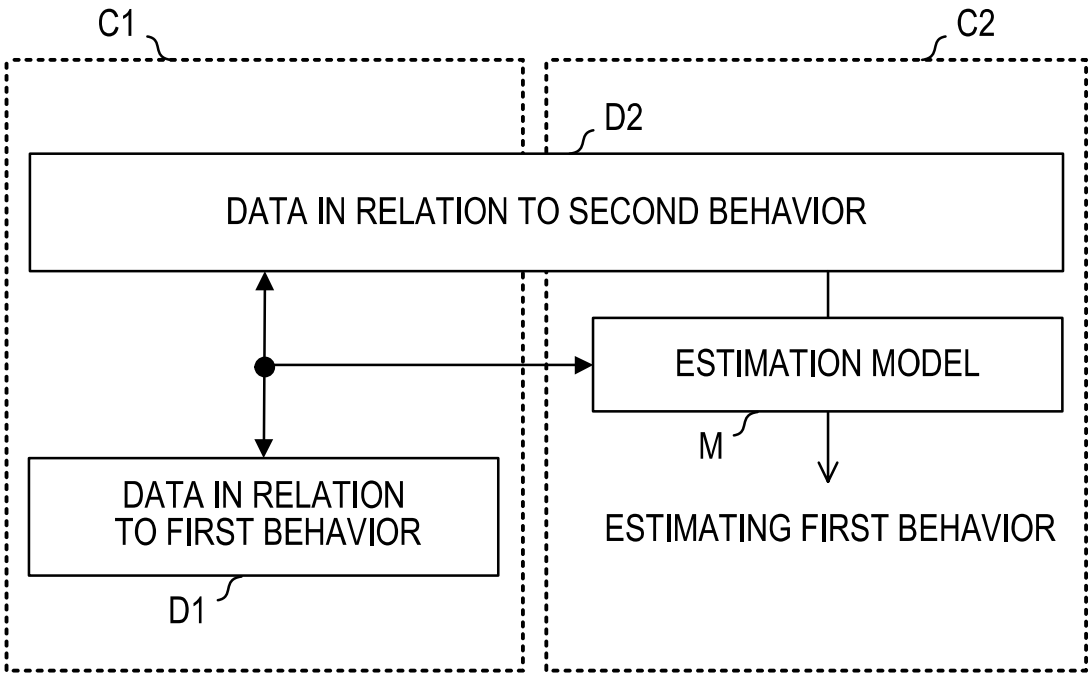

C1
C2
D2
DATA IN RELATION TO SECOND BEHAVIOR
ESTIMATION MODEL
M
DATA IN RELATION
TO FIRST BEHAVIOR
ESTIMATING FIRST BEHAVIOR
D1

FIG. 1

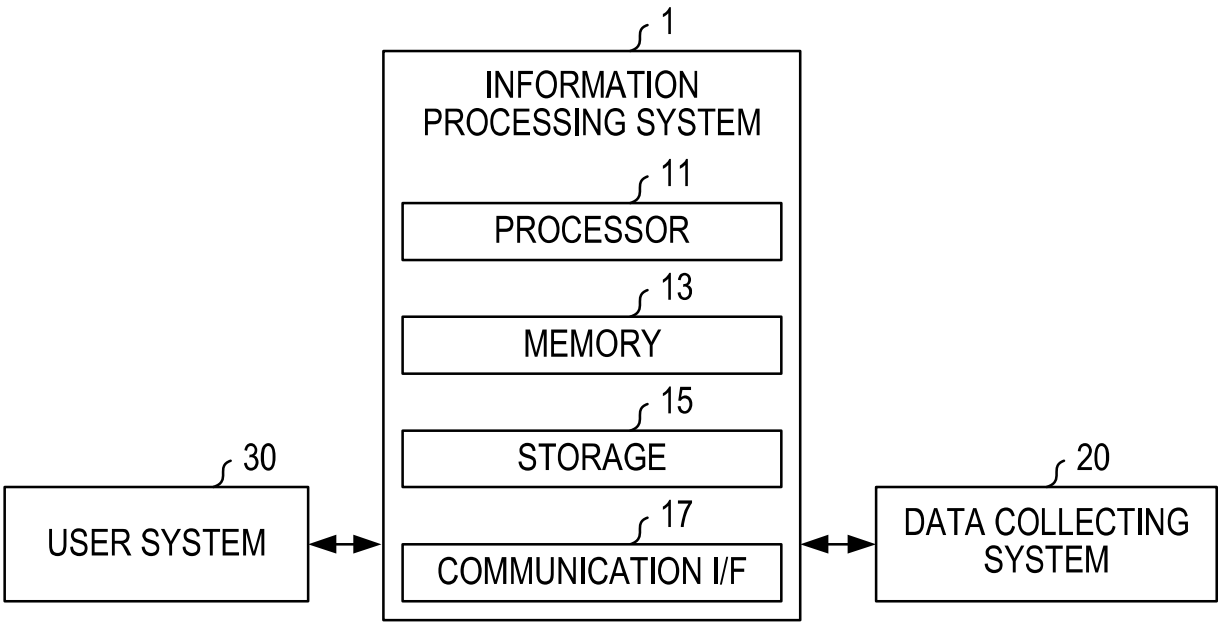

1
INFORMATION PROCESSING SYSTEM
11
PROCESSOR
13
MEMORY
15
STORAGE
17
COMMUNICATION I/F
30
USER SYSTEM
20
DATA COLLECTING SYSTEM

