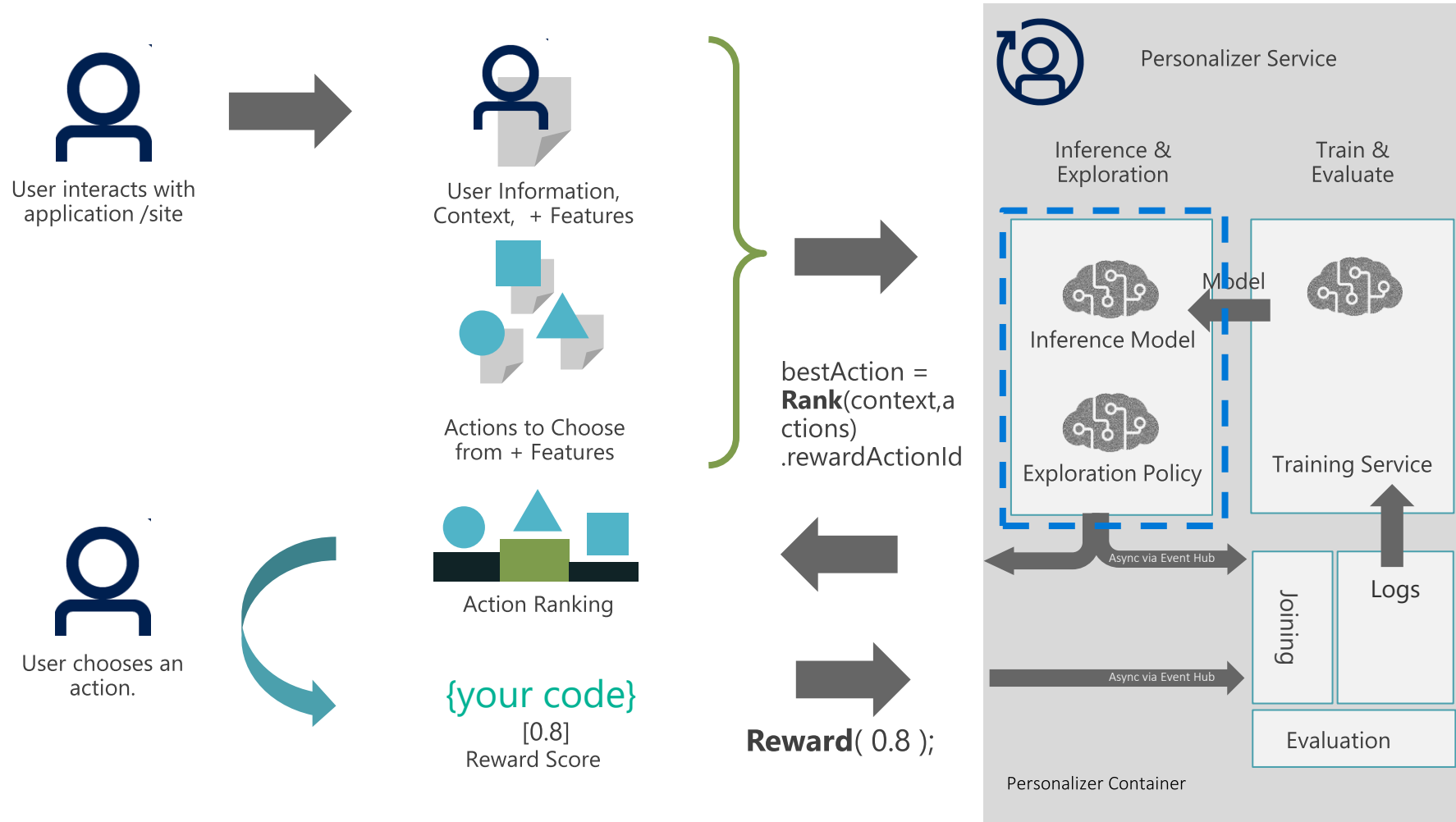


Yes, that's it.

