

FIG. 1A

FIG. 1B

ASSIGNMENT, APPLICATION, EXPIRATION AND RECYCLING OF DOIDS
WITH RESPECT TO DATA ATTRIBUTES AND/OR ATTRIBUTE
COMBINATIONS MAY OCCUR IN ANY OF THE FOLLOWING, OR
COMBINATION OF THE FOLLOWING, WAYS.



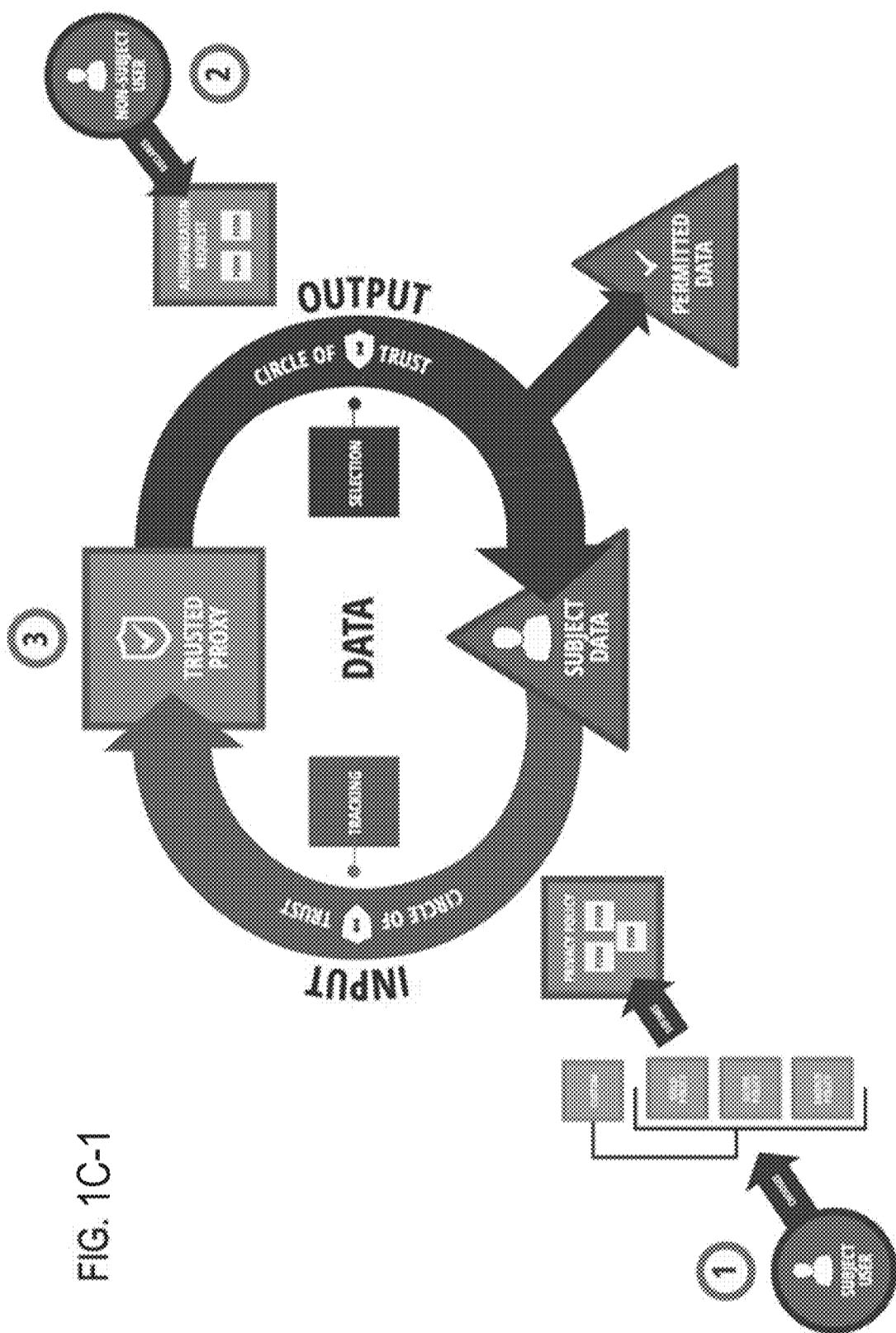
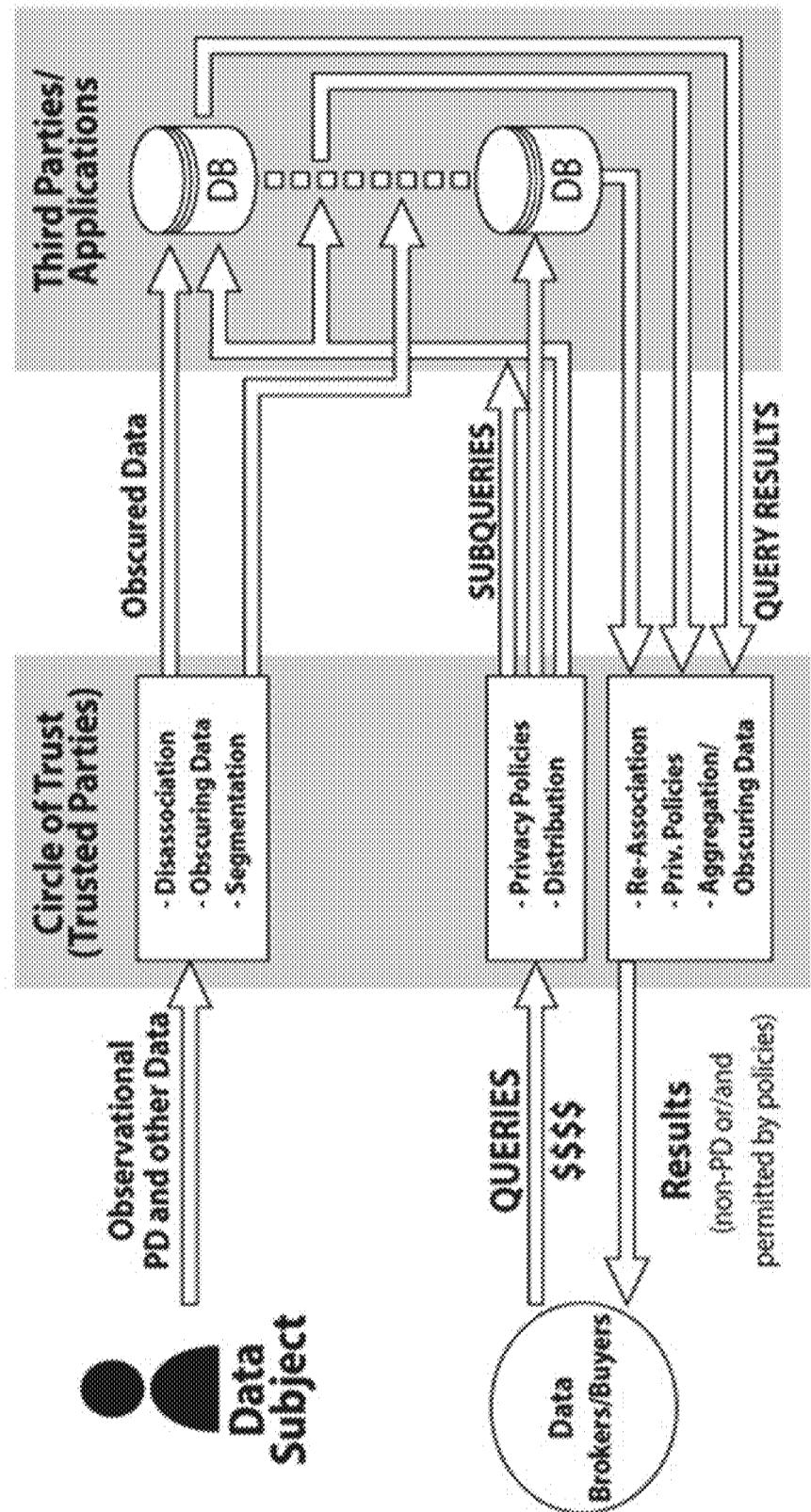