FIG. 2

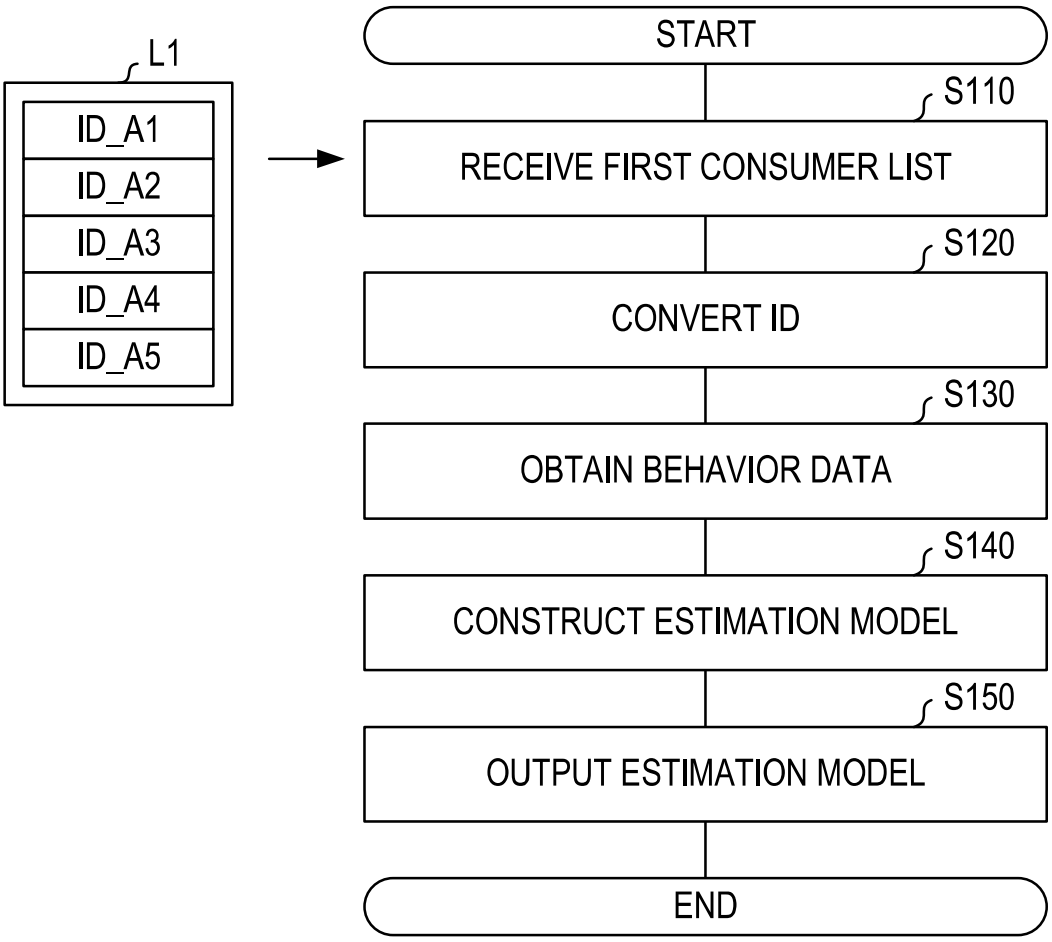

L1
ID_A1
ID_A2
ID_A3
ID_A4
ID_A5
START
S110
RECEIVE FIRST CONSUMER LIST
S120
CONVERT ID
S130
OBTAIN BEHAVIOR DATA
S140
CONSTRUCT ESTIMATION MODEL
S150
OUTPUT ESTIMATION MODEL
END

FIG. 3

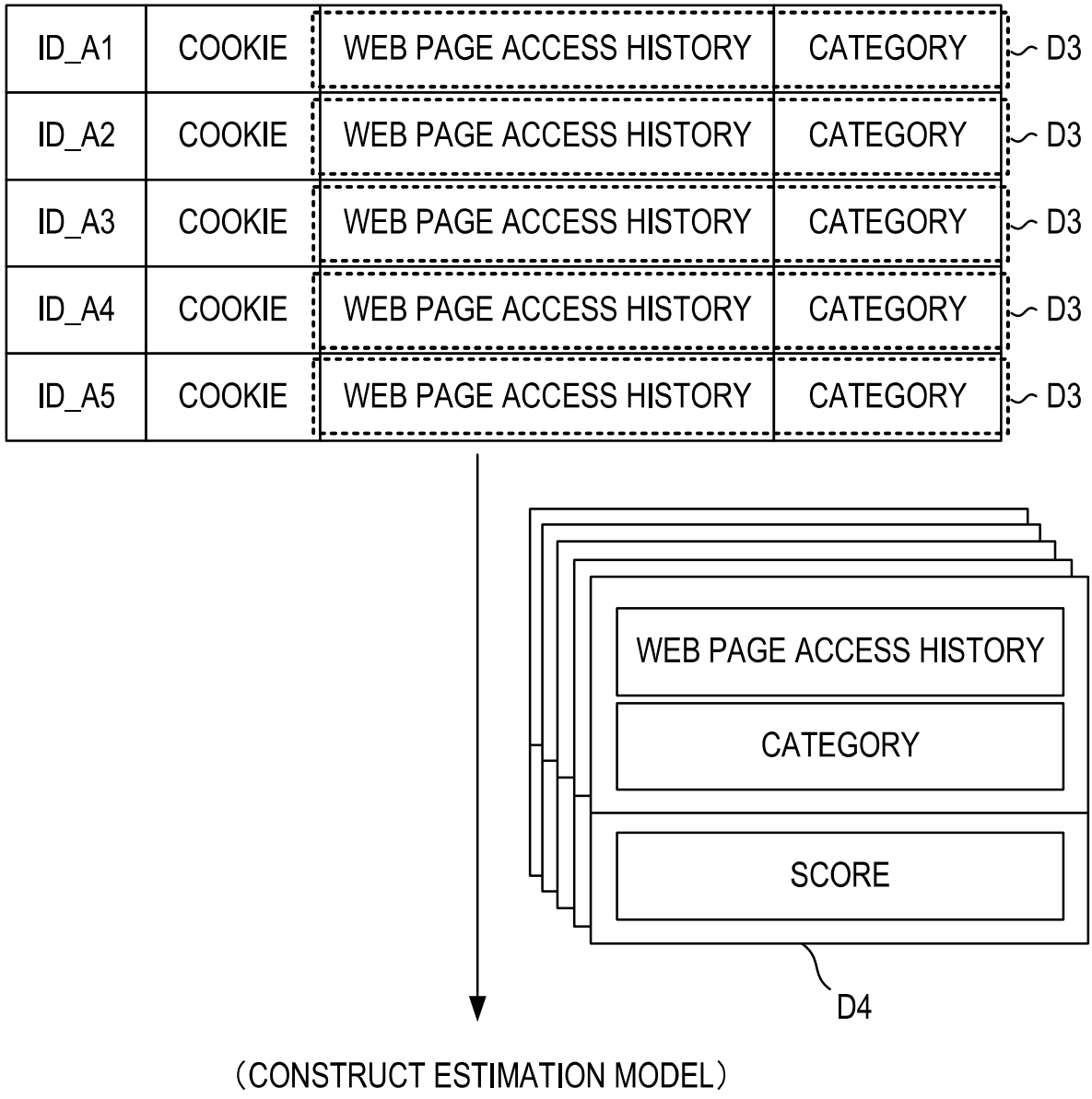

ID_A1
COOKIE
WEB PAGE ACCESS HISTORY
CATEGORY
D3
ID_A2
COOKIE
WEB PAGE ACCESS HISTORY
CATEGORY
D3
ID_A3
COOKIE
WEB PAGE ACCESS HISTORY
CATEGORY
D3
ID_A4
COOKIE
WEB PAGE ACCESS HISTORY
CATEGORY
D3
ID_A5
COOKIE
WEB PAGE ACCESS HISTORY
CATEGORY
D3
WEB PAGE ACCESS HISTORY
CATEGORY
SCORE
D4
(CONSTRUCT ESTIMATION MODEL)

