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Datasheet for the decision
of 3 April 2025

Case Number:	T 2137/21 - 3.4.03
Application Number:	15909072.9
Publication Number:	3380951
IPC:	G06Q50/30
Language of the proceedings:	EN

Title of invention:
RECOMMENDING CAR/PASSENGER RESOURCES FOR USER ACCORDING TO MOBILITY HABITS

Applicant:
Bayerische Motoren Werke Aktiengesellschaft

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - mixture of technical and non-technical features - main request (no) - auxiliary request (no)

Decisions cited:
G 0001/19, T 0641/00

Case Number: T 2137/21 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 3 April 2025

Appellant: (Applicant)	Bayerische Motoren Werke Aktiengesellschaft Petuelring 130 80809 München (DE)
Representative:	Bayerische Motoren Werke Aktiengesellschaft Patentabteilung, AJ-5 80788 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 2 July 2021 refusing European patent application No. 15909072.9 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	M. Papastefanou
Members:	A. Böhm-Pélissier
	T. Bokor

Summary of Facts and Submissions

I.   The appeal is against the decision of the Examining
Division to refuse European patent application
No. 15 909 072 on the ground of lack of inventive step
(Articles 52(1) and 56 EPC).

II.   Reference is made to the following **document**:

D1: BICOCCHI NICOLA ET AL: "Investigating ride sharing
opportunities through mobility data analysis",
PERVASIVE AND MOBILE COMPUTING, ELSEVIER, NL, vol. 14,
5 June 2014, pages 83-94, XP029055159,
ISSN: 1574-1192, DOI: 10.1016/J.PMCJ.2014.05.010

III.   The appellant (applicant) **requests** that the decision
under appeal be set aside, and a patent be granted on
the basis of the main request, or alternatively on the
basis of the auxiliary request, as indicated in the
statement setting out the grounds of appeal, where the
main request was filed on 11 December 2019 and the
auxiliary request was filed on 15 June 2021 during the
oral proceedings before the Examining Division, both
requests underlying the decision under appeal.

IV.   **Claim 1** according to the **main request** (feature
labelling "(A)", "(B)", ... inserted by the board):

*(A) A computer implemented method for recommending car
resources for a user as a passenger according to
mobility habits for the user, comprising:*
*(B) acquiring (301) mobility habit data for users
generated by: extracting (101) a trip including a start
and a destination from location data of the user,*

(C) wherein paths with the same start and the same destination are clustered into one trip;

(D) generating (102) time information corresponding to the trip, according to time data corresponding to the paths clustered into the trip,

(E) wherein the time information includes a range of departure time; and

(F) calculating (103) a frequency of occurrences for one trip within a predetermined time period as a habit value of the trip for the user,

(G) wherein the trip including the start and the destination, the time information corresponding to the trip, the habit value of the trip, and transport modality information indicating the user as a driver or a passenger are used together as the mobility habit data for the user;

(H) receiving (302) a riding requirement from the user as the passenger,

(I) wherein the riding requirement includes a start, a destination and a departure time;

(J) searching (303), from mobility habit data for users as a driver, trips which match the riding requirement and have habit values above a first threshold as target trips, according to the received riding requirement;

(M) sending (304) the riding requirement to users as the driver related to the target trips; and

(N) recommending (305) the users as the driver to the user as the passenger after confirmation information is received from the users as the driver.

V.   **Claim 1** of the **auxiliary request**:

To claim 1 of the main request features (K) and (L) are added (between features (J) and (M)):

(K) and searching, from the mobility habit data for users as the driver, trips which match the riding requirement and have habit values above a second threshold and below the first threshold as target trips, according to the received riding requirement, (M) if the confirmation information is not received from the users as the driver in a predetermined time period;

VI.   The **arguments** of the appellant as far as they are relevant for the decision, can be summarised as follows:

(a) There are three main distinguishing features compared to D1, which establish a technical effect and an inventive difference:

(b) Firstly, D1 does not disclose a grouping of trips based on similar routes (features (B) and (C)). Consistent journey trip data contributes to greater system efficiency.