FIG. 1C-1

FIG. 1C-2



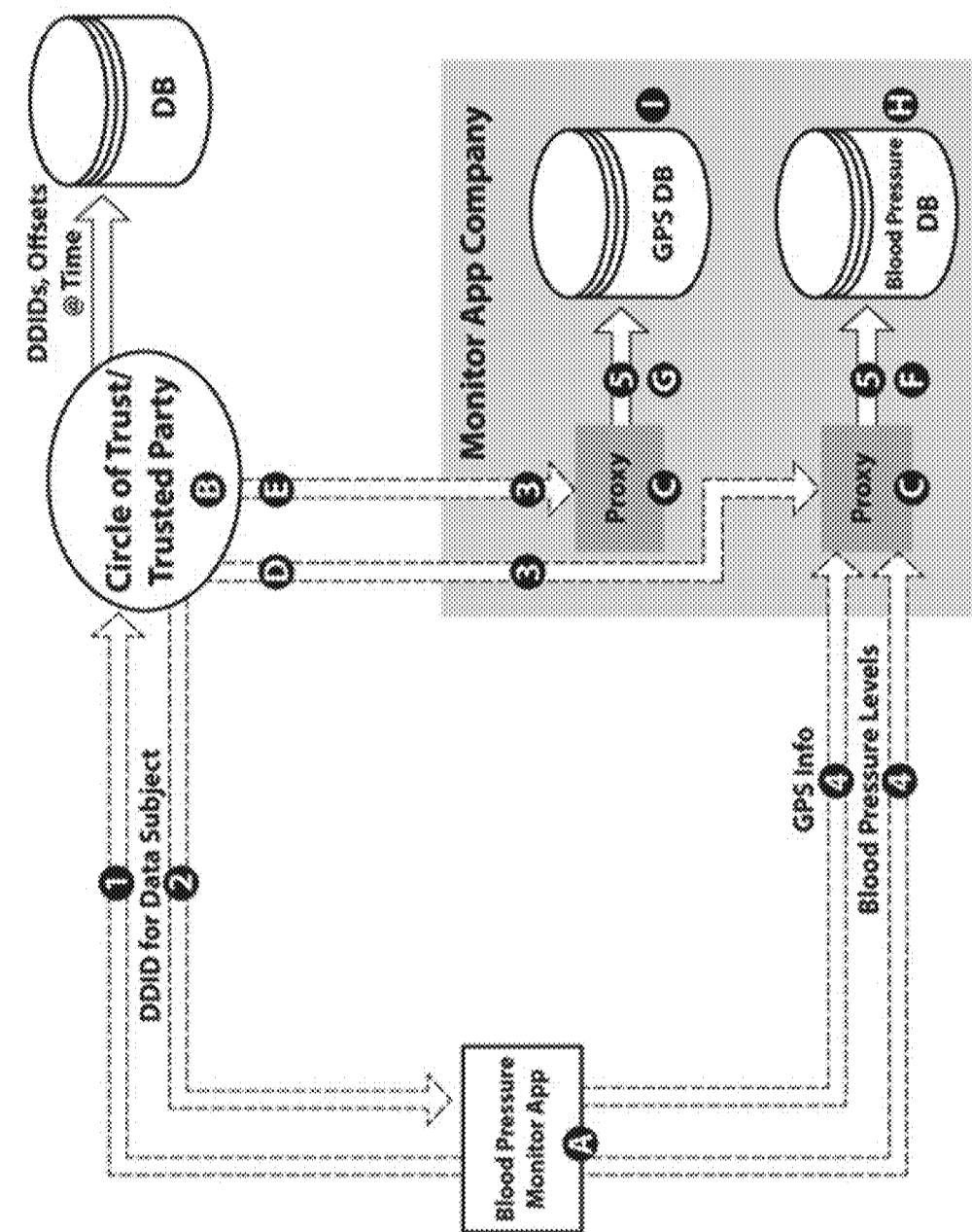
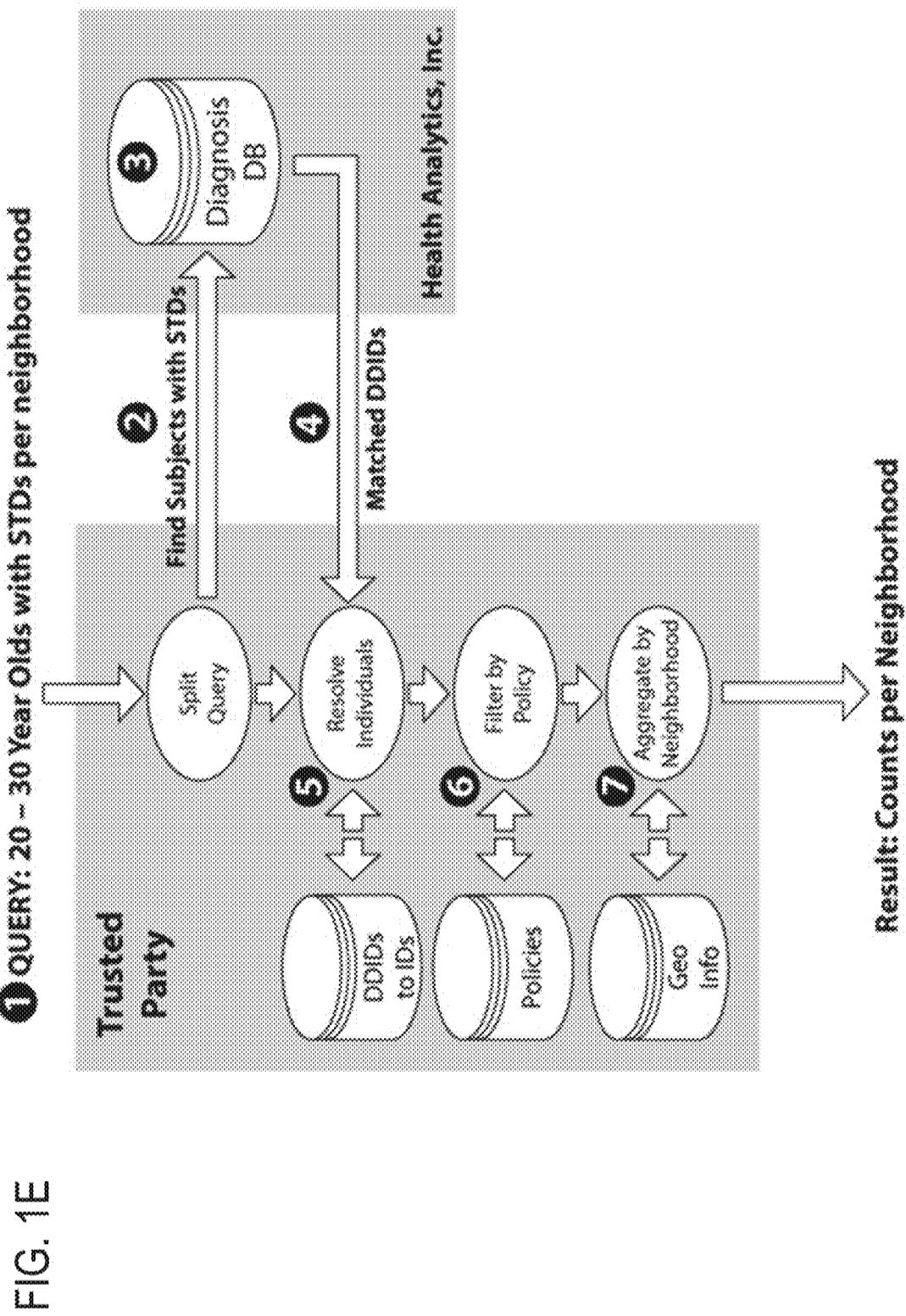