FIG. 4

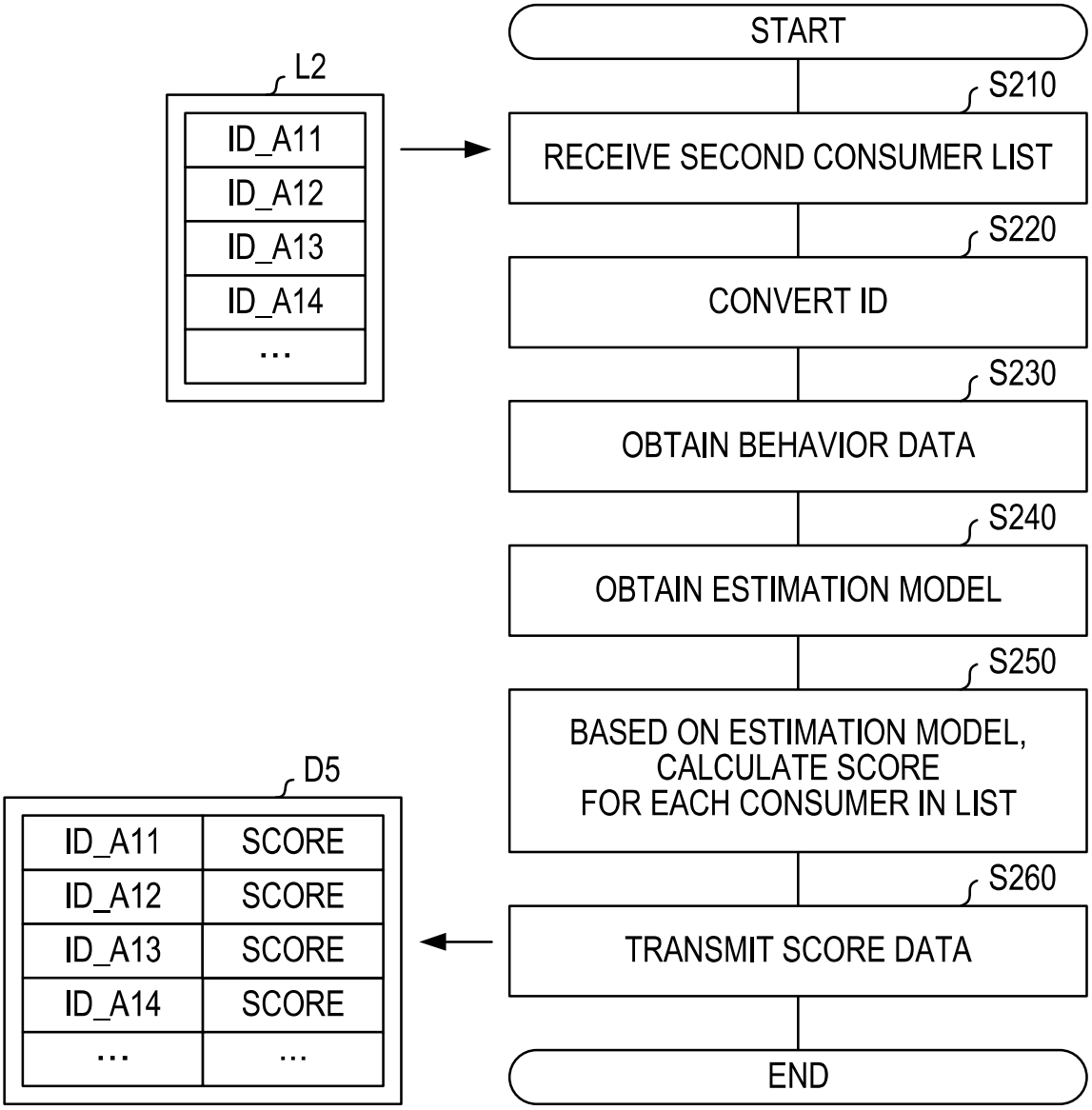

START
L2
ID_A11
ID_A12
ID_A13
ID_A14
...
S210
RECEIVE SECOND CONSUMER LIST
S220
CONVERT ID
S230
OBTAIN BEHAVIOR DATA
S240
OBTAIN ESTIMATION MODEL
S250
BASED ON ESTIMATION MODEL, CALCULATE SCORE FOR EACH CONSUMER IN LIST
S260
TRANSMIT SCORE DATA
END
D5
ID_A11 SCORE
ID_A12 SCORE
ID_A13 SCORE
ID_A14 SCORE
... ...

FIG. 5

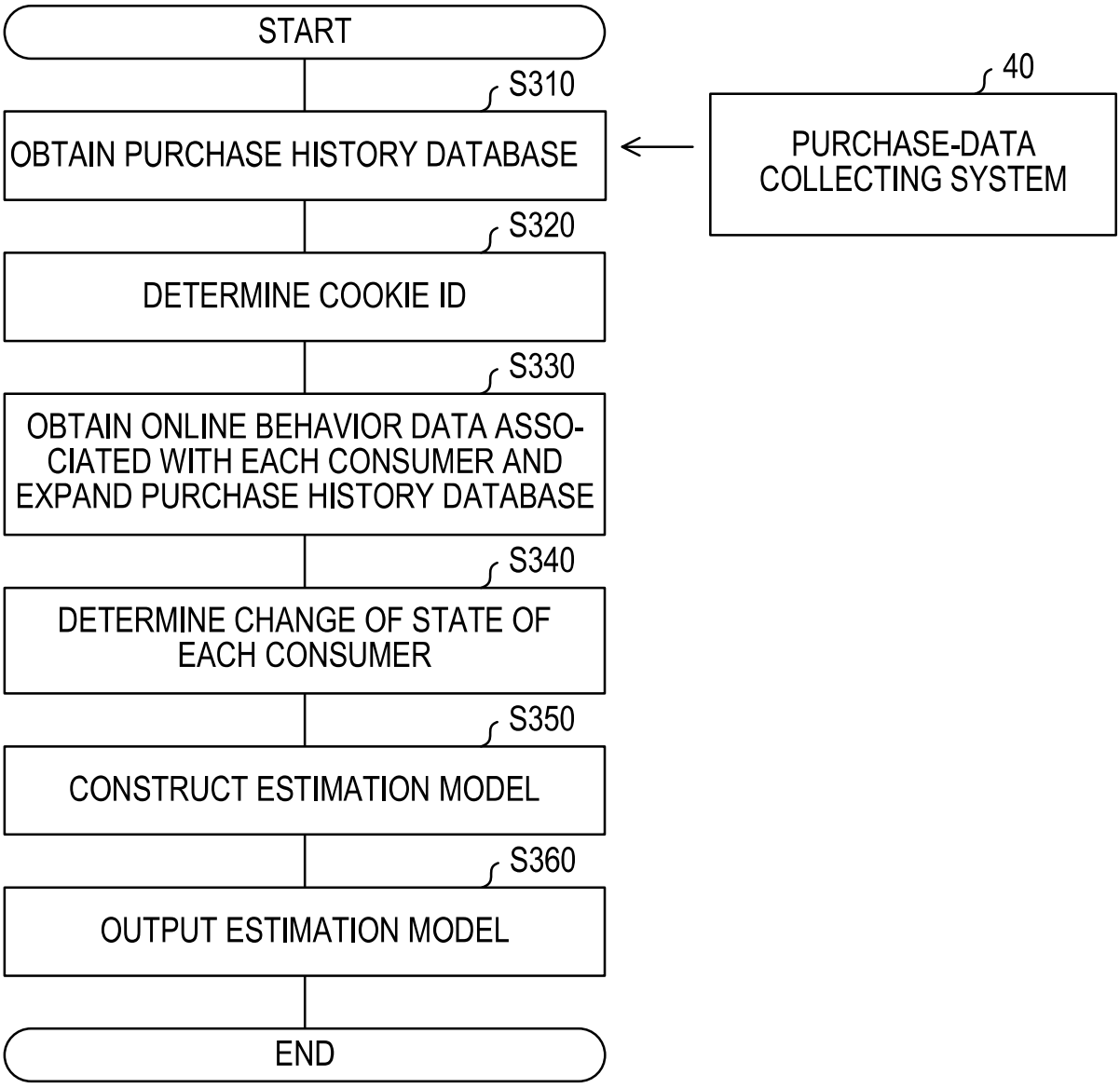
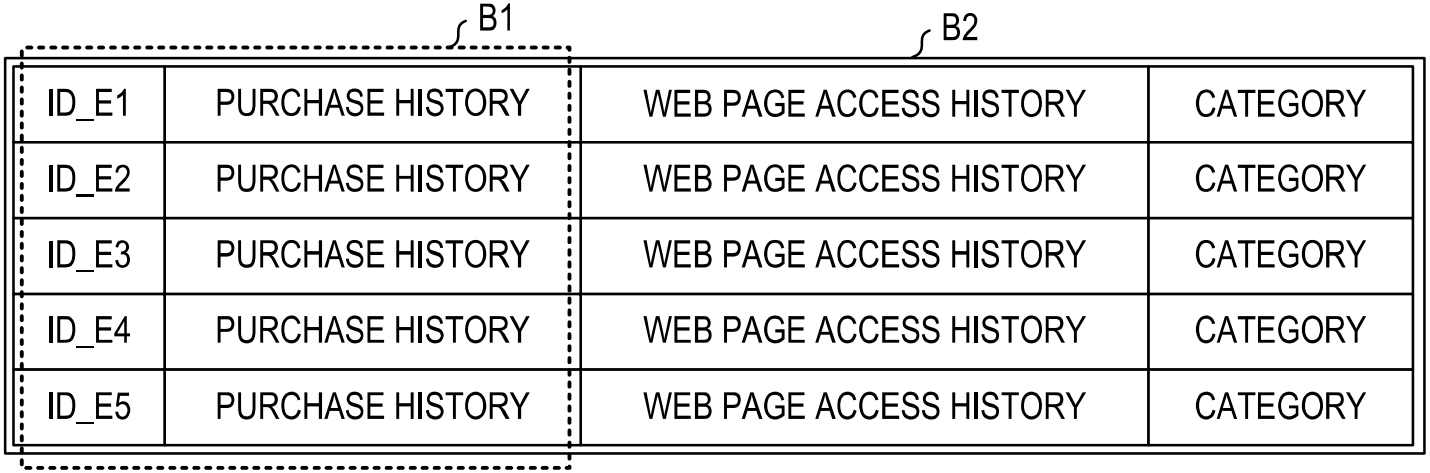
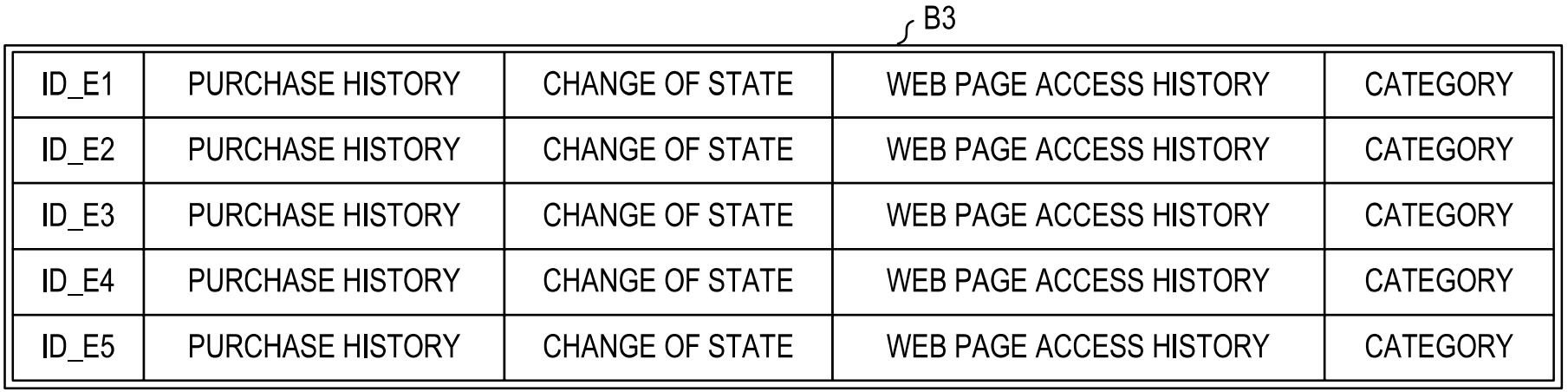