(c) Secondly, the filtering based on habit values is not disclosed in D1 or is at least carried out differently (features (F), (G) and (J)).

(d) Thirdly, D1 does not distinguish between driver and passenger when recording trip data. The distinction between driver and passenger is important when extracting data for carpooling and has a technical contribution.

(e) These three differences contribute to a technical effect and together ensure an improved system architecture. Therefore, the claimed method reduces the search effort and the communication load.

(f) The subject-matter of the auxiliary request is inventive because D1 gives no indication of using a second threshold below the first threshold.

Reasons for the Decision

1.   The invention

1.1   Carpooling should be made easier.

1.2   To this end, users' driving habits are analysed,
       matches are detected and suggestions for carpooling are
       made. Only when a habit value, which indicates the
       frequency with which a particular route is travelled,
       exceeds a certain threshold, a potential driver is
       offered to a particular passenger who is considered
       suitable for car sharing (main request). If no driver
       is found with the specified threshold, the habit value
       threshold is lowered (auxiliary request).

2.   Main Request - inventive step

2.1   Technicality - closest prior art

The board agrees with the reasoning of the examining
division regarding the technicality of the claimed
subject-matter (see point 1.2 of the reasons of the
impugned decision). For the sake of argument, and in
order to limit the discussions on the technical
character of the claimed features, the board uses D1 as
starting point for the skilled person (closest prior
art). The appellant also argues with D1 as the closest
prior art. However, contrary to the appellant's
arguments, the board concludes that D1 discloses most
of features (A) to (N):

2.2   Disclosure of D1

2.2.1   D1 discloses tracking/tracing of driving habits, as
        well as a statistical analysis of driving habits. Trips

are recorded in terms of starting point and end point
(HOME, WORK, GYM, PUB, see figures 6, 7 and 12) as well
as timing. Statistical analyses of the trips and the
users are carried out, as explained further below.
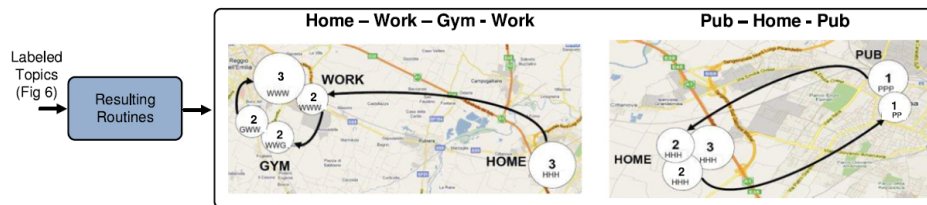
Fig. 7. General architecture of our approach (part 3). Graphic representation of two discovered routines: spatial distribution of the routine displayed on a map. The larger the circle, the higher is the probability associated to the given place. These results will be used to find users with similar routines to identify ride sharing opportunities—see next section.
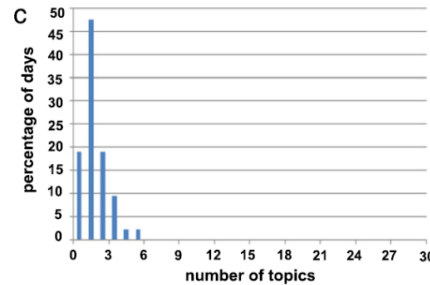
Fig. 8. Topics' distribution for the first user in our study: (a) $p(d|z)$ plot for days described with low probability by many topics. (b) $p(d|z)$ plot for days well described by few topics. (c) Histogram of number of dominating topics per day.

D1

2.2.2   Driving patterns are referred to as "words" or
        "topics". Time-slots of 60 min are used for classifying
        the events (see section 3.3). A "routine labelling"
        algorithm evaluates the driver habits as a periodic
        routine (see section 3.5). Therefore, the approach in
        D1 is based on the idea that words comparing with high
        probability (P) are those best describing the topic.
        For example, only when a topic reaches a certain
        probability (e.g. P = 90%) is it considered
        sufficiently regular to qualify as a routine commuting
        habit (section 3.6: "*We compute the number of topics
        composing at least 90% of the probability mass of each
        day in the study*").