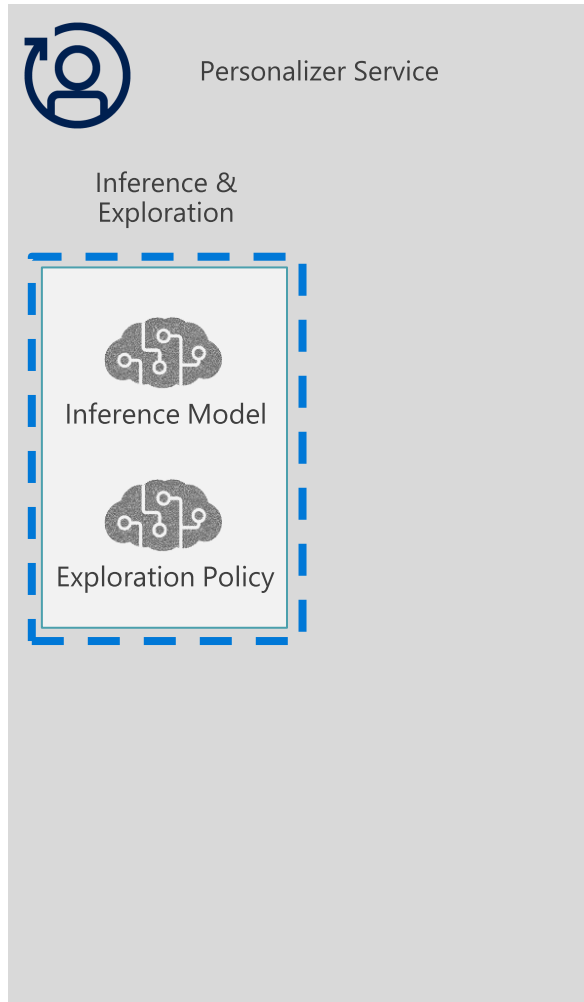
How does it look inside?



It's a complicated box...