START
S310
OBTAIN PURCHASE HISTORY DATABASE
40
PURCHASE-DATA COLLECTING SYSTEM
S320
DETERMINE COOKIE ID
S330
OBTAIN ONLINE BEHAVIOR DATA ASSOCIATED WITH EACH CONSUMER AND EXPAND PURCHASE HISTORY DATABASE
S340
DETERMINE CHANGE OF STATE OF EACH CONSUMER
S350
CONSTRUCT ESTIMATION MODEL
S360
OUTPUT ESTIMATION MODEL
END

FIG. 6



ID_E1	PURCHASE HISTORY	WEB PAGE ACCESS HISTORY	CATEGORY
ID_E2	PURCHASE HISTORY	WEB PAGE ACCESS HISTORY	CATEGORY
ID_E3	PURCHASE HISTORY	WEB PAGE ACCESS HISTORY	CATEGORY
ID_E4	PURCHASE HISTORY	WEB PAGE ACCESS HISTORY	CATEGORY
ID_E5	PURCHASE HISTORY	WEB PAGE ACCESS HISTORY	CATEGORY

FIG. 7A



ID_E1	PURCHASE HISTORY	CHANGE OF STATE	WEB PAGE ACCESS HISTORY	CATEGORY
ID_E2	PURCHASE HISTORY	CHANGE OF STATE	WEB PAGE ACCESS HISTORY	CATEGORY
ID_E3	PURCHASE HISTORY	CHANGE OF STATE	WEB PAGE ACCESS HISTORY	CATEGORY
ID_E4	PURCHASE HISTORY	CHANGE OF STATE	WEB PAGE ACCESS HISTORY	CATEGORY
ID_E5	PURCHASE HISTORY	CHANGE OF STATE	WEB PAGE ACCESS HISTORY	CATEGORY