2.2.3   Therefore, the probability P can be considered a "habit
        value". The example value of P = 90% can be considered

a threshold value for the habit value. Other example
habit values indicated in D1 are "$P > 50\%$" and "$P > 10\%$" (see sections 3.6 and 4.1).

2.2.4   A filtering is applied in order to identify the most
active and probable users (see section 4.1, were it is
also disclosed that events with low probability [$P < 0,1$] are not taken into account). The results of the
trip analyses are shown in figure 10 of D1:
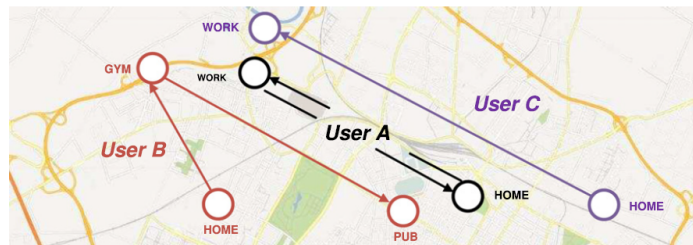
Fig. 10. Ride matching approach. The routine of user A is "covered" by the routines of users B and C. Successful ride sharing would allow user A to leave the car at home and going to work with user C and coming back home with user B.

D1

2.2.5   Based on this data, a matching is determined (see
section 4). An app/web-interface was developed that
suggests car pooling for driver B and driver C (see
figure 12 and section 4.2). The app proposes carpooling
for specific week-days (Mondays) at specific times
(8:00/9:00) for specific routes (Turin - Milano, with
specific GPS coordinates).

2.2.6   The board accepts that D1 does not distinguish between
driver and passenger during tracking/tracing of driving
habits.

2.2.7   Reference is made to the appellant's arguments
summarised in section VI.

ad (b)

2.2.8   The appellant argued that the present application took
into account a variety of different routes from one

point (X) to another point (Y), as long as the starting
point (X) and the end point (Y) were the same. These
route variants were grouped together as one trip. This
was not disclosed in D1.

2.2.9   However, the board is of the opinion that the same
         happens in D1. In D1, various regularly visited points
         are determined, such as WORK, HOME, PUB, GYM (see
         figures 7 and 10). It is not essential which route is
         travelled between the points, but only how regularly
         one travels from point (X) to point (Y) (see figures 6,
         8C and 7 of D1). The claim wording of claim 1 is silent
         about more details of the tracing/tracking method in
         the present application. Consequently, the board
         concludes that D1 discloses features (B) and (C).

ad (c):
2.2.10   The appellant argued that in the method described in D1
         filtering by habit value took place before the matching
         step. Consequently, feature (J) was not disclosed in D1
         in accordance with the requirement of "*searching ...
         trips ... which have habit values above a first
         threshold*", which means that the thresholding must take
         place during the searching/filtering.

2.2.11   However, the board is of the opinion that the condition
         in feature (J) is also fulfilled if the sorting out of
         trips with a habit value below a threshold already
         takes place before searching for certain riding
         requirements. If feature (J) had been explicitly worded
         to indicate that the filtering takes place during the
         search, then D1 would not have disclosed feature (J).
         Since this is not the case, the board concludes that D1
         discloses features (F) and (J).

ad (d)

2.2.12   The board agrees with the appellant that D1 only
         partially discloses feature (G), namely that D1 does
         not unambiguously disclose that, when a trip is
         analysed, it is examined and stored whether the user
         travelled the route as a driver or as a passenger.

