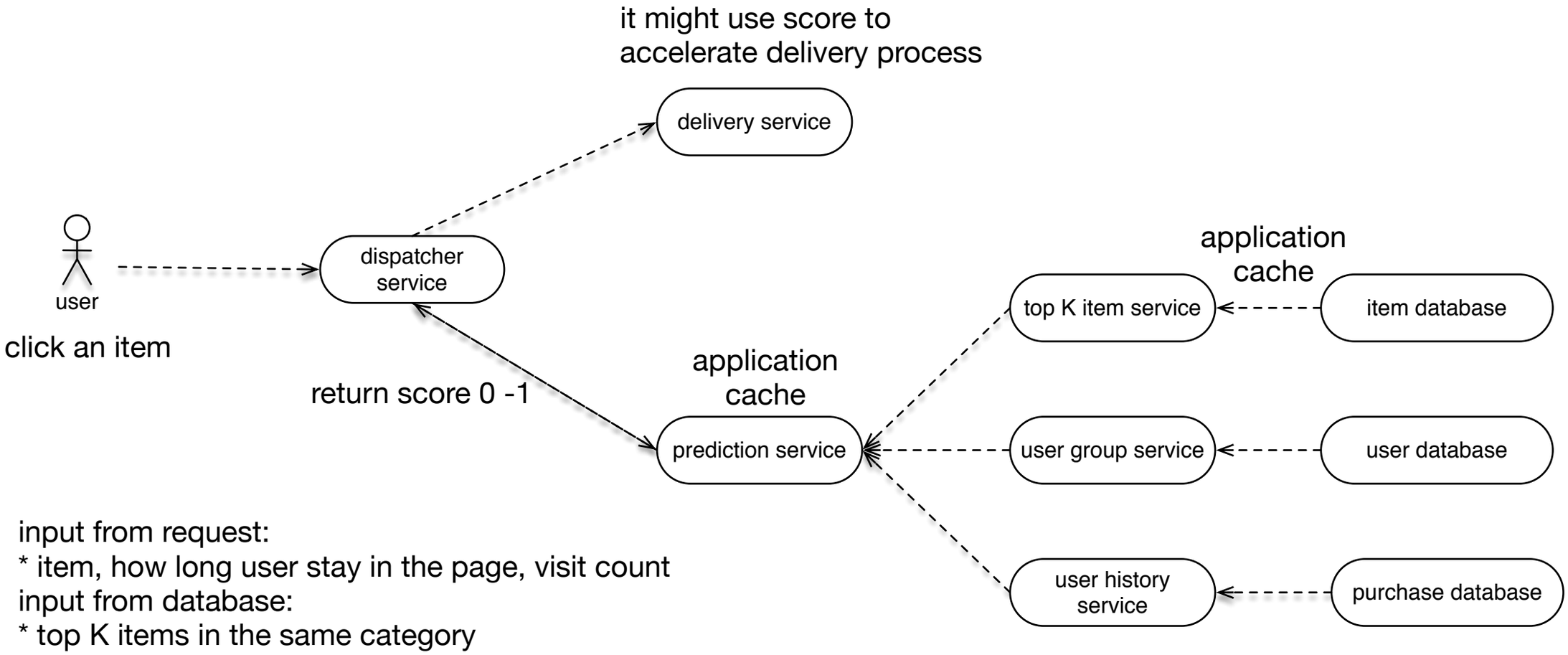
Predict User Purchase



input from request:
* item, how long user stay in the page, visit count
input from database:
* top K items in the same category
* user group,
* user purchase history, user view history

features of prediction data:
1. weak consistency
    1. data in local caches among worker instances is not needed to be consistent
2. no need for persistence and transaction management
3. high availability and read heavy.

application cache:
1. in memory database
2. time-to-live
3. data among many caches is not needed to be consistent

Availability?
* fail-over: master-slave servers
* replication: database

Scalability?
* user and purchase database sharding by user id first character, geographically
* top K service - use MapReduce to do jobs in parallel
* NoSQL

Performance?
* application caching
* database caching at the query level

For read-heavy system and results have to delivered to UI/user,
* client caching - OS or browser
* CDN

How should we use CDN between user and end servers to improve performance?

1. Find the closest CDN by dynamic DNS lookup
2. Send HTTP to master server in that cluster