FIG. 7B

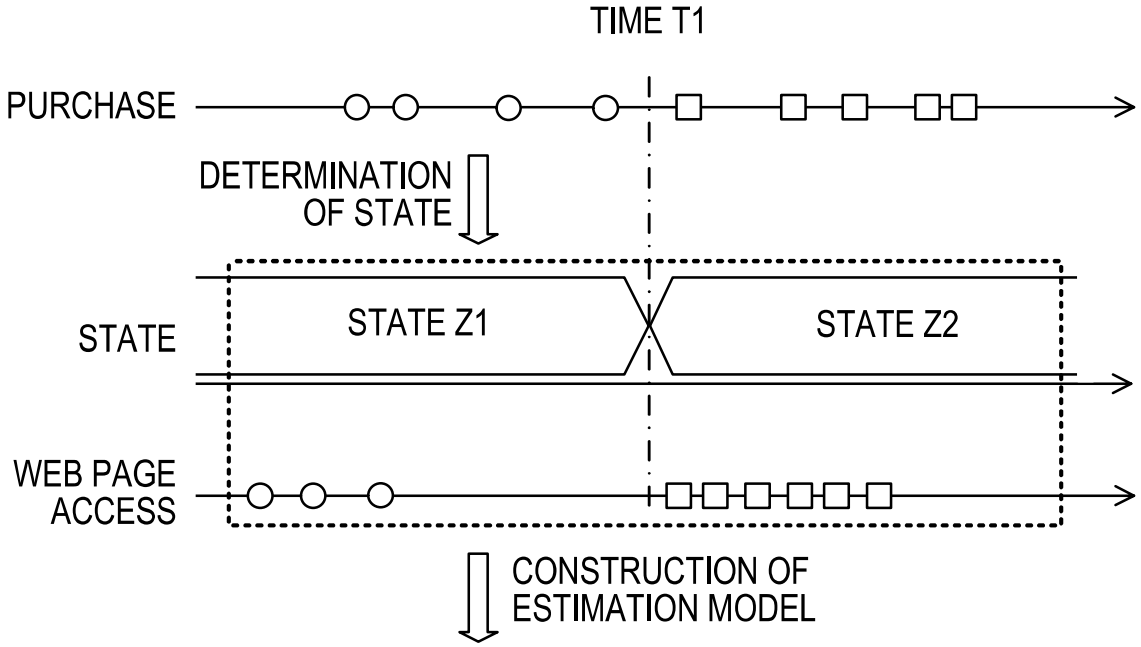

TIME T1
PURCHASE
DETERMINATION OF STATE
STATE
STATE Z1
STATE Z2
WEB PAGE ACCESS
CONSTRUCTION OF ESTIMATION MODEL

FIG. 8

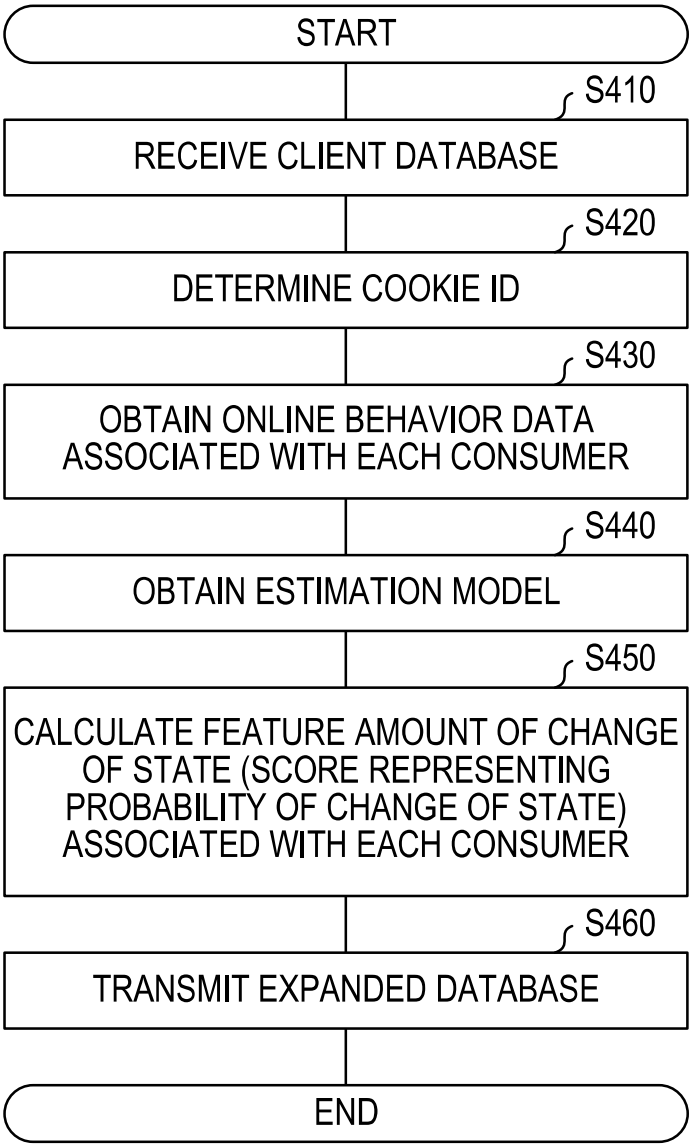

START
S410
RECEIVE CLIENT DATABASE
S420
DETERMINE COOKIE ID
S430
OBTAIN ONLINE BEHAVIOR DATA ASSOCIATED WITH EACH CONSUMER
S440
OBTAIN ESTIMATION MODEL
S450
CALCULATE FEATURE AMOUNT OF CHANGE OF STATE (SCORE REPRESENTING PROBABILITY OF CHANGE OF STATE) ASSOCIATED WITH EACH CONSUMER
S460
TRANSMIT EXPANDED DATABASE
END

FIG. 9

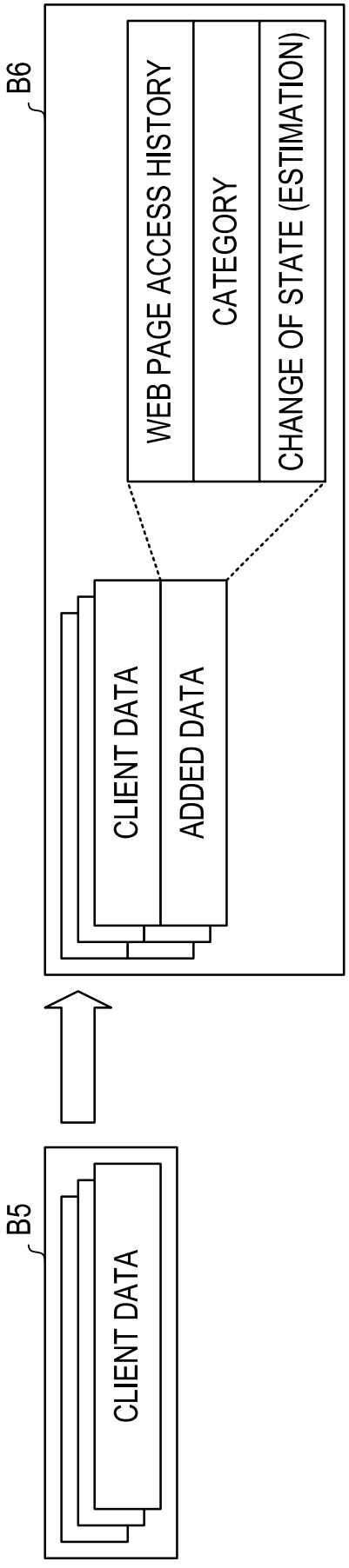


FIG. 10A

B7

CLUSTER1	CLIENT DATA	WEB PAGE ACCESS HISTORY	CATEGORY	CHANGE OF STATE
CLUSTER2	CLIENT DATA	WEB PAGE ACCESS HISTORY	CATEGORY	CHANGE OF STATE
CLUSTER3	CLIENT DATA	WEB PAGE ACCESS HISTORY	CATEGORY	CHANGE OF STATE

FIG. 10B

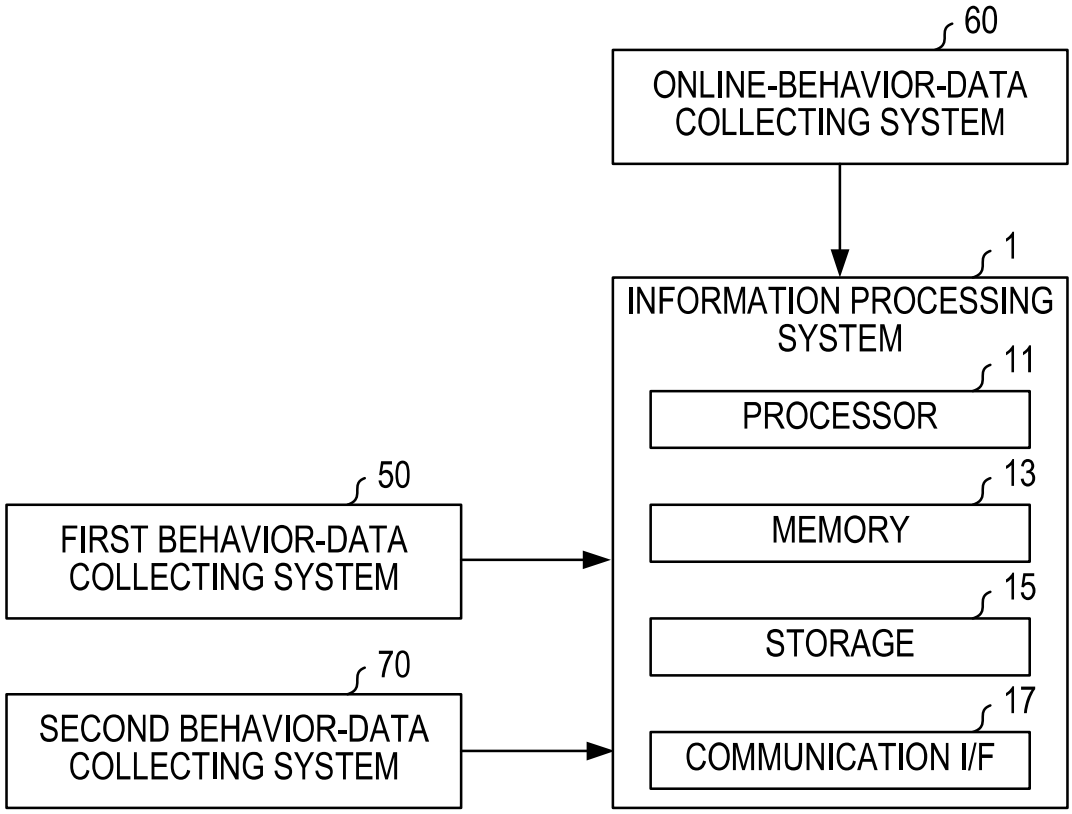

60
ONLINE-BEHAVIOR-DATA COLLECTING SYSTEM
1
INFORMATION PROCESSING SYSTEM
11
PROCESSOR
13
MEMORY
15
STORAGE
17
COMMUNICATION I/F
50
FIRST BEHAVIOR-DATA COLLECTING SYSTEM
70
SECOND BEHAVIOR-DATA COLLECTING SYSTEM