2.3   Disclosure of D1 with respect to the claim wording

2.3.1   Therefore, D1 discloses (wording of claim 1, references
         to D1):

         (A) a computer implemented method for recommending car
         resources for a user as a passenger (section 4.2)
         according to mobility habits for the user, comprising:
         (B) acquiring (figures 1 to 7) mobility habit data for
         users generated by: extracting (figure 7) a trip
         including a start ("HOME") and a destination ("WORK")
         from location data of the user,
         (C) wherein paths ("HOME-WORK-GYM-WORK" with its legs
         "HOME-WORK", "WORK-GYM", "GYM-WORK") with the same
         start and the same destination are clustered into one
         trip (figures 6, 7, 8, 10, 12);
         (D) generating (figure 6) time information
         corresponding to the trip, according to time data
         corresponding to the paths clustered into the trip
         (slots of 60 minutes, section 3.3),
         (E) wherein the time information includes a range of
         departure time (slots of 60 minutes, section 3.3); and
         (F) calculating (figures 6 and 8) a frequency of
         occurrences for one trip within a predetermined time
         period as a habit value (P) of the trip for the user,
         (G) wherein the trip including the start ("HOME") and
         the destination ("WORK"), the time information
         corresponding to the trip (time slots), the habit value
         of the trip (P), and transport modality information

indicating the user as a driver ~~or a passenger~~ are used together as the mobility habit data for the user;
(H) receiving (the passenger queries with a "ride sharing" request, section 4.2) a riding requirement from the user as the passenger,
(I) wherein the riding requirement includes a start (GPS data of "HOME"), a destination (GPS of "WORK") and a departure time (time slot, "8:00", "9:00", section 4.2);
(J) searching (section 4.2), from mobility habit data for users as a driver, trips which match the riding requirement and have habit values ("topics" having at least P = 90% probability in section 3.6 or P > 10% in section 4.1, matching algorithm in section 4) above a first threshold (P > 90%) as target trips, according to the received riding requirement;
(M) sending (email to the driver, section 4.2) the riding requirement to users as the driver related to the target trips; and
(N) recommending the users as the driver to the user as the passenger after confirmation information ("*on acceptance*" in section 4.2) is received from the users as the driver.

2.4   Difference

D1 therefore fails only to disclose a part of feature (G) of present claim 1, namely "*indicating the user as a driver or a passenger".*

2.5   Technical effect

2.5.1   Assuming, for the sake of argument, that this difference achieves a technical effect, although the board doubts that this is the case (see also the reasoning in the impugned decision, section 1.2.1.1, in

particular "Re I"), such an effect could be identified in that when searching for a suitable driver for a passenger, only persons who regularly undertake a desired journey as a *driver* themselves are suggested, so that incorrect matches can be excluded and the allocation of a carpooling becomes more efficient.

2.5.2   This means that less data has to be sent over the data network from the outset and the load on the data network is reduced.

2.6   Technical problem to be solved

2.6.1   Like the examining division, the board regards the above effect as a consequence of a boundary condition ("constraint") for a purely organisational and administrative task (see T 641/00, catchword, and G 1/19, grounds 31 to 34), since this procedural step in particular is part of a purely organisational scheme, unlike, for example, an algorithm that determines a "routine" (e.g. "routine labelling" and "routine identification" in sections 3.5 and 3.6 of D1). In this regard, reference is made in particular to the arguments set out in sections 2.7.4 and 2.7.5, below.

2.6.2   In terms of T 641/00 and G 1/19, the identified non-technical constraint ("record driver and passenger data") would be given to the skilled person (a programmer) for implementation, and any technical problem apparent would relate to the implementation in the D1 system. Therefore, the technical problem could be formulated to register whether the recorded journeys were made as driver or passenger, i.e. in D1 journeys that are not carried out as a driver are labelled as such (i.e. at least implicitly as "passenger").