The brains





VOWPAL WABBIT

www.vowpalwabbit.org

Vowpal Wabbit



OPEN SOURCE LIBRARY

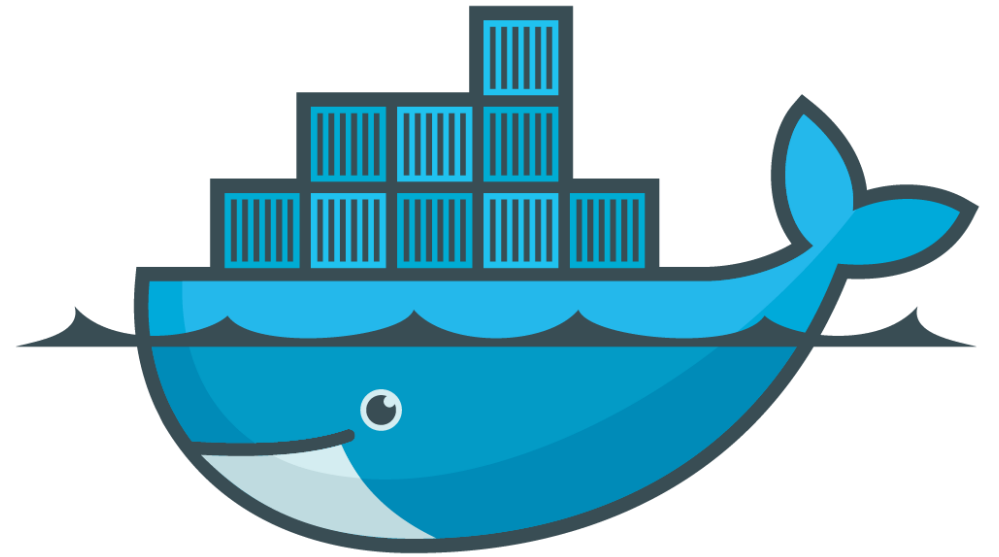


ONLINE, ACTIVE OR INTERACTIVE
LEARNING



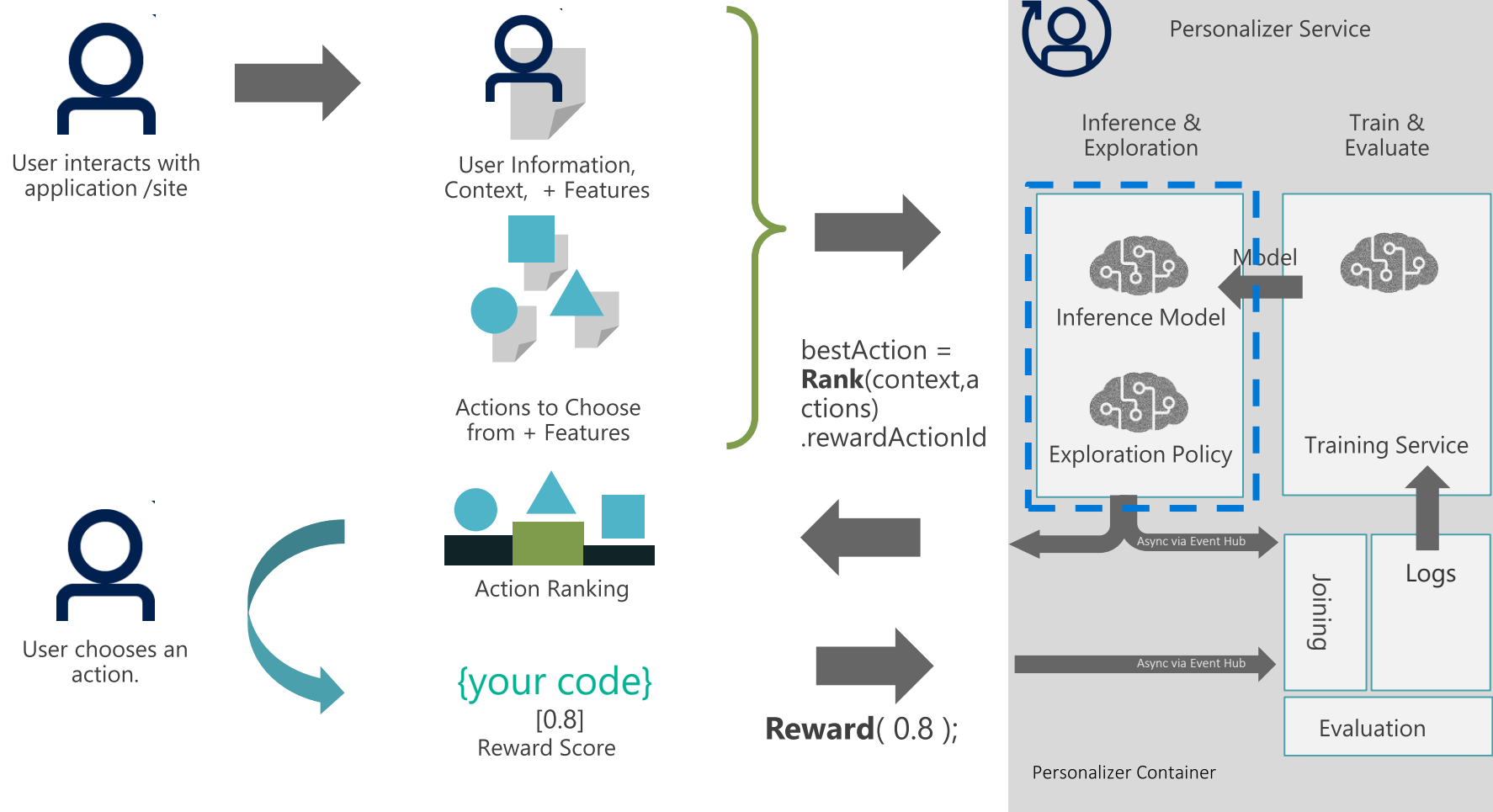