FIG. 11

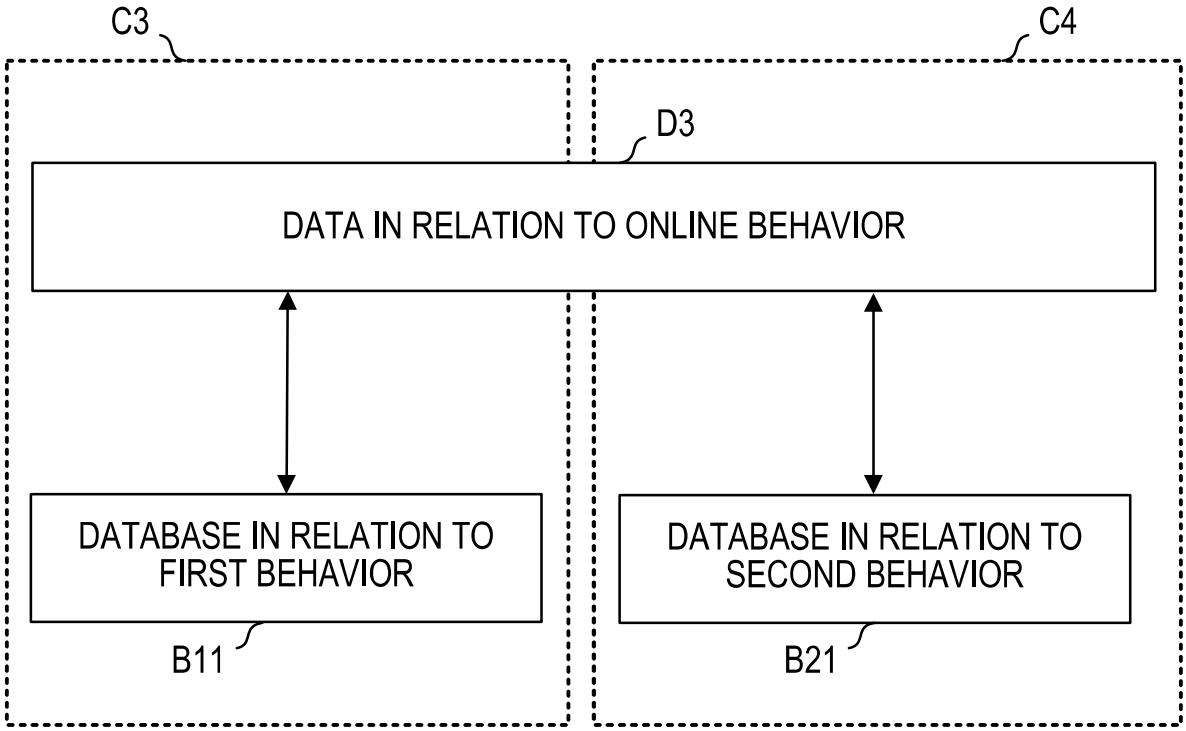

C3
C4
D3
DATA IN RELATION TO ONLINE BEHAVIOR
DATABASE IN RELATION TO FIRST BEHAVIOR
DATABASE IN RELATION TO SECOND BEHAVIOR
B11
B21

FIG. 12

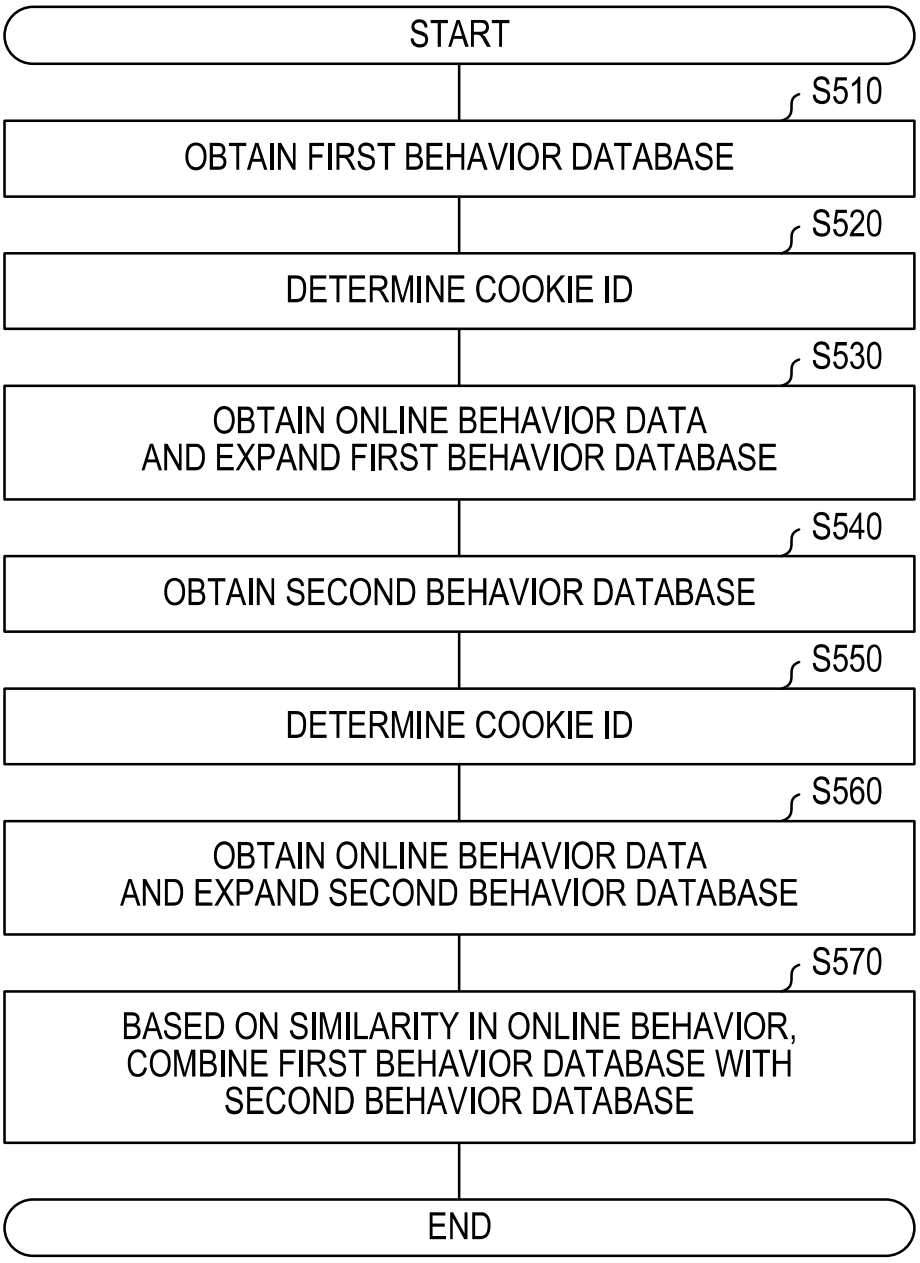

START
S510
OBTAIN FIRST BEHAVIOR DATABASE
S520
DETERMINE COOKIE ID
S530
OBTAIN ONLINE BEHAVIOR DATA
AND EXPAND FIRST BEHAVIOR DATABASE
S540
OBTAIN SECOND BEHAVIOR DATABASE
S550
DETERMINE COOKIE ID
S560
OBTAIN ONLINE BEHAVIOR DATA
AND EXPAND SECOND BEHAVIOR DATABASE
S570
BASED ON SIMILARITY IN ONLINE BEHAVIOR,
COMBINE FIRST BEHAVIOR DATABASE WITH
SECOND BEHAVIOR DATABASE
END