FIG. 1D

① QUERY: 20 ~ 30 Year Olds with STDs per neighborhood



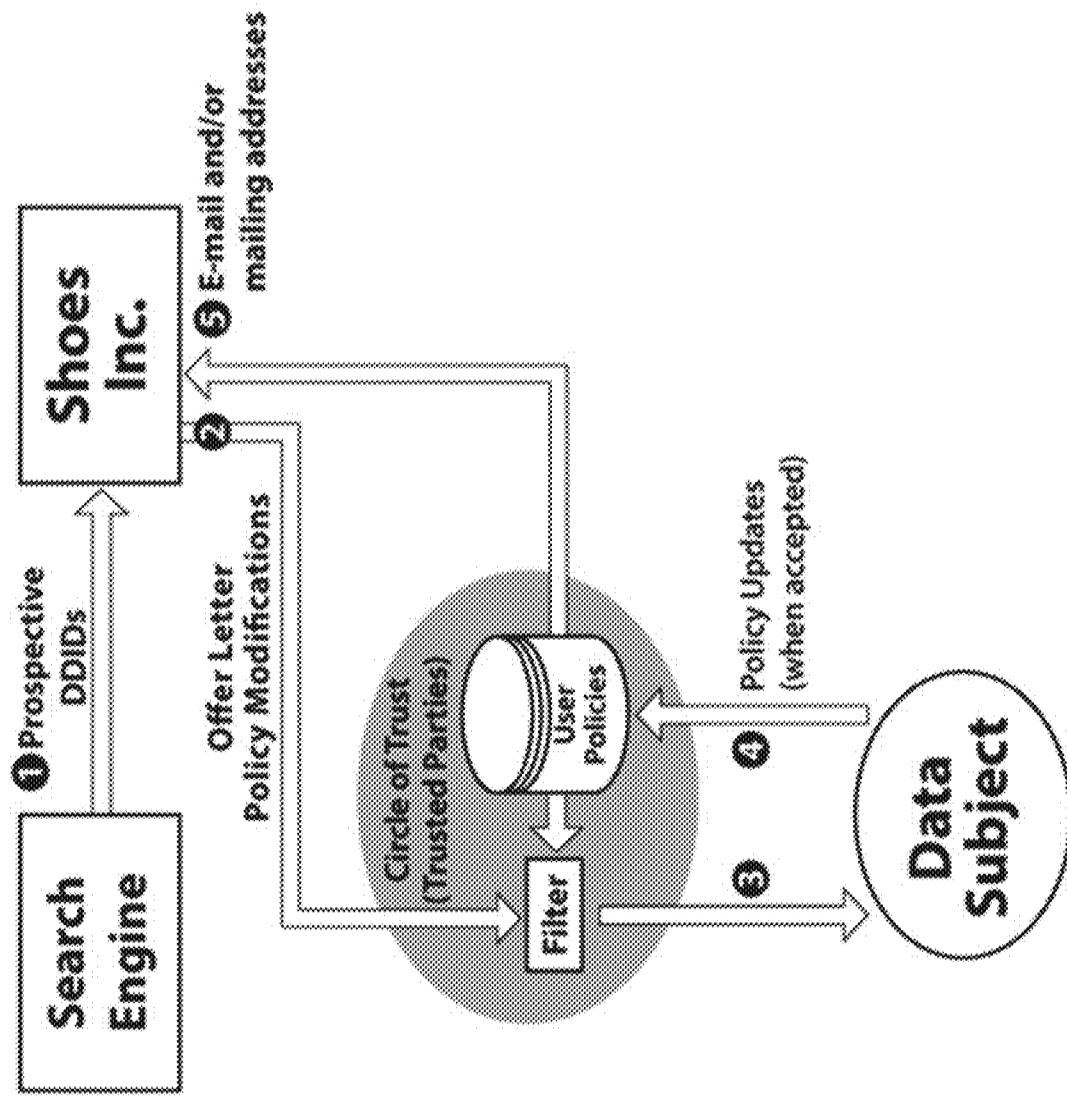


FIG. 1F

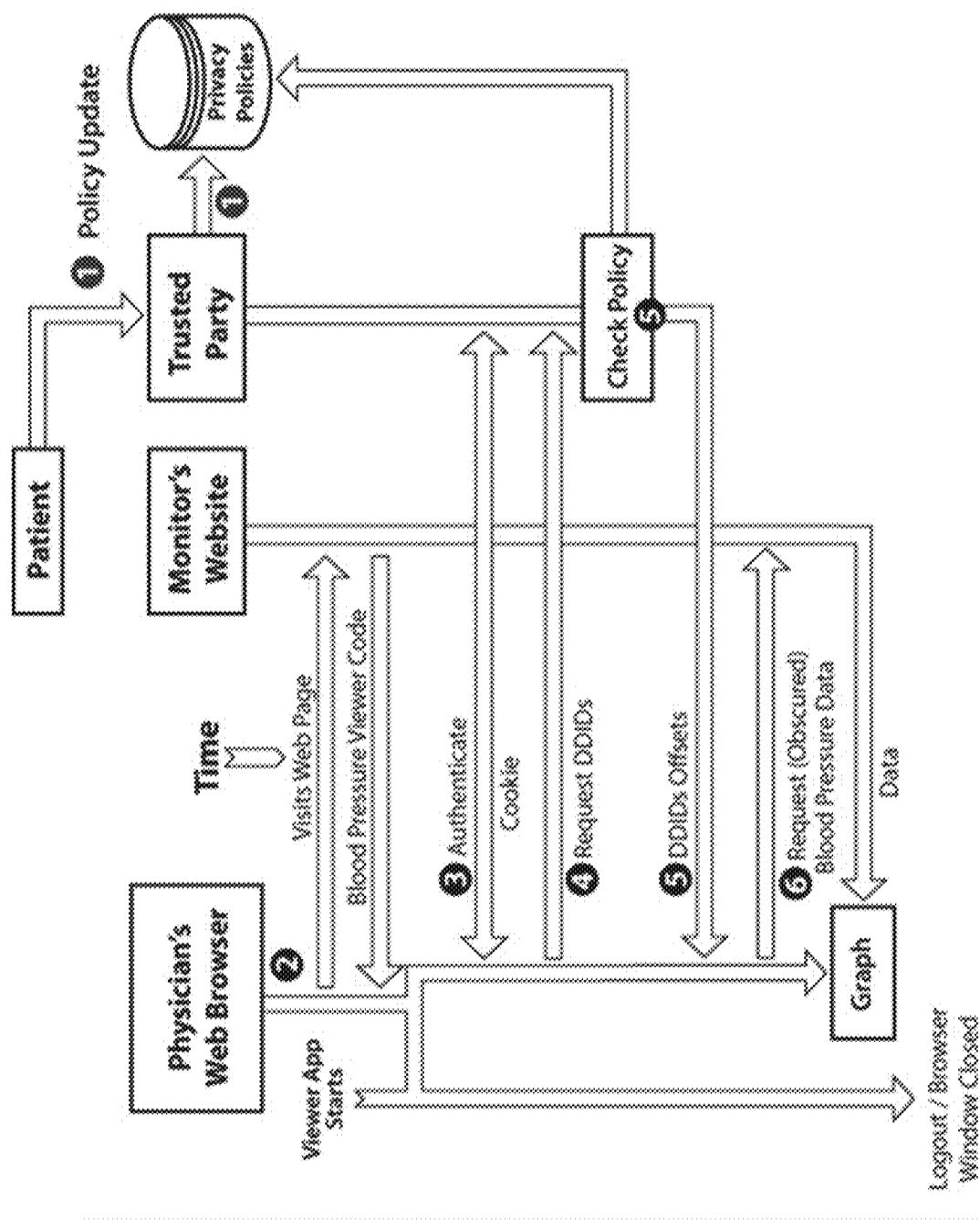
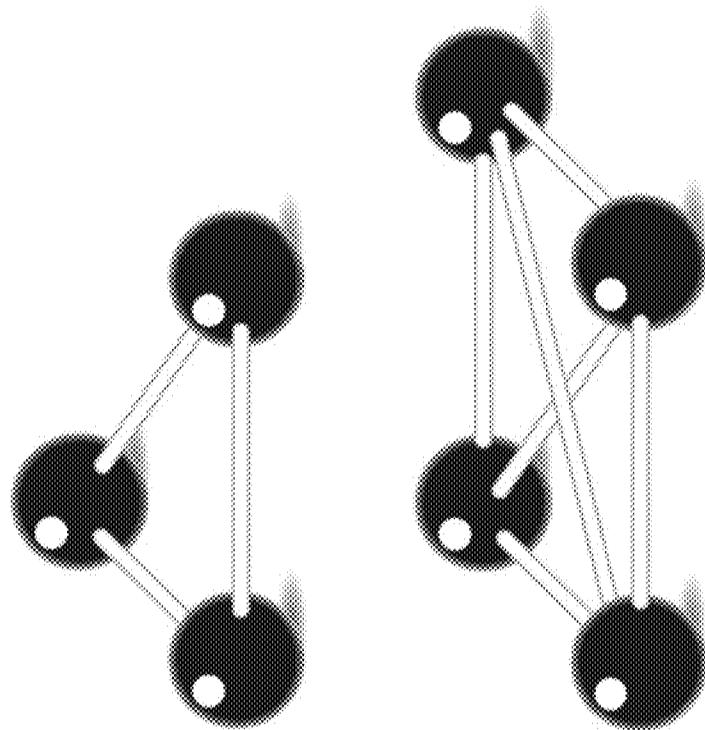
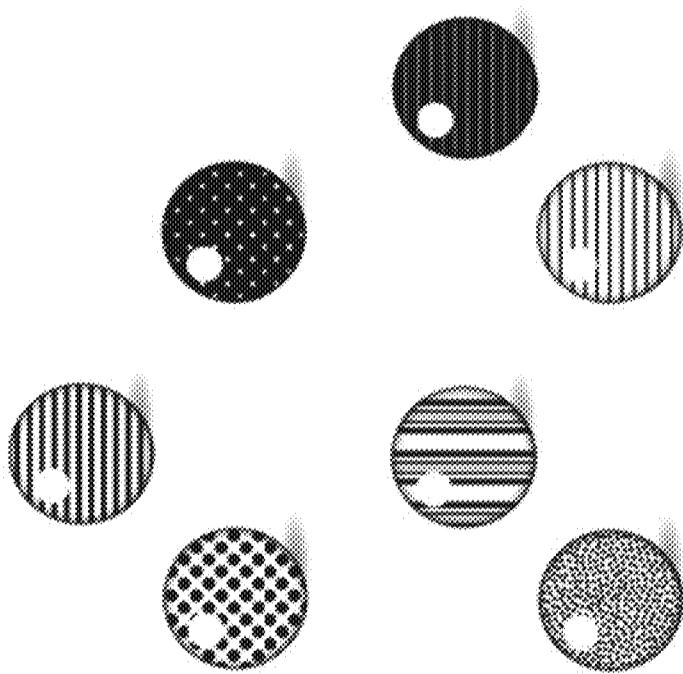


FIG. 1G

FIG. 1H



1H-A. Non-Obscured Data Elements



1H-B. Obscured Data Elements

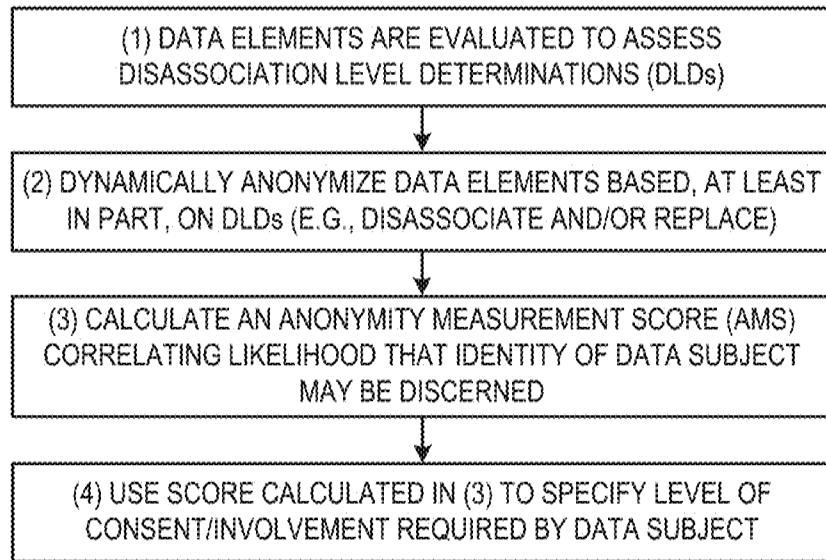


FIG. 1I

FIG. 1J

	Non- Disassociated /Replaced	Disassociation / Replacement	Disassociation / Replacement	Disassociation / Replacement
	Level 1	Level 2	Level 2	Level 3
Social Security Number	100	90	81	40.5
Credit Card Number	75	67.5	60.75	30.375
First Name	25	22.5	20.25	10.125
Last Name	25	22.5	20.25	10.125
Birthdate	25	22.5	20.25	10.125
Age	20	18	16.2	8.1
Sex	10	9	8.1	4.05

Level 1 =

DDIDs are assigned for purposes of disassociation and/or replacement and retain their initially assigned value(s) – i.e., permanent assignments

Level 2 =

DDIDs are assigned for purposes of disassociation and/or replacement and retain their initially assigned value(s) until the value(s) are changed on an ad hoc basis – i.e., ad hoc changeability.

Level 3 =

DDIDs are assigned for purposes of disassociation and/or replacement and retain their initially assigned value(s) until the value(s) are changed based on a random, fixed, variable or other dynamic basis – i.e., dynamic changeability.

FIG. 1K

Category A = Aggregated score of 75+

Category B = Aggregated score of 40 to 74.9

Category C = Aggregated score of 39.9 and lower

Category A = Data set may be used only with current, express and unambiguous consent of data subject.

Category B = Data set may be used with (i) current or (ii) prior, express consent of data subject.

Category C = Data set may be used without requiring consent of data subject.

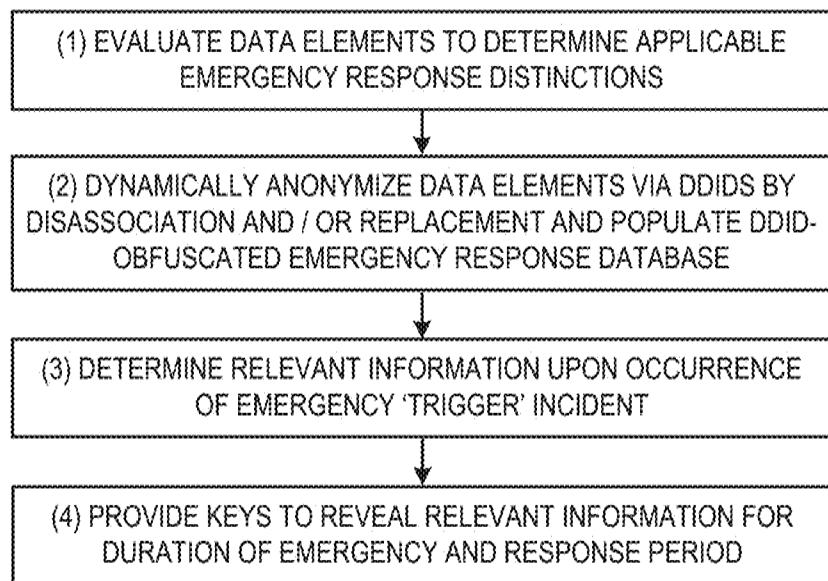
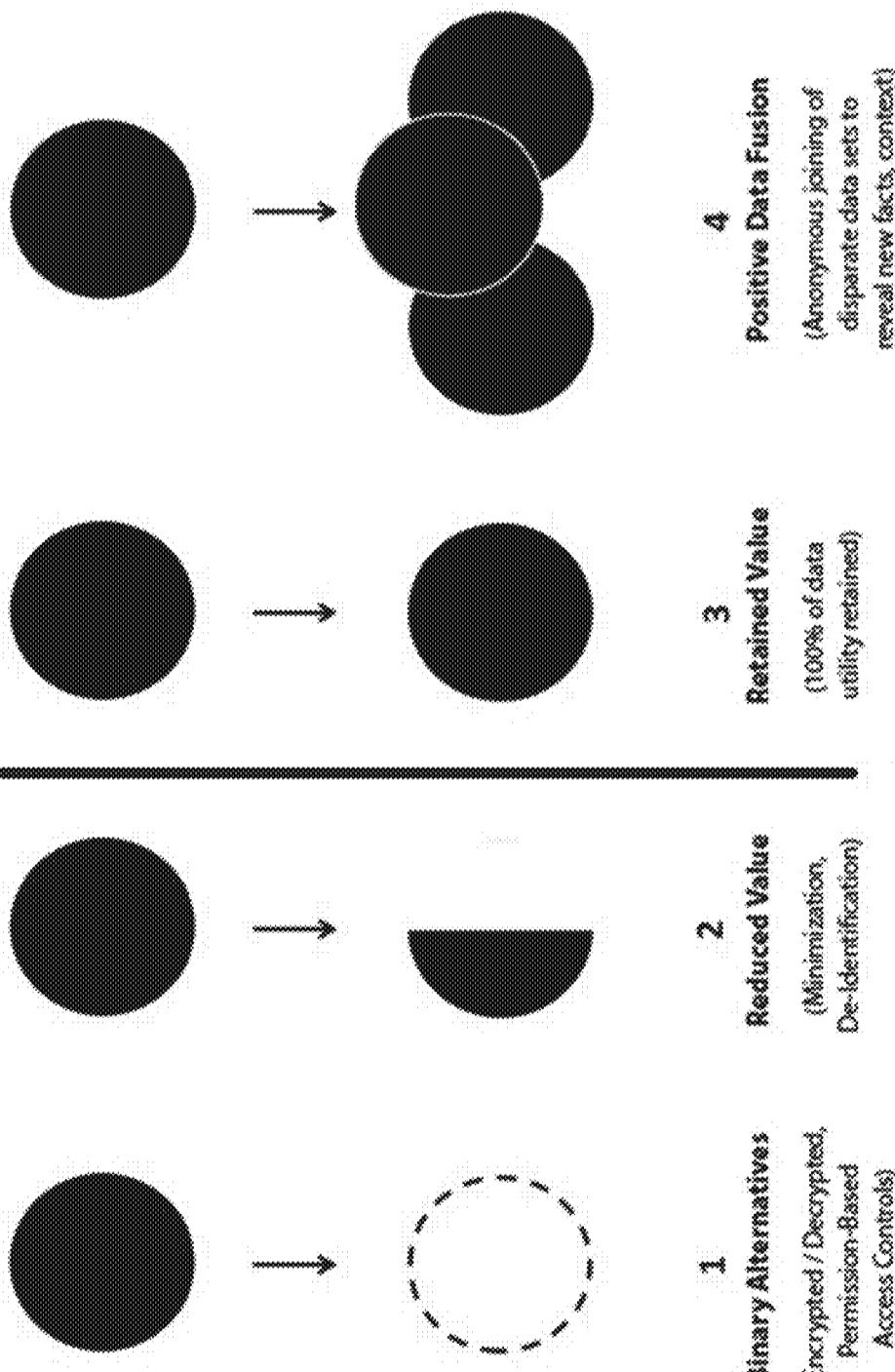