CONTEXTUAL BANDITS,
LEARN2SEARCH, EXTREME
CLASSIFICATION

Http service
wrapped in
a container

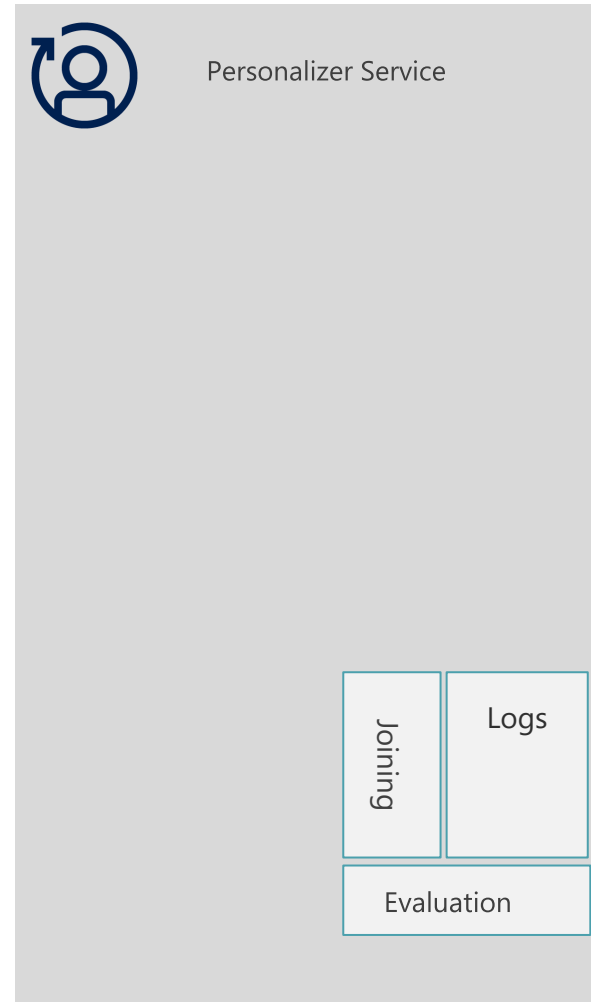


docker

Logs & Joining

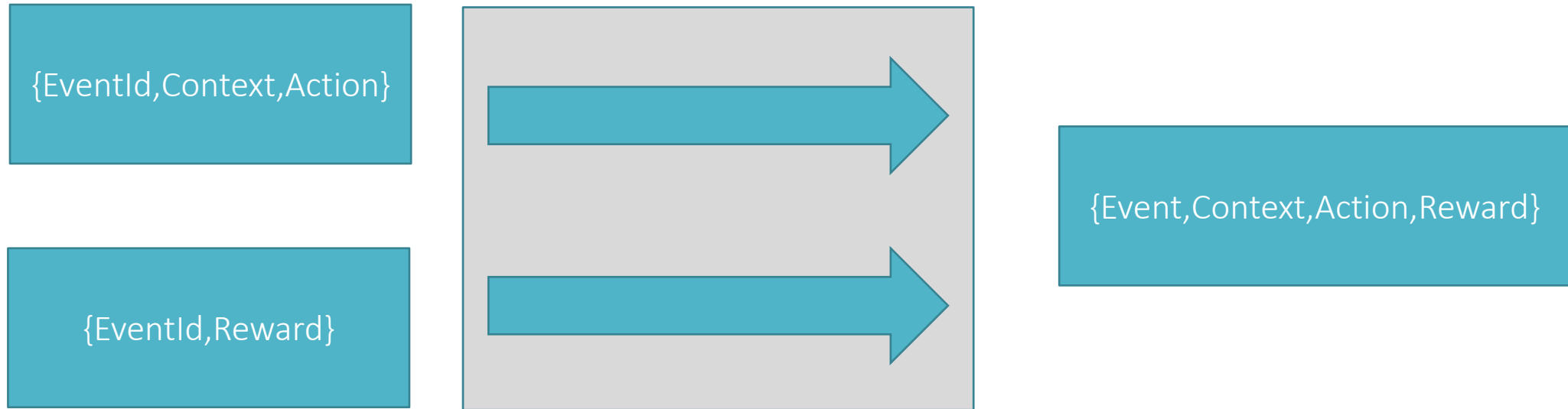