FIG. 13

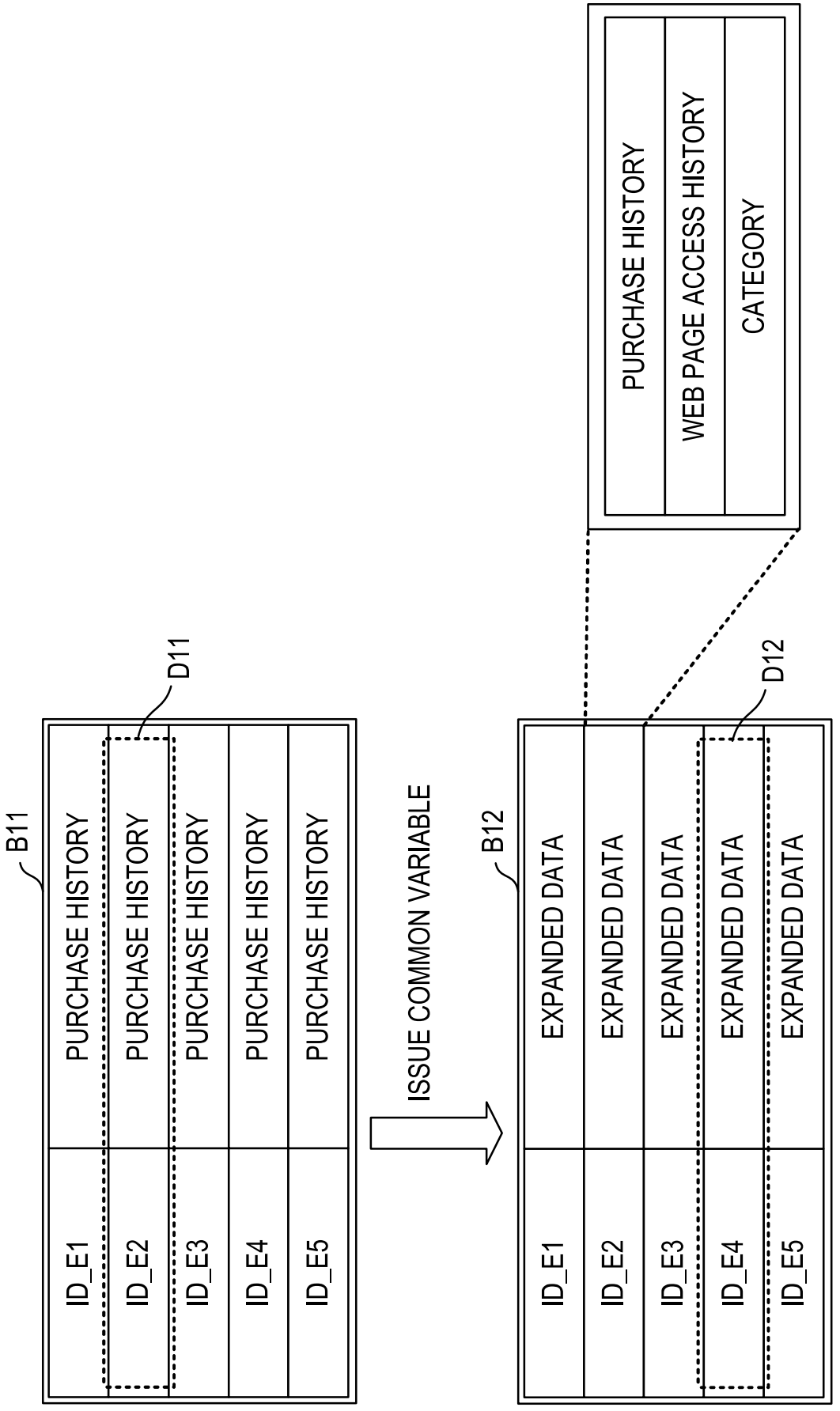

B11
D11
ID_E1
ID_E2
ID_E3
ID_E4
ID_E5
PURCHASE HISTORY
PURCHASE HISTORY
PURCHASE HISTORY
PURCHASE HISTORY
PURCHASE HISTORY
ISSUE COMMON VARIABLE
B12
D12
EXPANDED DATA
EXPANDED DATA
EXPANDED DATA
EXPANDED DATA
EXPANDED DATA
PURCHASE HISTORY
WEB PAGE ACCESS HISTORY
CATEGORY

