

WHAT IS CLAIMED IS:

- 1 1. A method comprising:
 - 2 receiving, by a database management computer, from a requestor
 - 3 computer associated with a requestor, a request for interaction event data
 - 4 corresponding to a geographic region, the request comprising a location identifier
 - 5 and a boundary element;
 - 6 determining, by the database management computer, one or more
 - 7 geohashes corresponding to the geographic region based on the location identifier
 - 8 and the boundary element;
 - 9 querying by the database management computer, a geographic
 - 10 resource provider database using the one or more geohashes to determine one or
 - 11 more resource provider identifiers;
 - 12 querying, by the database management computer, a resource provider
 - 13 interaction database using the one or more resource provider identifiers to determine
 - 14 one or more interaction events;
 - 15 retrieving, by the database management computer, from the resource
 - 16 provider interaction database, interaction event data or derivatives thereof; and
 - 17 providing, by the database management computer, the interaction
 - 18 event data or derivatives thereof to the requestor computer, wherein the requestor
 - 19 computer and/or the requestor takes subsequent action based on the interaction
 - 20 event data or derivatives thereof.
- 1 2. The method of claim 1 further comprising:
 - 2 receiving, by the database management computer, one or more data
 - 3 sets corresponding to interaction events, wherein each data set of the one or more
 - 4 data sets comprises a resource provider identifier and a geographic region identifier;
 - 5 determining, by the database management computer, for each data
 - 6 set, a geohash based on the geographic region identifier;
 - 7 generating, by the database management computer, one or more
 - 8 geographic resource provider database entries, each geographic resource provider
 - 9 database entry comprising a resource provider identifier and a corresponding
 - 10 geohash;

11 storing, by the database management computer, the one or more
12 geographic resource provider database entries in the geographic resource provider
13 database;
14 generating, by the database management computer, one or more
15 resource provider interaction event database entries, each resource provider
16 interaction event database entry comprising a resource provider identifier and a data
17 set corresponding to an interaction event; and
18 storing, by the database management computer, the one or more
19 resource provider interaction event database entries in the resource provider
20 interaction database.

1 3. The method of claim 1, wherein the boundary element is a
2 radius.

1 4. The method of claim 3, wherein determining, by the database
2 management computer, one or more geohashes corresponding to the geographic
3 region based on the location identifier and the radius comprises:
4 determining, by the database management computer, one or more
5 candidate coordinate points;
6 for each candidate coordinate point of the one or more candidate
7 coordinate points, determining, by the database management computer, a distance
8 between the candidate coordinate point and a coordinate point associated with the
9 location identifier, thereby determining one or more distances;
10 for each distance of the one or more distances, determining, by the
11 database management computer, whether the distance exceeds the radius; and
12 for each distance of the one of more distances that does not exceed
13 the radius, determining, by the database management computer, a geohash
14 corresponding to a corresponding candidate coordinate point, thereby determining
15 one or more geohashes corresponding to the geographic region.

1 5. The method of claim 3, wherein determining, by the database
2 management computer, one or more geohashes corresponding to the geographic
3 region based on the location identifier and the radius comprises:
4 determining, by the database management computer, a bounding
5 region corresponding to a circular geographic region defined by the location identifier

6 and the radius, such that the circular geographic region is inscribed within the
7 bounding region; and
8 determining, by the database management computer, one or more
9 geohashes corresponding to the bounding region, wherein the one or more
10 geohashes corresponding to the geographic region are the one or more geohashes
11 corresponding to the bounding region.

1 6. The method of claim 3, wherein determining, by the database
2 management computer, one or more geohashes corresponding to the geographic
3 region based on the location identifier and the radius comprises:
4 determining, by the database management computer, a circular
5 bounding region corresponding to a circular geographic region defined by the
6 location identifier and the radius;
7 determining, by the database management computer, one or more
8 inscribed geographic regions, the one or more inscribed geographic regions
9 inscribed by the circular bounding region; and
10 determining, by the database management computer, one or more
11 geohashes corresponding to the one or more inscribed geographic regions, wherein
12 the one or more geohashes corresponding to the geographic region are the one or
13 more geohashes corresponding to the one or more inscribed geographic regions.

1 7. The method of claim 1, wherein the interaction event data
2 additionally corresponds to a time range and/or a resource provider category, and
3 wherein the request additionally comprises the time range and/or the resource
4 provider category.

1 8. The method of claim 1, wherein the interaction event data is
2 aggregated and ordered.