Logs & Joining

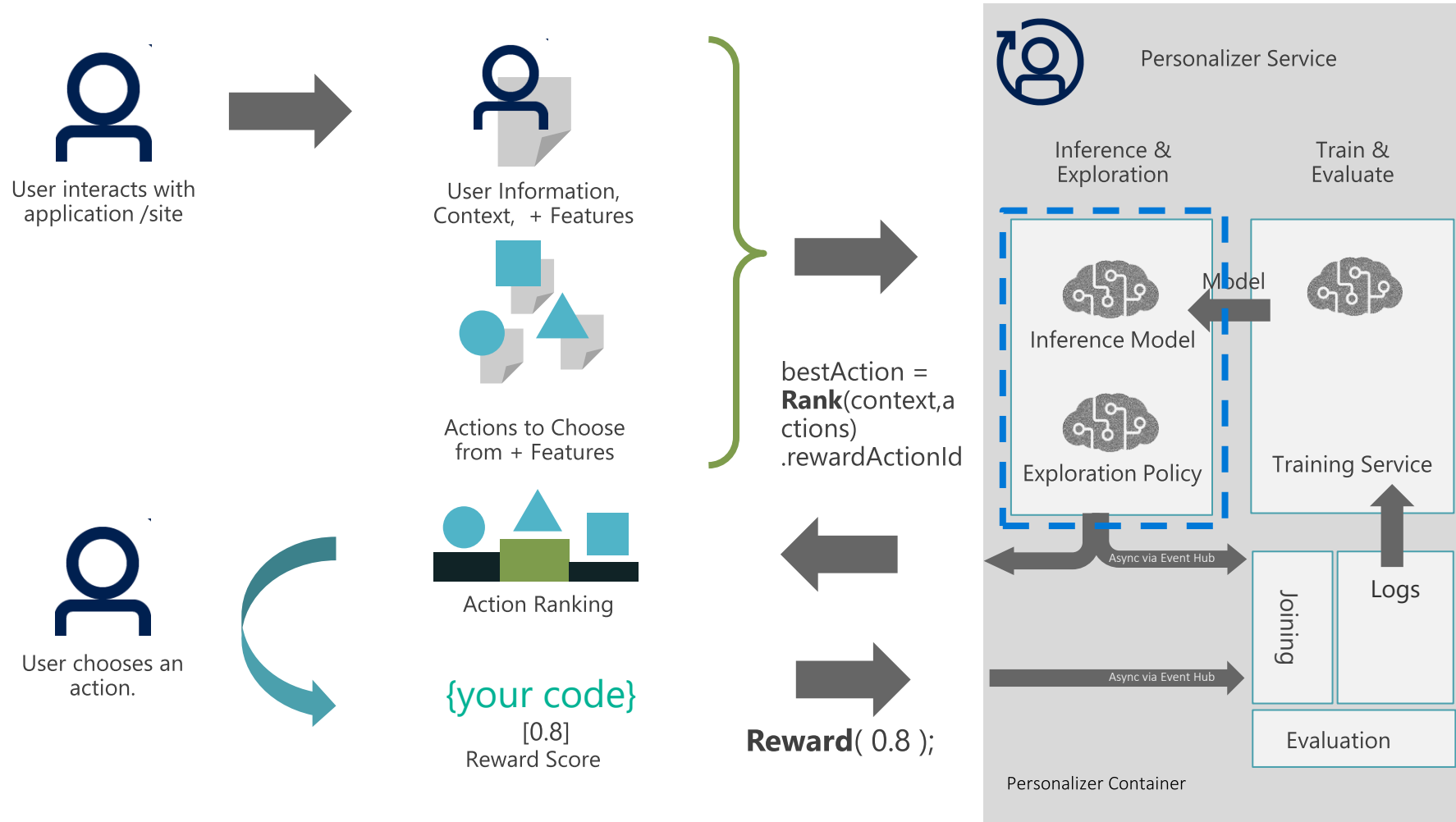


Logs & Joining

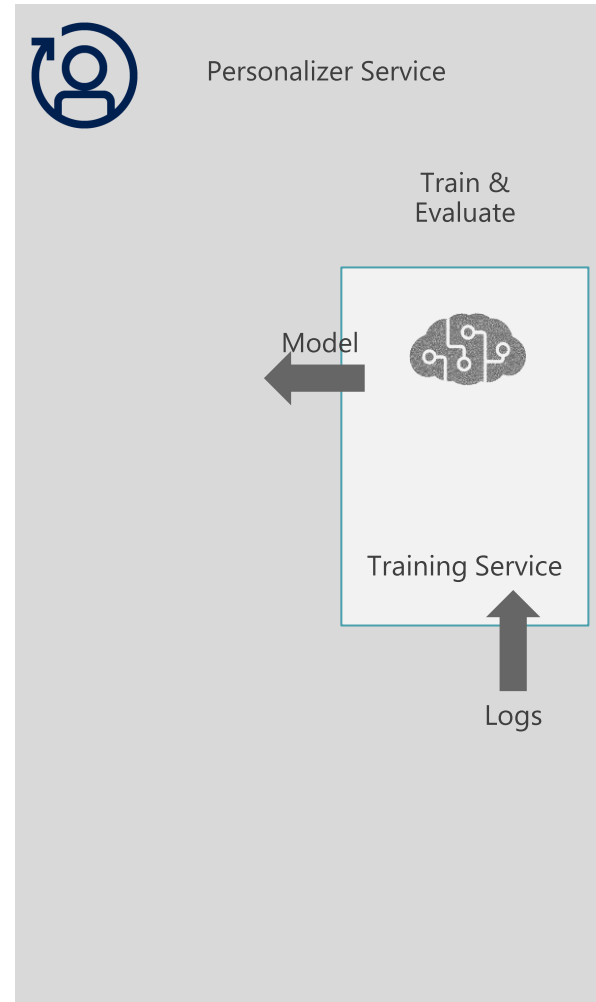
Joiner



Trainer



Trainer



Azure Portal

edjez-build-demo-eu - Settings

Search (Ctrl+F)