FIG. 1L

Traditional Approaches to
Data Security and Privacy

FIG. 1M

Just-In-Time-Identity(JITI)
Enabled Security and Privacy



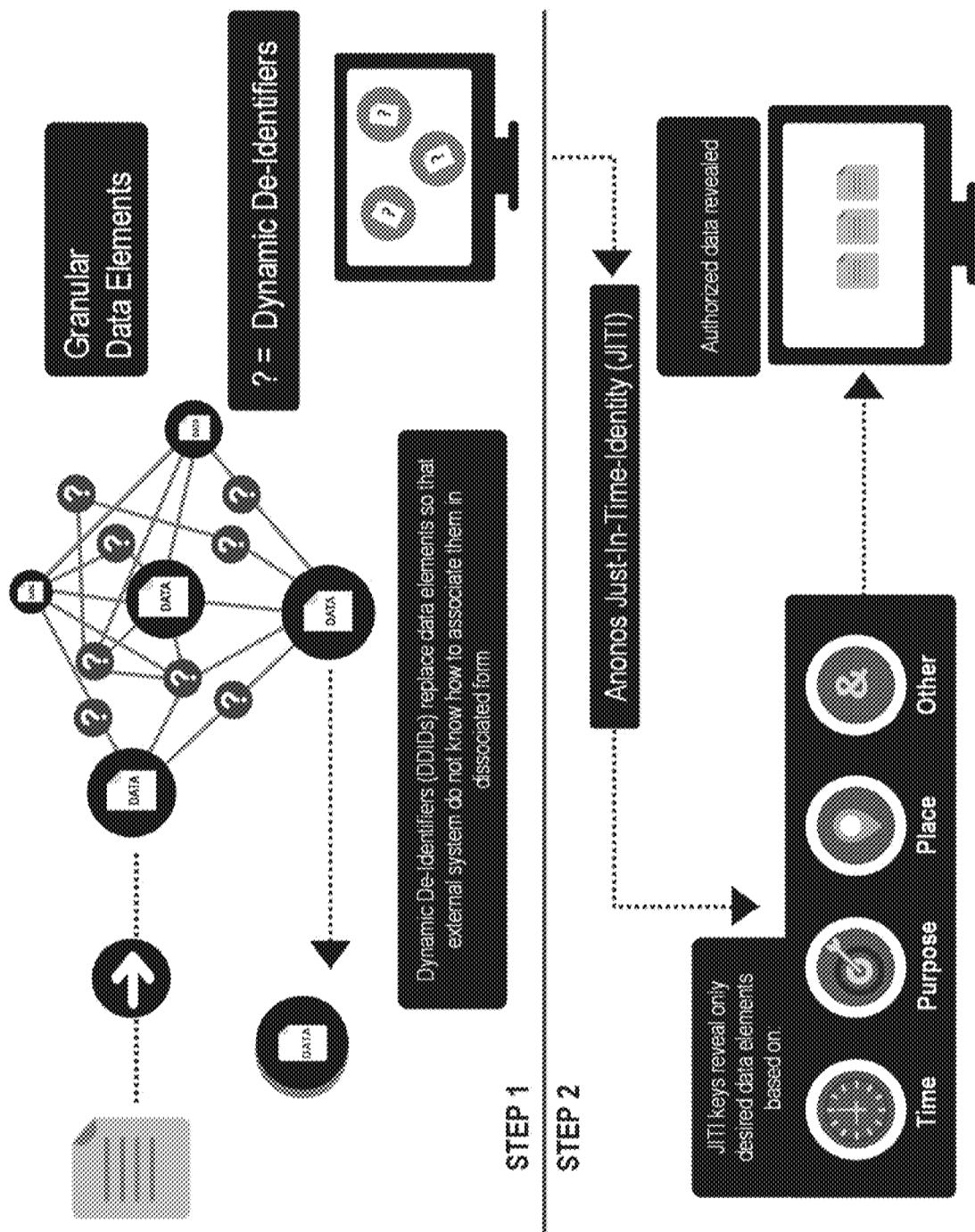


FIG. 1N

'Static' Anonymity Example.
Financial traces in a simply
anonymized data set such as the
one we use for this work. Arrows
represent the temporal sequence
of transactions for user 7abc1a23
and the prices are grouped in bins
of increasing size.

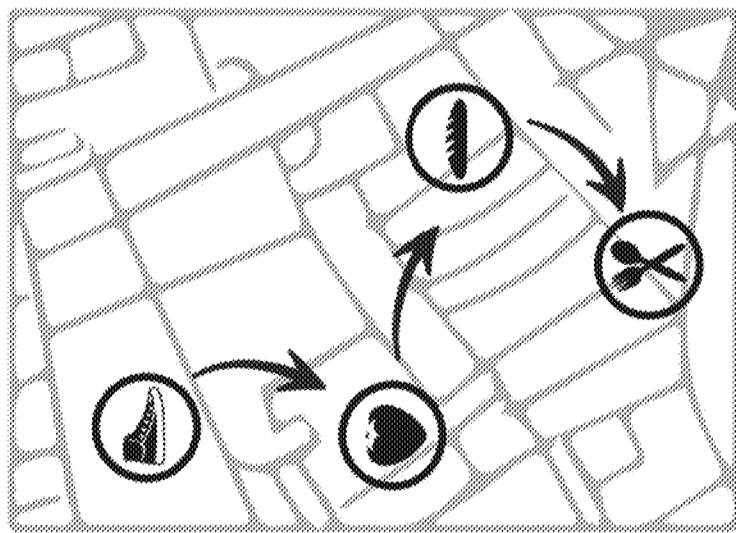


FIG. 1P-1

shop	user_id	time	price	price_bin
●	7abc1a23	09/23	\$97.30	\$49 - \$146
●	7abc1a23	09/23	\$15.13	\$5 - \$16
●	3092fc10	09/23	\$43.78	\$16 - \$49
●	7abc1a23	09/23	\$4.33	\$2 - \$5
●	4c7af72a	09/23	\$12.29	\$5 - \$16
●	89c0829c	09/24	\$3.66	\$2 - \$5
●	7abc1a23	09/24	\$35.81	\$16 - \$49

Just-In-Time-Identity (JITI) enables dynamic protection at the data element level. The universal 'no' symbols highlight that dynamically obscuring data linkages that could be aggregated by parsing recognizable static 'anonymous' identifiers breaks the assumptions necessary for re-identification.

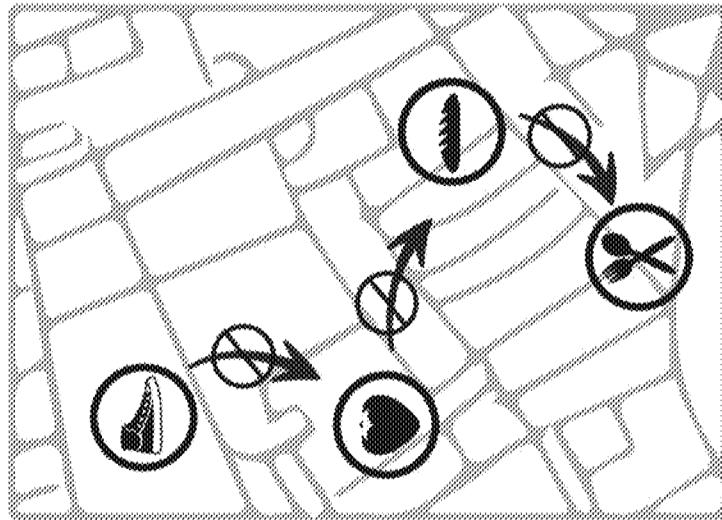
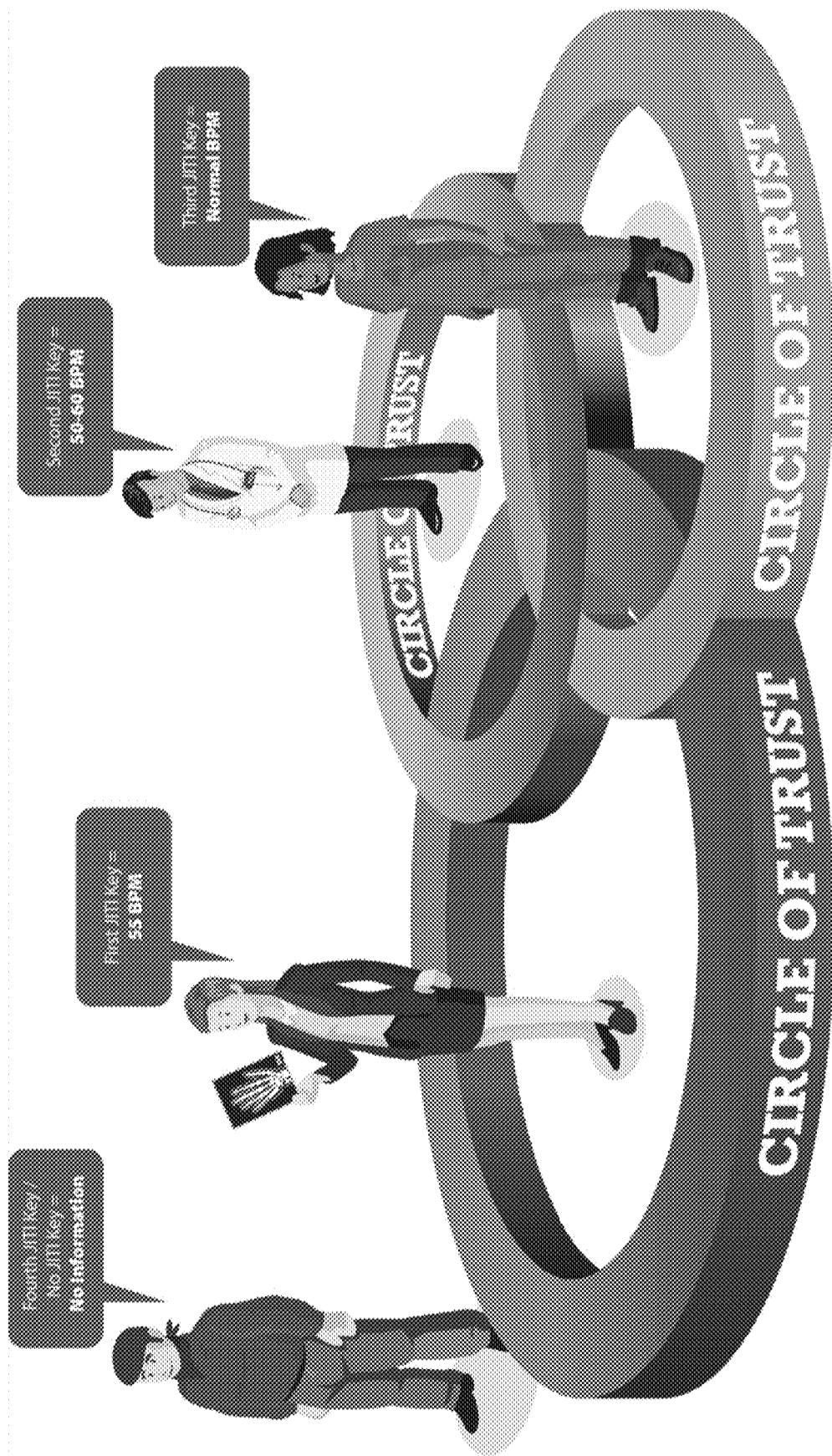