1 9. The method of claim 1, wherein the interaction event data or
2 derivatives thereof comprises a difference between two interaction values
3 corresponding to two interaction data sets.

1 10. The method of claim 1, wherein the requestor computer is a
2 data service computer.

1 11. A database management computer comprising:
2 a processor; and
3 a non-transitory computer readable medium coupled to the processor,
4 the non-transitory computer readable medium comprising code, executable by the
5 processor for implementing a method comprising:
6 receiving, from a requestor computer associated with a requestor, a
7 request for interaction event data corresponding to a geographic region, the request
8 comprising a location identifier and a boundary element;
9 determining one or more geohashes corresponding to the geographic
10 region based on the location identifier and the boundary element;
11 querying a geographic resource provider database using the one or
12 more geohashes to determine one or more resource provider identifiers;
13 querying a resource provider interaction database using the one or
14 more resource provider identifiers to determine one or more interaction events;
15 retrieving, from the resource provider interaction database, interaction
16 event data or derivatives thereof; and
17 providing, by the database management computer, the interaction
18 event data or derivatives thereof to the requestor computer, wherein the requestor
19 computer and/or the requestor takes subsequent action based on the interaction
20 event data or derivatives thereof.

1 12. The database management computer of claim 11, wherein the
2 method further comprises:
3 receiving one or more data sets corresponding to interaction events,
4 wherein each data set of the one or more data sets comprises a resource provider
5 identifier and a geographic region identifier;
6 determining for each data set, a geohash based on the geographic
7 region identifier;
8 generating one or more geographic resource provider database
9 entries, each geographic resource provider database entry comprising a resource
10 provider identifier and a corresponding geohash;
11 storing the one or more geographic resource provider database entries
12 in the geographic resource provider database;

13 generating one or more resource provider interaction event database
14 entries, each resource provider interaction event database entry comprising a
15 resource provider identifier and a data set corresponding to an interaction event; and
16 storing the one or more resource provider interaction event database
17 entries in the resource provider interaction database.

1 13. The database management computer of claim 11, wherein the
2 boundary element is a radius.

1 14. The database management computer of claim 13, wherein
2 determining one or more geohashes corresponding to the geographic region based
3 on the location identifier and the radius comprises:
4 determining one or more candidate coordinate points;
5 for each candidate coordinate point of the one or more candidate
6 coordinate points, determining a distance between the candidate coordinate point
7 and a coordinate point associated with the location identifier, thereby determining
8 one or more distances;
9 for each distance of the one or more distances, determining whether
10 the distance exceeds the radius; and
11 for each distance of the one or more distances that does not exceed
12 the radius, determining a geohash corresponding to a corresponding candidate
13 coordinate point, thereby determining one or more geohashes corresponding to the
14 geographic region.

1 15. The database management computer of claim 13, wherein
2 determining one or more geohashes corresponding to the geographic region based
3 on the location identifier and the radius comprises:
4 determining a bounding region corresponding to a circular geographic
5 region defined by the location identifier and the radius, such that the circular
6 geographic region is inscribed within the bounding region; and
7 determining one or more geohashes corresponding to the bounding
8 region, wherein the one or more geohashes corresponding to the geographic region
9 are the one or more geohashes corresponding to the bounding region.

1 16. The database management computer of claim 13, wherein
2 determining one or more geohashes corresponding to the geographic region based
3 on the location identifier and the radius comprises:
4 determining a circular bounding region corresponding to a circular
5 geographic region defined by the location identifier and the radius;
6 determining one or more inscribed geographic regions, the one or more
7 inscribed geographic regions inscribed by the circular bounding region; and
8 determining one or more geohashes corresponding to the one or more
9 inscribed geographic regions, wherein the one or more geohashes corresponding to
10 the geographic region are the one or more geohashes corresponding to the one or
11 more inscribed geographic regions.

1 17. The database management computer of claim 11, wherein the
2 interaction event data additionally corresponds to a time range and/or a resource
3 provider category, and wherein the request additionally comprises the time range
4 and/or the resource provider category.

1 18. The database management computer of claim 11, wherein the
2 interaction event data is aggregated and ordered.

1 19. The database management computer of claim 11, wherein the
2 interaction event data or derivatives thereof comprise a difference between two
3 interaction values corresponding to two interaction data sets.

1 20. The database management computer of claim 11, wherein the
2 requestor computer is a client computer.

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