Save Discard Refresh

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

| Days | Hours | Minutes | Seconds |
|------|-------|---------|---------|
| 0 | 0 | 10 | 0 |

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?

| Days | Hours | Minutes | Seconds |
|------|-------|---------|---------|
| 0 | 0 | 2 | 0 |

Data retention

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

How long should log data be retained? (days)

200

edjez-build-demo-eu - Settings

Search (Ctrl+F)

Evaluation results - Features

My Evaluation

Start date
3/2/2019

End date
3/12/2019

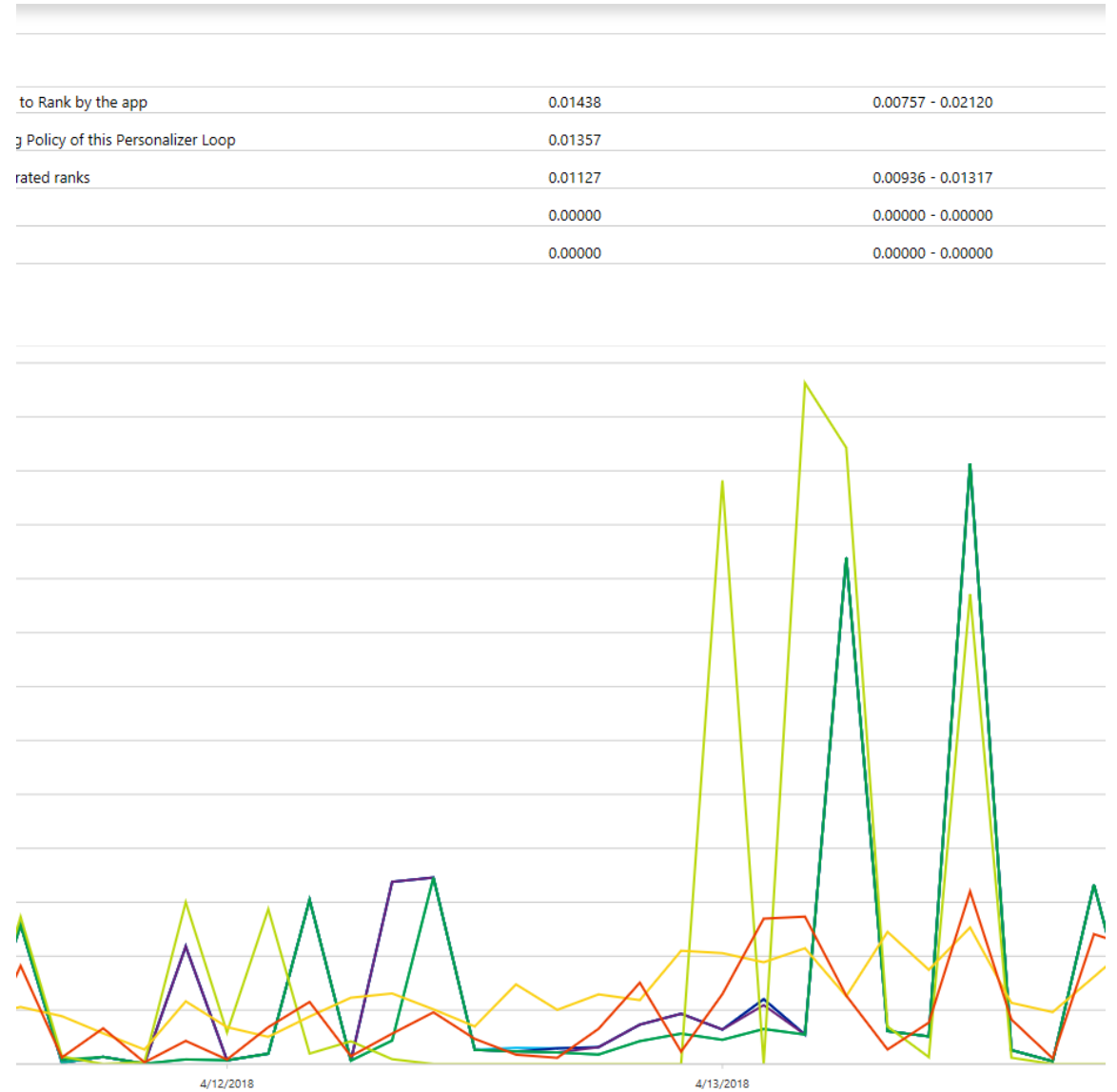
Feature effectiveness (high to low)