FIG. 1P-2

shop	user_id	time	price	price_bin
	7abc1a23	09/23	\$97.30	\$49 - \$146
	548#3216	09/23	\$15.13	\$5 - \$16
	3092fc10	09/23	\$43.78	\$16 - \$49
	DeTym321	09/23	\$4.33	\$2 - \$5
	4c7af72a	09/23	\$12.29	\$5 - \$16
	89c0829c	09/24	\$33.66	\$2 - \$5
	HHyargLM	09/24	\$35.81	\$16 - \$49

FIG. 1Q



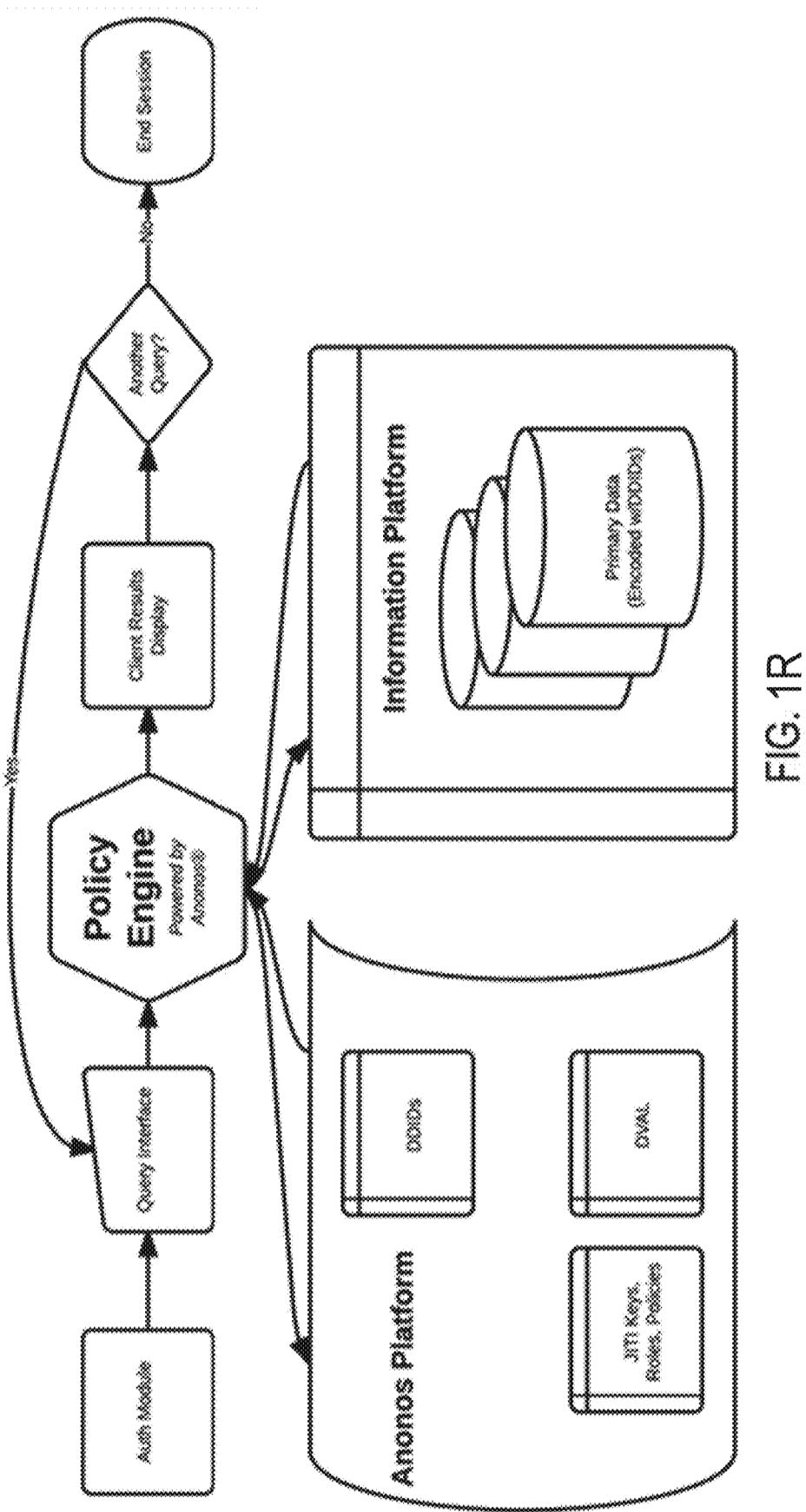
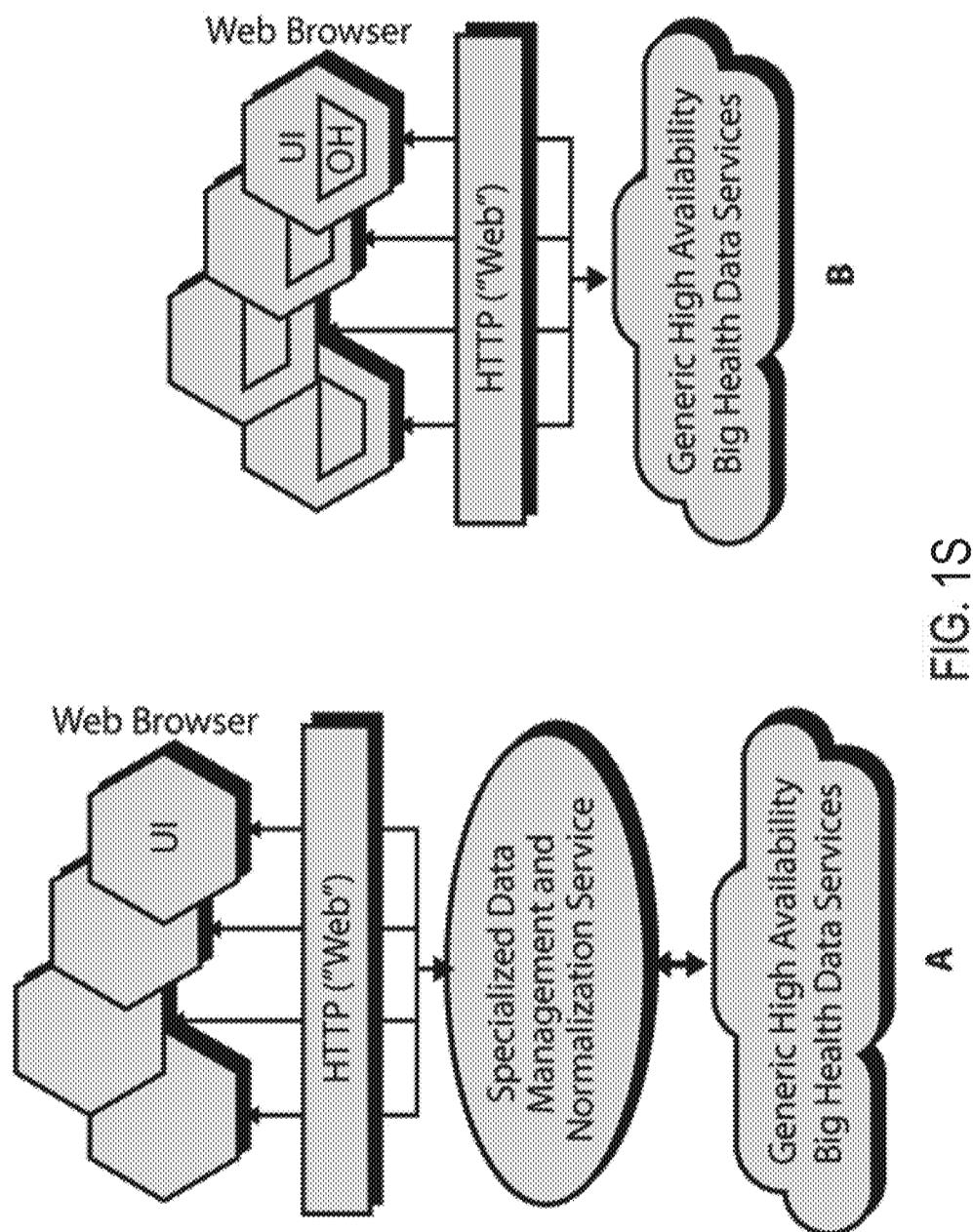


FIG. 1R



record_date	name	bpm	address	city	state	country	birthdate
2008-10-28	Jane Freemont	59	904 32 nd St N	Milwaukee	WI	USA	1944-10-28
2011-01-23	Jane Freemont	55	904 32 nd St N	Milwaukee	WI	USA	1944-10-28

record_date	name	bpm	address	city	state	country	birthdate
2008-10-28	RD-b1967de	RD-8bf677fa	RD-503a808c	RD-abcf63e7	RD-5f89d996	USA	RD-f2148b47
2011-01-23	RD-9215622c	RD-4a7e8d33	RD-f2ddbf97	RD-2b607a8f	RD-46c3a855	USA	RD-4f0b03c0

record_date	name	bpm	address	city	state	country	birthdate
2011-01-23	Jane Freemont	55	904 32 nd St N	Milwaukee	WI	USA	1944-10-28

record_date	name	bpm	address	city	state	country	birthdate
2011-01-23	RD-9215622c	RD-4a7e8d33	RD-f2ddbf97	RD-2b607a8f	RD-46c3a855	USA	RD-4f0b03c0

104

record_date	name	bpm	address	city	state	country	birthdate
2011-01-23	RD-9215622c	RD-4a7e8d33	RD-f2ddbf97	RD-2b607a8f	RD-46c3a855	USA	RD-4f0b03c0

record_date	name	bpm	address	city	state	country	birthdate
2011-01-23	RD-9215622c	55	RD-f2ddbf97	RD-2b607a8f	RD-46c3a855	USA	1944-10-28