FIG. 14

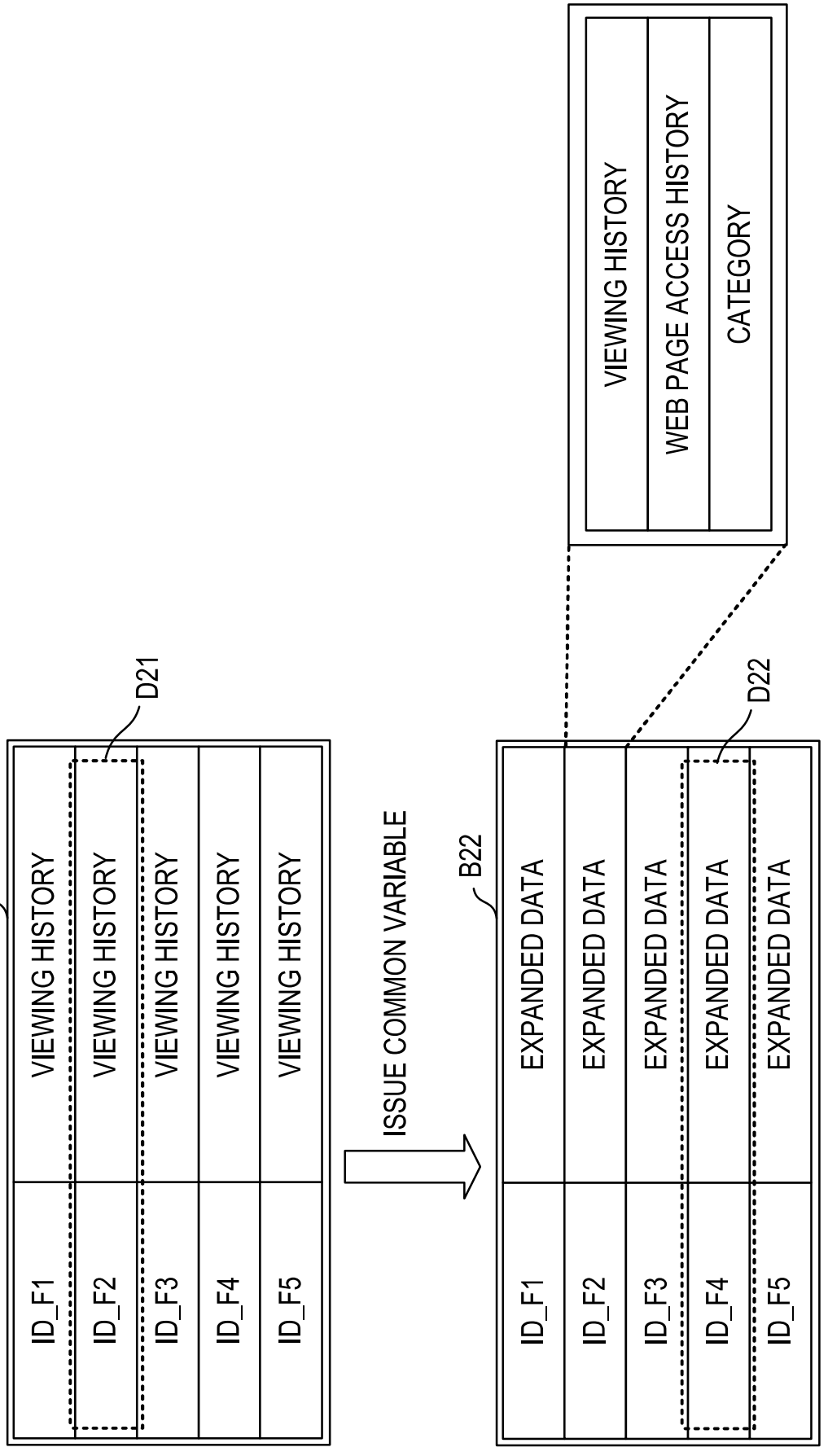

B21
D21
ID_F1
ID_F2
ID_F3
ID_F4
ID_F5
VIEWING HISTORY
VIEWING HISTORY
VIEWING HISTORY
VIEWING HISTORY
VIEWING HISTORY
ISSUE COMMON VARIABLE
B22
D22
ID_F1
ID_F2
ID_F3
ID_F4
ID_F5
EXPANDED DATA
EXPANDED DATA
EXPANDED DATA
EXPANDED DATA
EXPANDED DATA
VIEWING HISTORY
WEB PAGE ACCESS HISTORY
CATEGORY

FIG. 15

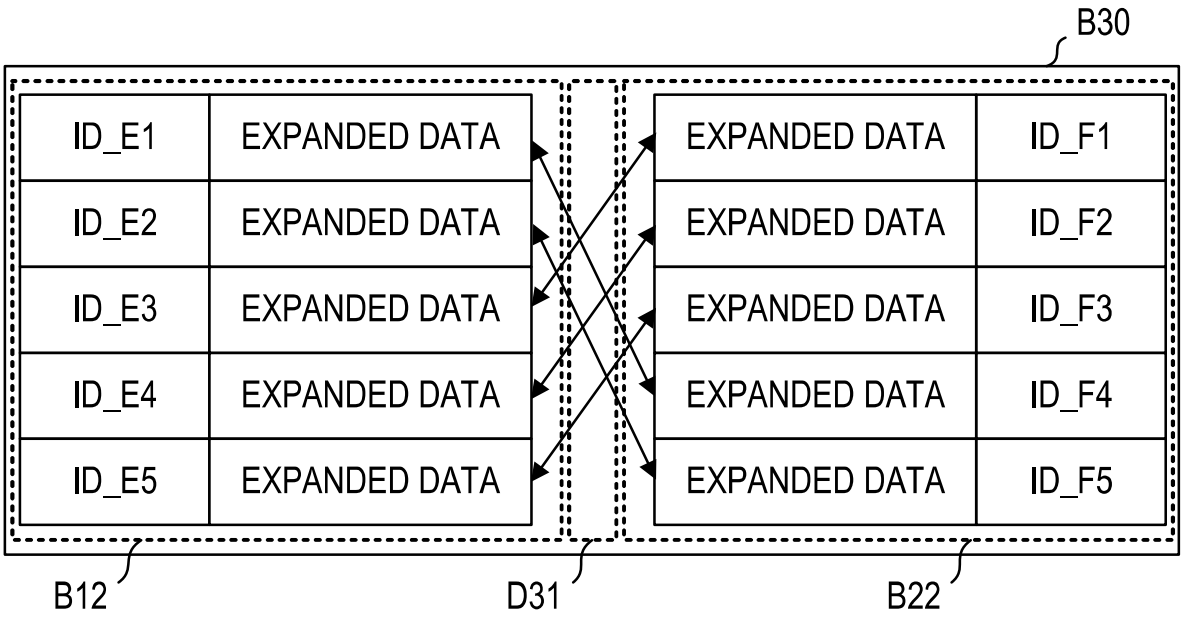

B30
ID_E1
EXPANDED DATA
ID_E2
EXPANDED DATA
ID_E3
EXPANDED DATA
ID_E4
EXPANDED DATA
ID_E5
EXPANDED DATA
EXPANDED DATA
ID_F1
EXPANDED DATA
ID_F2
EXPANDED DATA
ID_F3
EXPANDED DATA
ID_F4
EXPANDED DATA
ID_F5
B12
D31
B22

FIG. 16

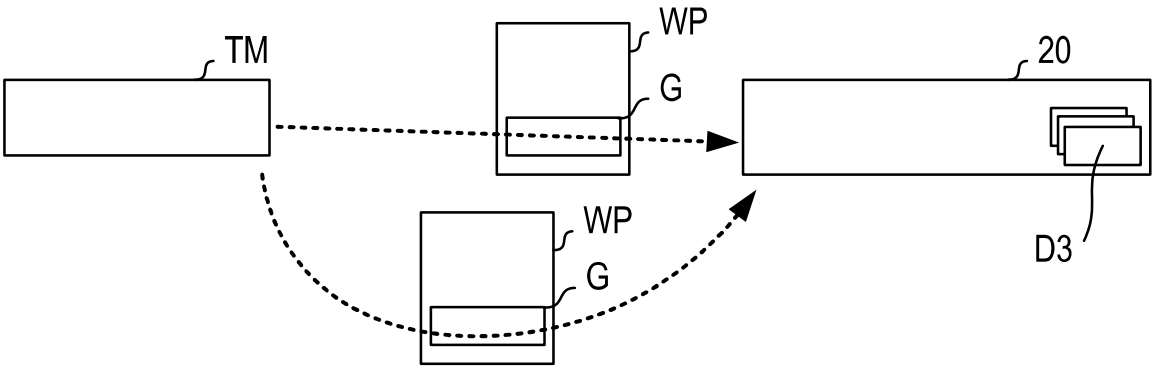


FIG. 17A

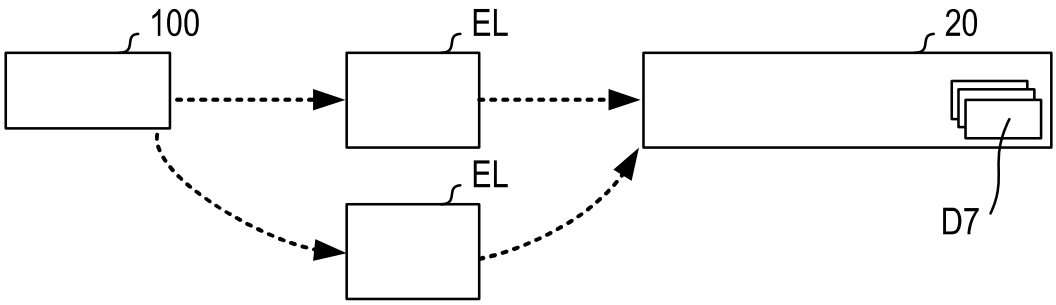


FIG. 17B