| |
|----------------------------|
| vvideoLength |
| ventities/celebrity |
| uservideoPreviouslyWatched |
| mMobileBattery |
| ttimeOfDay |
| hVideoPublishedYear |
| uaBrowserType |
| vvideoindexer/sentiment |
| hmostViewedByUserType |
| tdayOfWeek |
| vresolution4K |
| tmonth |

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

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

Counterfactual evaluation and optimization



Do you have a Bandits problem?



You're picking one choice from many options.



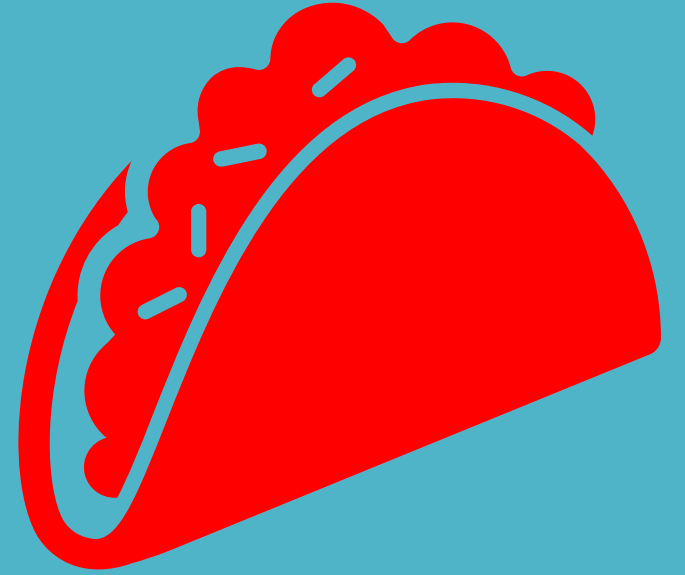
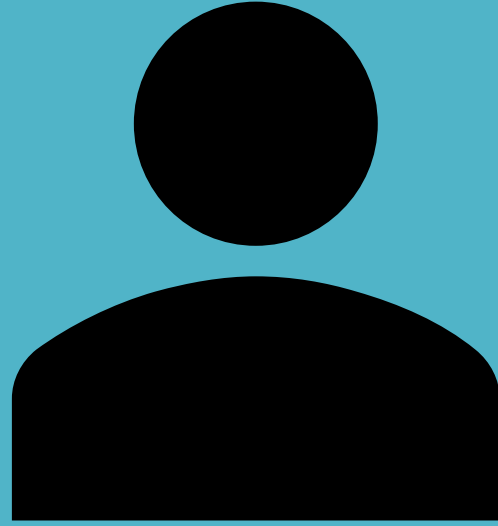
You don't know what would happen if you picked the other options.



Your options change over time.



The world keeps changing around you.

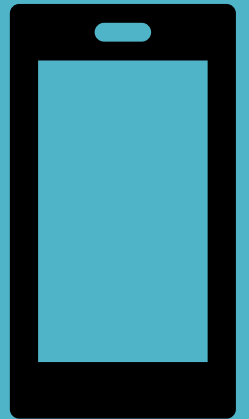
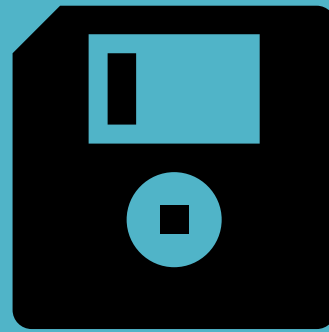


You gave me pizza
You don't know my preference to tacos

The menu changed!



Non stationarity



Questions?

Thank you!

rokumper@Microsoft.com

@kumpera

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,