105

record_date	name	bpm	address	city	state	country	birthdate
2011-01-23	RD-9215622c	55	RD-f2ddbf97	RD-2b607a8f	RD-46c3a855	USA	1944-10-28

FIG. 1T

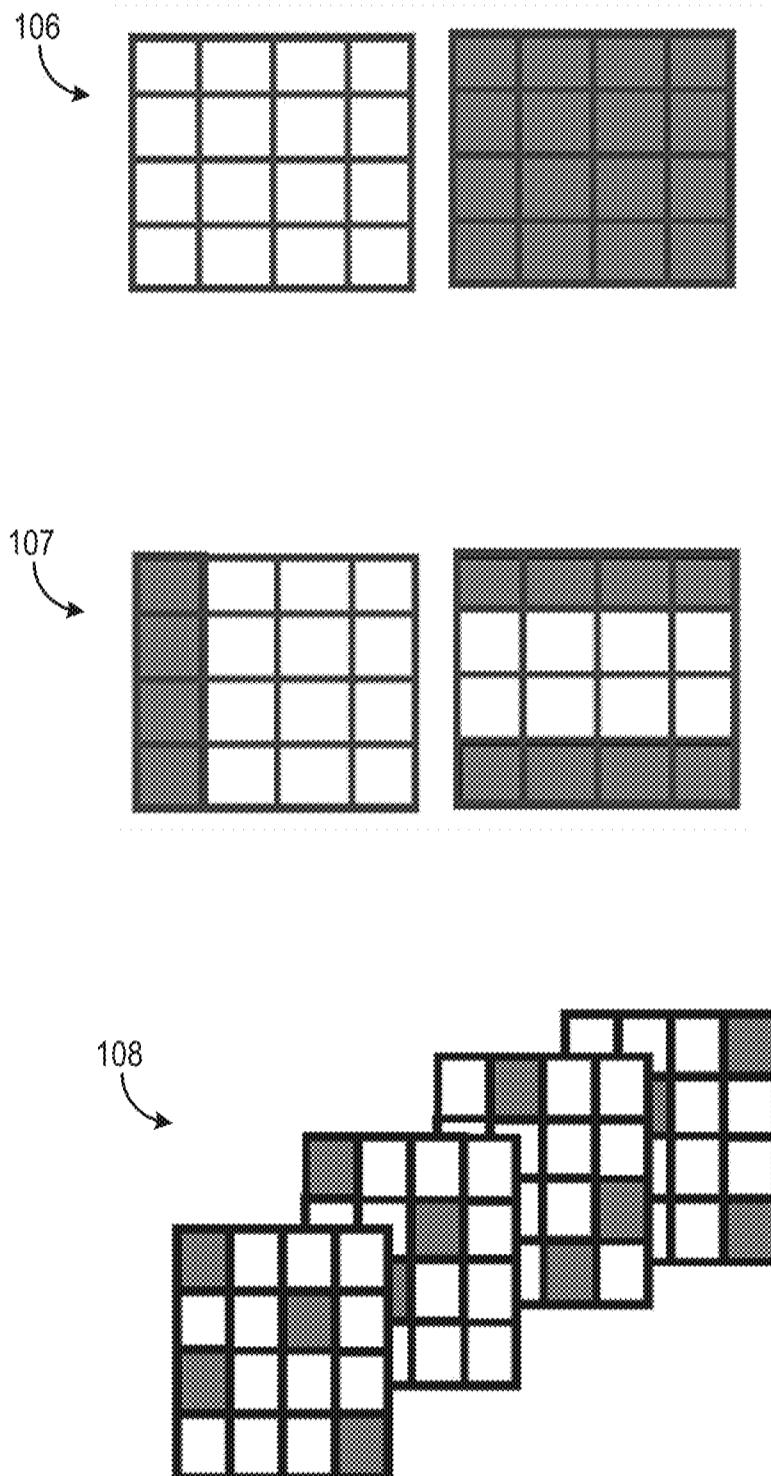


FIG. 1U

FIG. 1V

110

Subject Area	Accuracy Rating	Privacy Rating	Price Per Run
D8276921 Policy	HIPAA	87.3	92.54
CT209jh276 Policy	HIPAA	54.1	97.3
CT209jh299 Policy	GDPR	49.87	95.3
CT209jh371 Policy	GDPR	51.6	77.64