2.7   Obviousness of the solution

2.7.1   The board considers that the solution given is obvious
         and self-evident alone from the problem to be solved.
         In the board's opinion, the skilled person would add
         the use of relevant labelling ("driver", "passenger")
         of the logged trips in the system of D1 (e.g. as an
         additional option in the app) only by appropriate
         programming, using only common general knowledge:

2.7.2   In general, it is obvious to obtain and record a
         specific parameter in a database in order to be able to
         apply a filter later that filters out unnecessary data
         records of the specific parameter. If the skilled
         person is tasked with minimising the network load, they
         will always try to structure the searched data sets so
         that a targeted and reduced search of data sets is
         possible. It is a basic principle of databases that, if
         possible, all parameters that can be captured should be
         stored in separate, indexed data fields so that
         targeted and unambiguous search queries can be carried
         out as quickly and easily as possible.

2.7.3   Consequently, if the information is available as to
         whether a route was travelled by a user as a driver or
         as a passenger, it is immediately obvious to a skilled
         person to write this information in a separate data
         field and to take it into account when conducting a
         search.

2.7.4   However, the present patent application does not
         provide any information as to how it is determined
         whether a car user is driving or is a passenger. During
         the oral proceedings, the appellant stated that at the
         time of the oral proceedings, this complex problem was

solved by registering biometric data of possible users
and by AI-supported recognition using cameras to
determine who was using the vehicle and in what role,
as driver or passenger. However, this procedure is not
even hinted at in the application, and it is
questionable whether such a procedure was even possible
at the time of filing. In this respect, the question
arises as to whether the skilled person could even
carry out this feature (feature (G)) at the time of the
invention (Article 83 EPC). On the other hand, other
simpler solutions would also be possible, namely that
the user of a car indicates his identity and role
(driver/passenger) by filling out an electronic (or
"paper") questionnaire. This could also be done using
an app on a phone (as used in D1). But the application
is completely silent on this point as well.

2.7.5   Since there are no technical details about the
         technical realisation of the feature (G), this feature
         can be seen as a purely administrative act, namely as
         including the possibility of filling out a
         "questionnaire" and storing the answers in a database.
         Consequently, such an administrative feature has no
         technical effect and can be included in the problem to
         be solved as a constraint, as described above, whose
         solution is then intrinsically obvious.

2.7.6   Furthermore, such a "questionnaire" can also be
         integrated into the telephone app described in D1
         without any technical difficulties (see, for example,
         figure 8 of D1).

2.7.7   Therefore, if the skilled person were entrusted with
         the problem of reducing the communication load, they
         would try to optimise the database structure to such an
         extent that more specifically targeted queries are

possible. Detecting and storing the user role (driver/
passenger) in a separate data field in the app in D1 is
therefore considered as straightforward and obvious.

2.8   Consequently, the subject-matter of the main request
        lacks inventive step (Article 56 EPC).

3.   **Auxiliary request - inventive step**

3.1   **Amendments**

The auxiliary request adds that if no suitable driver
is found for a first threshold, a window is considered
where the habit value is below the first threshold but
above a second (lower) threshold (features (K) and
(L)).

3.2   **Obviousness**

3.2.1   The board considers that it to be a general common
        practice, when searching for a match, that the search
        thresholds (search range) are varied, if necessary
        extended to a wider range if the searching with the
        initial range does not provide a match. D1 teaches
        different thresholds, e.g. $P > 90\%$, $P > 50\%$ and
        $P > 10\%$ (see above).

3.2.2   The board considers that it would be obvious for the
        skilled person, also in view of the teachings of D1, to
        extend the range $P > 90\%$ by the range $P > 50\%$, if still
        no confirmation of a driver (i.e. a match) is received.

3.3   Therefore, the subject-matter of claim 1 of the
        auxiliary request does not involve an inventive step
        within the meaning of Article 56 EPC either.

4.   **Summary**

Summarising, the board agrees with the Examining
Division that the main request and the auxiliary
request do not meet the requirements of Article 56 EPC.
Since none of the requests on file meets the
requirements of the EPC, the Examining Division's
decision refusing the application is confirmed.
Consequently the appeal has to be dismissed
(Articles 97(2) EPC and 111(1) EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

S. Sánchez Chiquero   M. Papastefanou

Decision electronically authenticated