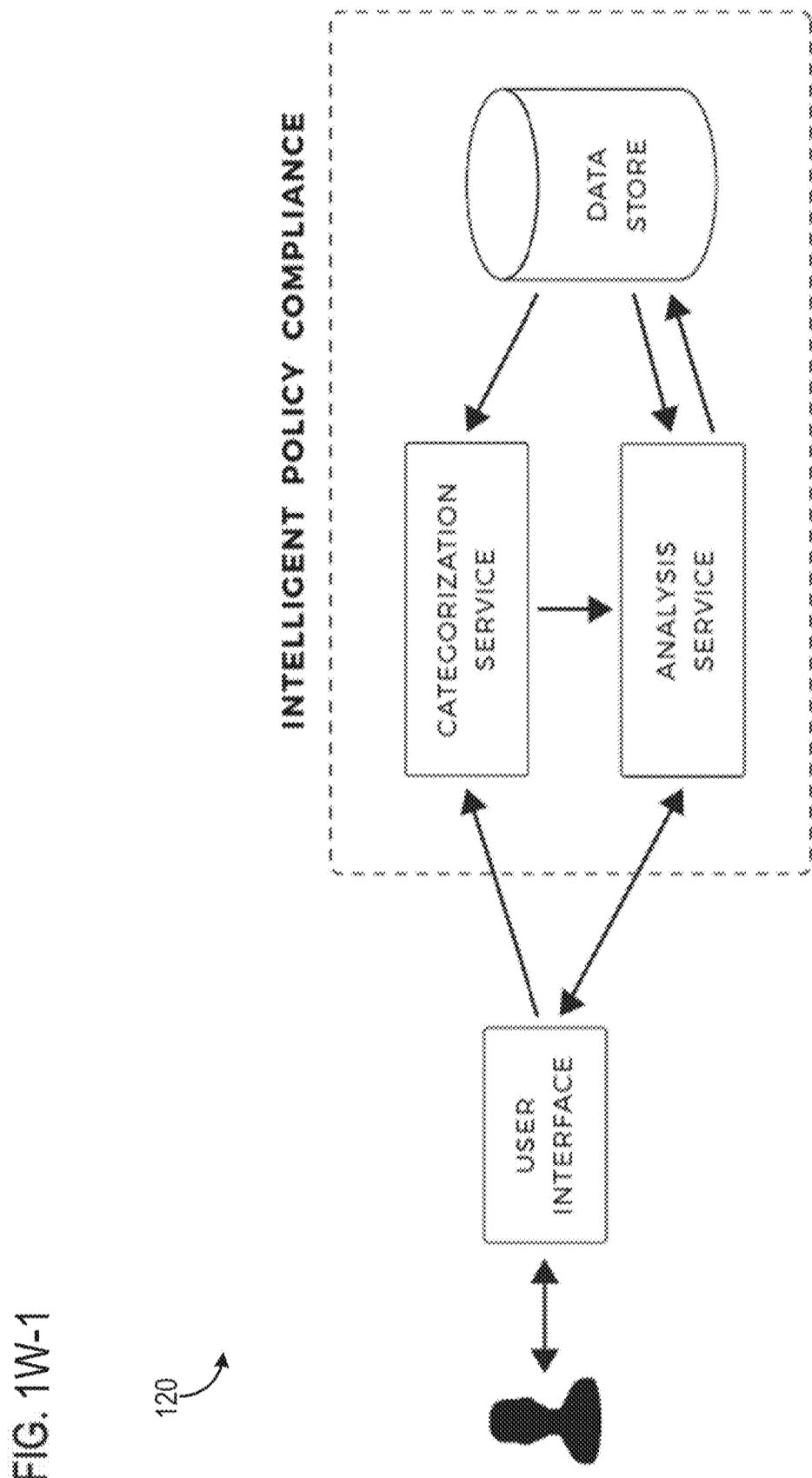


FIG. 1W-1

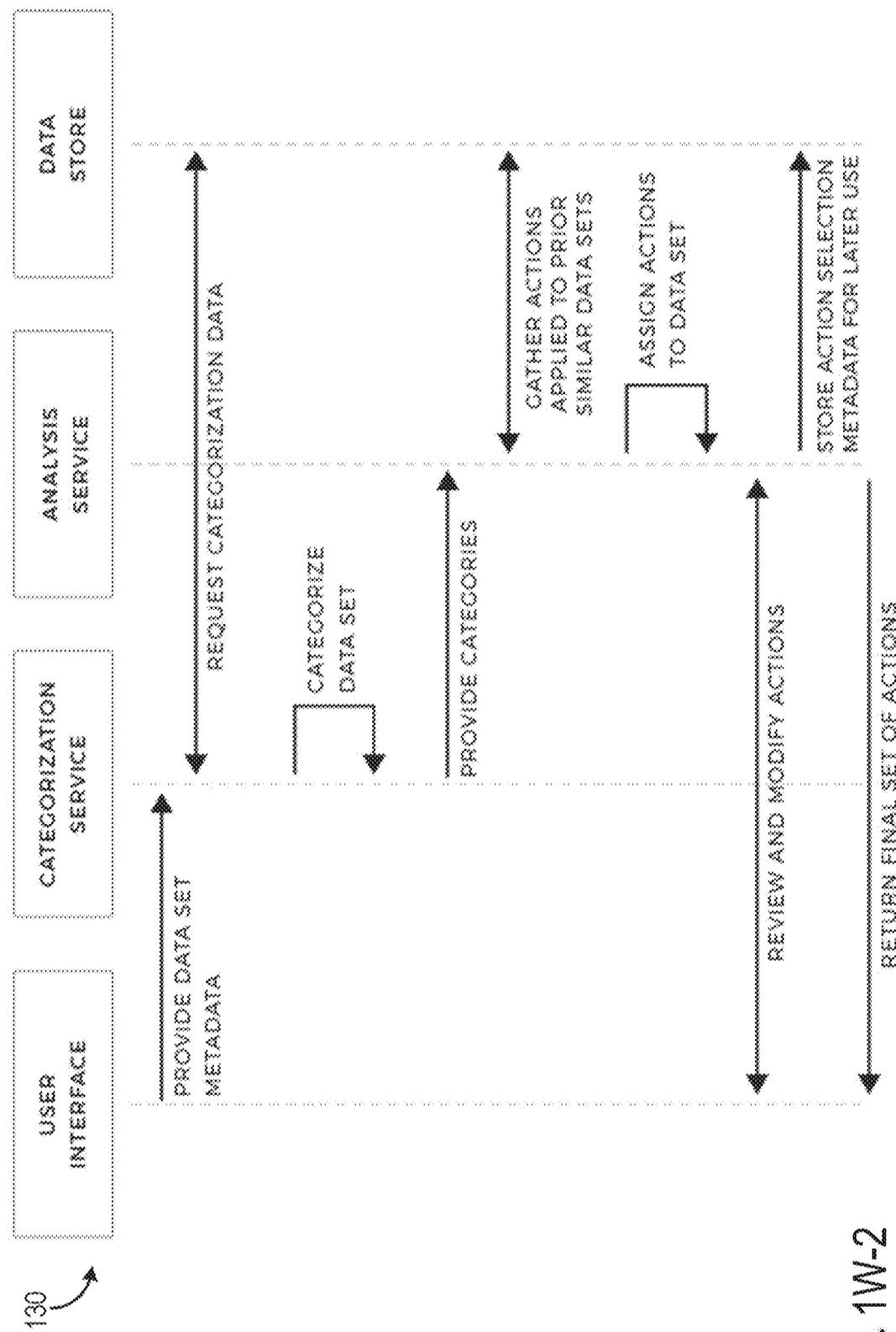


FIG. 1W-2

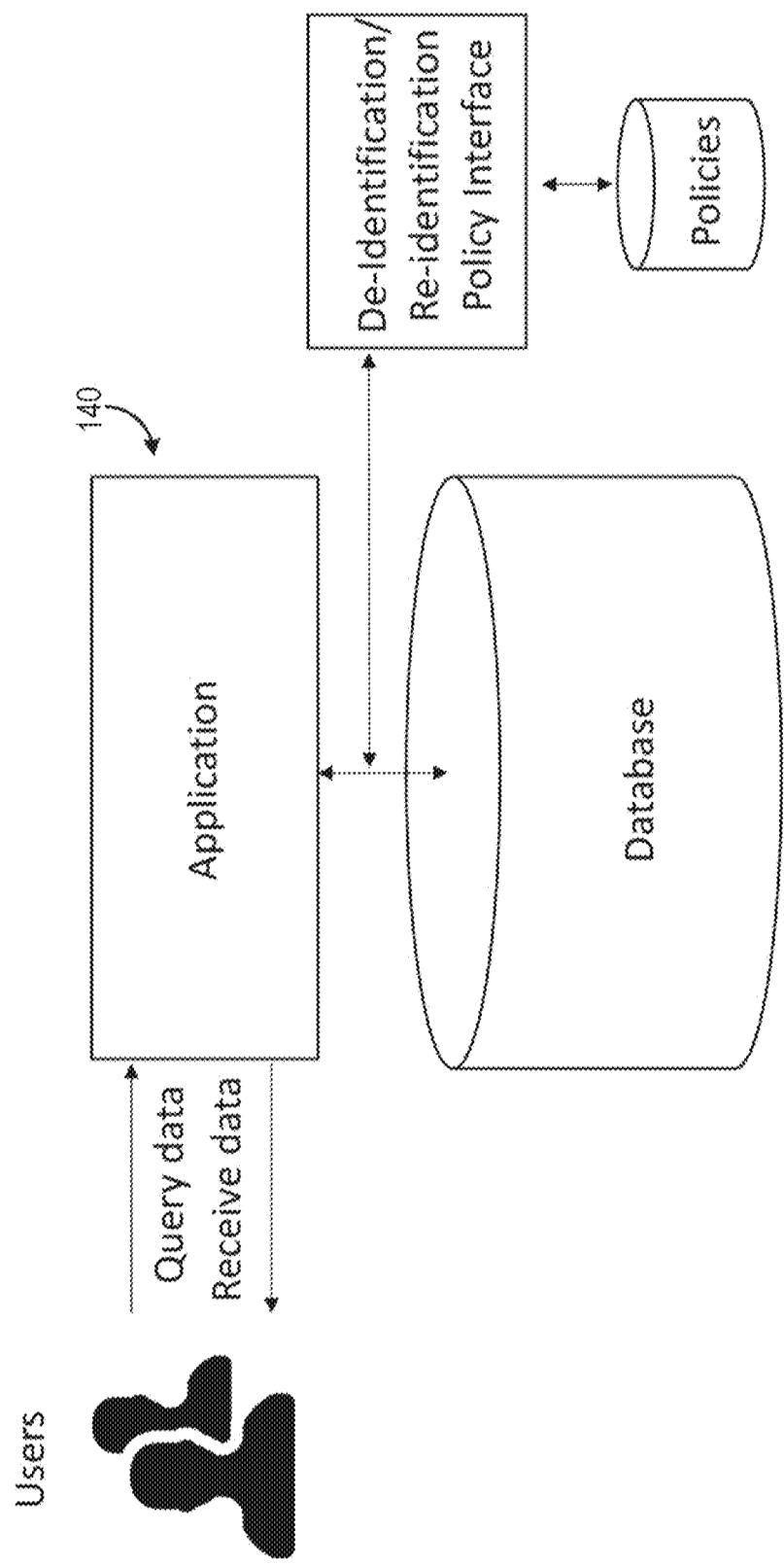


FIG. 1X-1

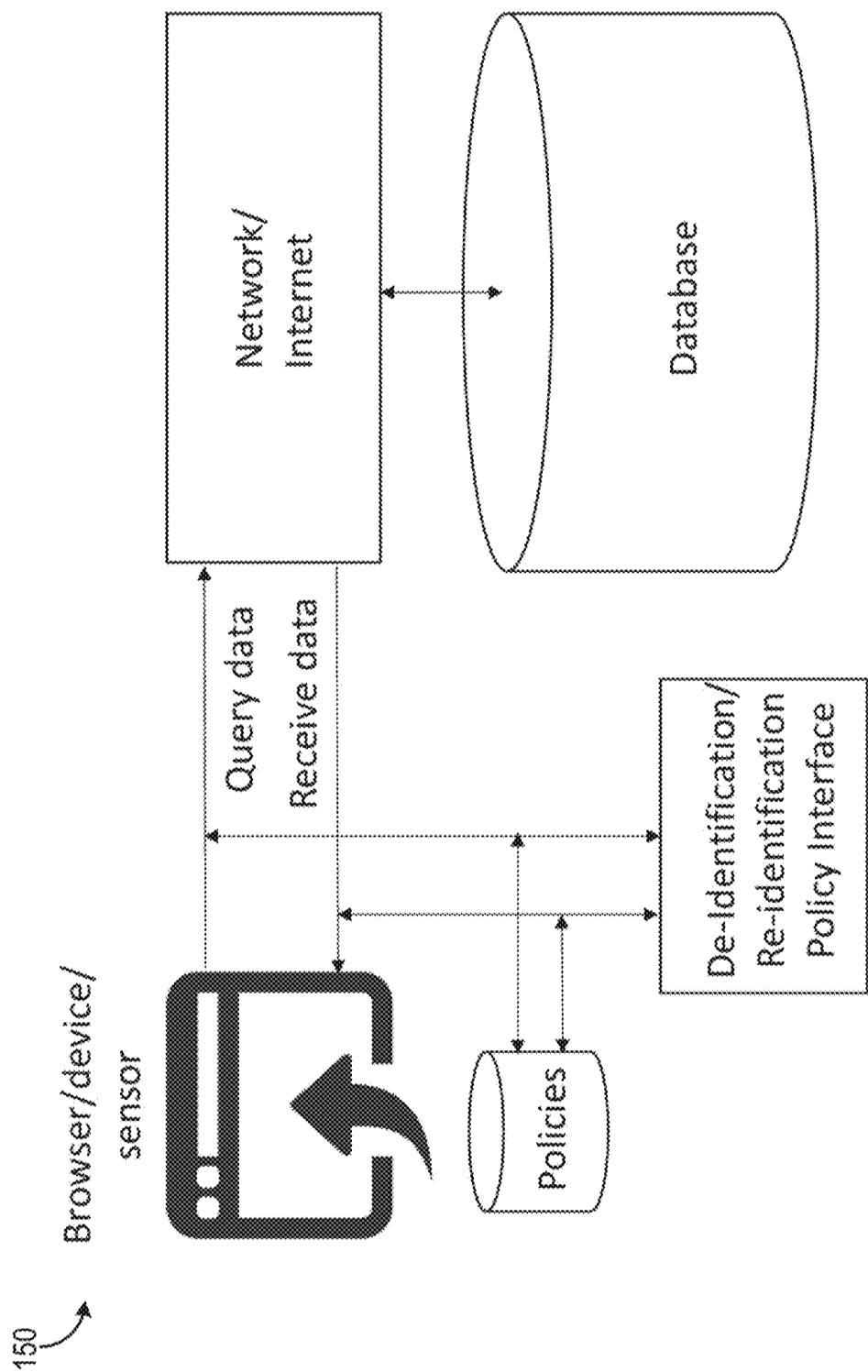


FIG. 1X-2

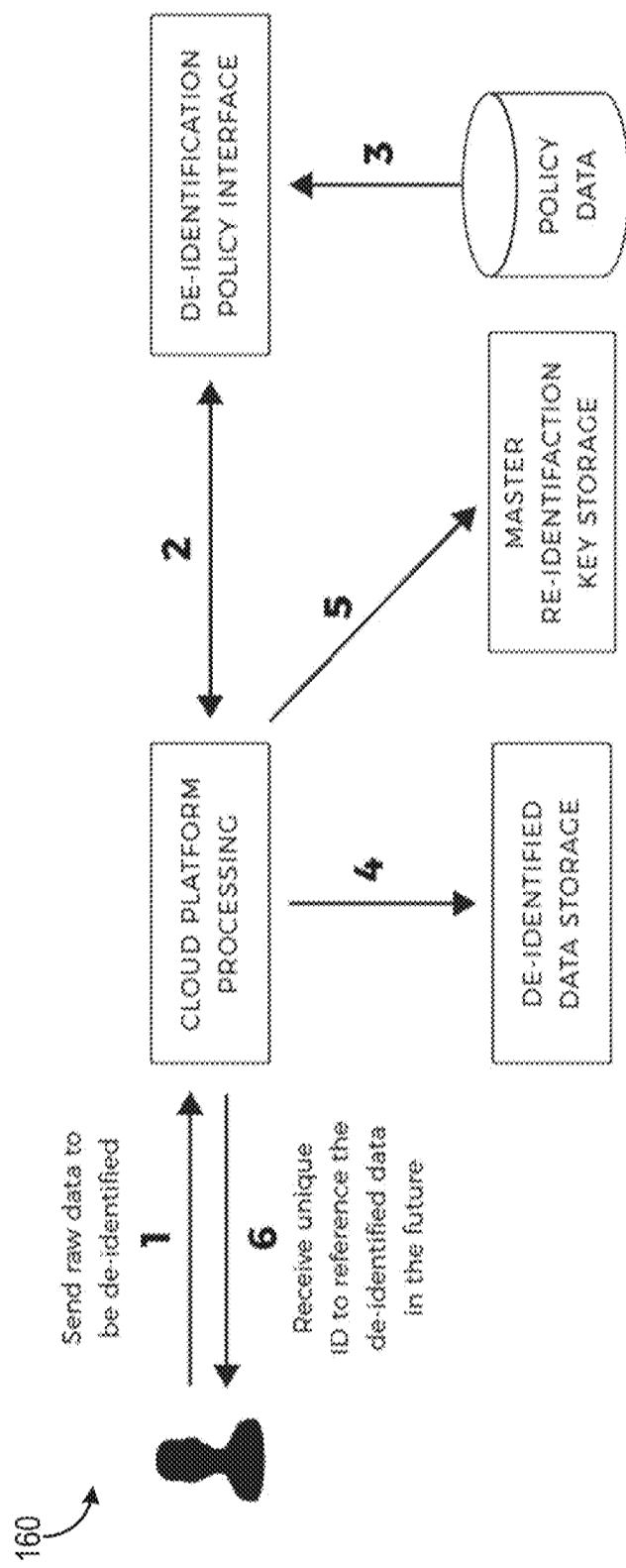


FIG. 1Y-1

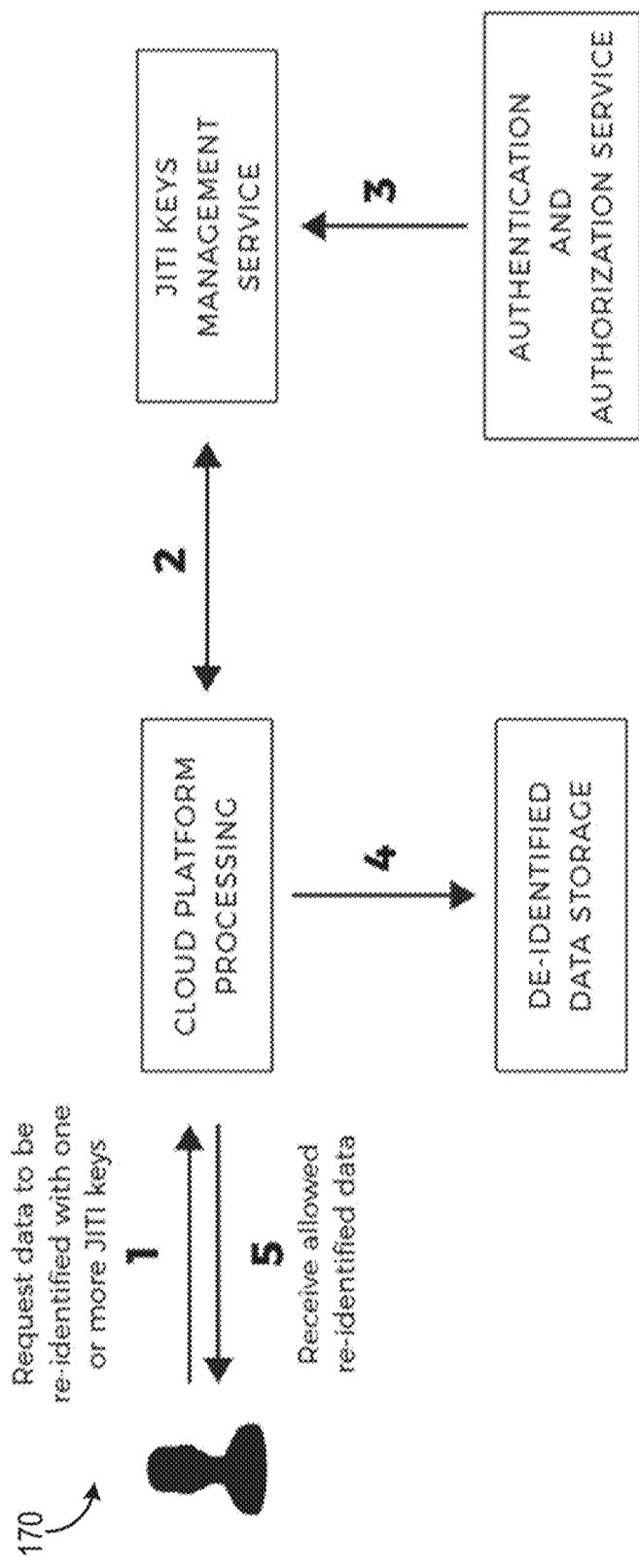


FIG. 1Y-2

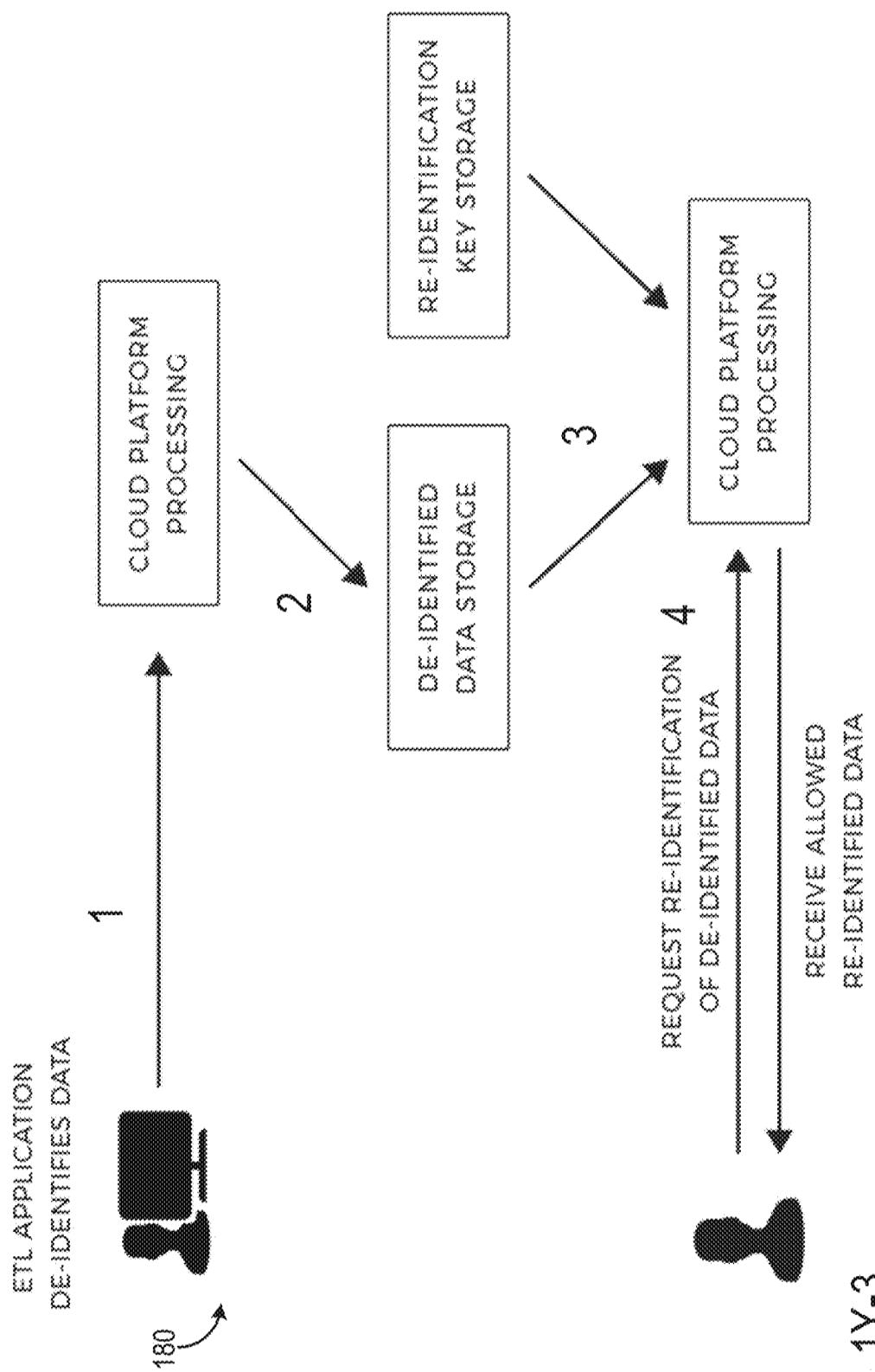


FIG. 1Y-3

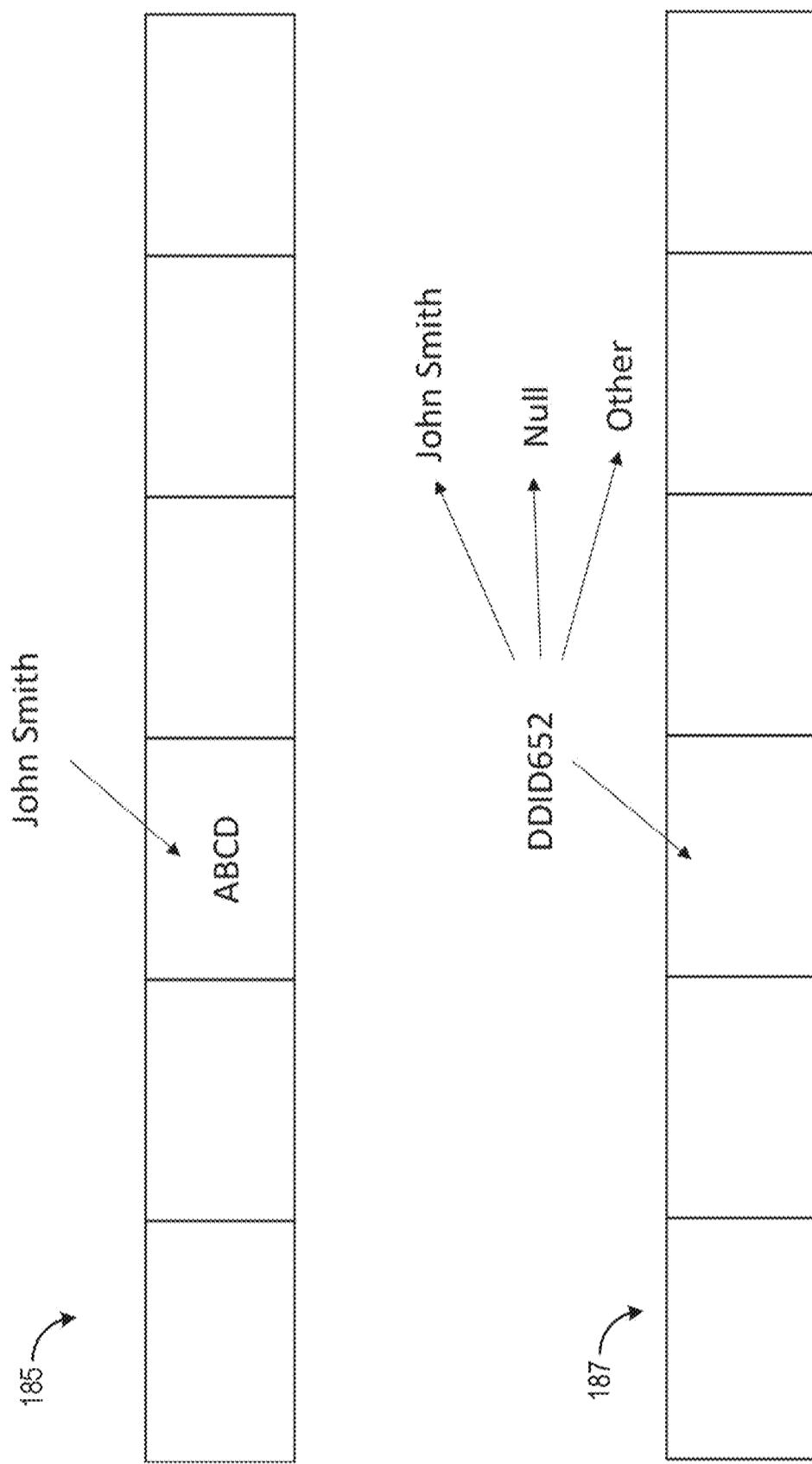


FIG. 1Z-1

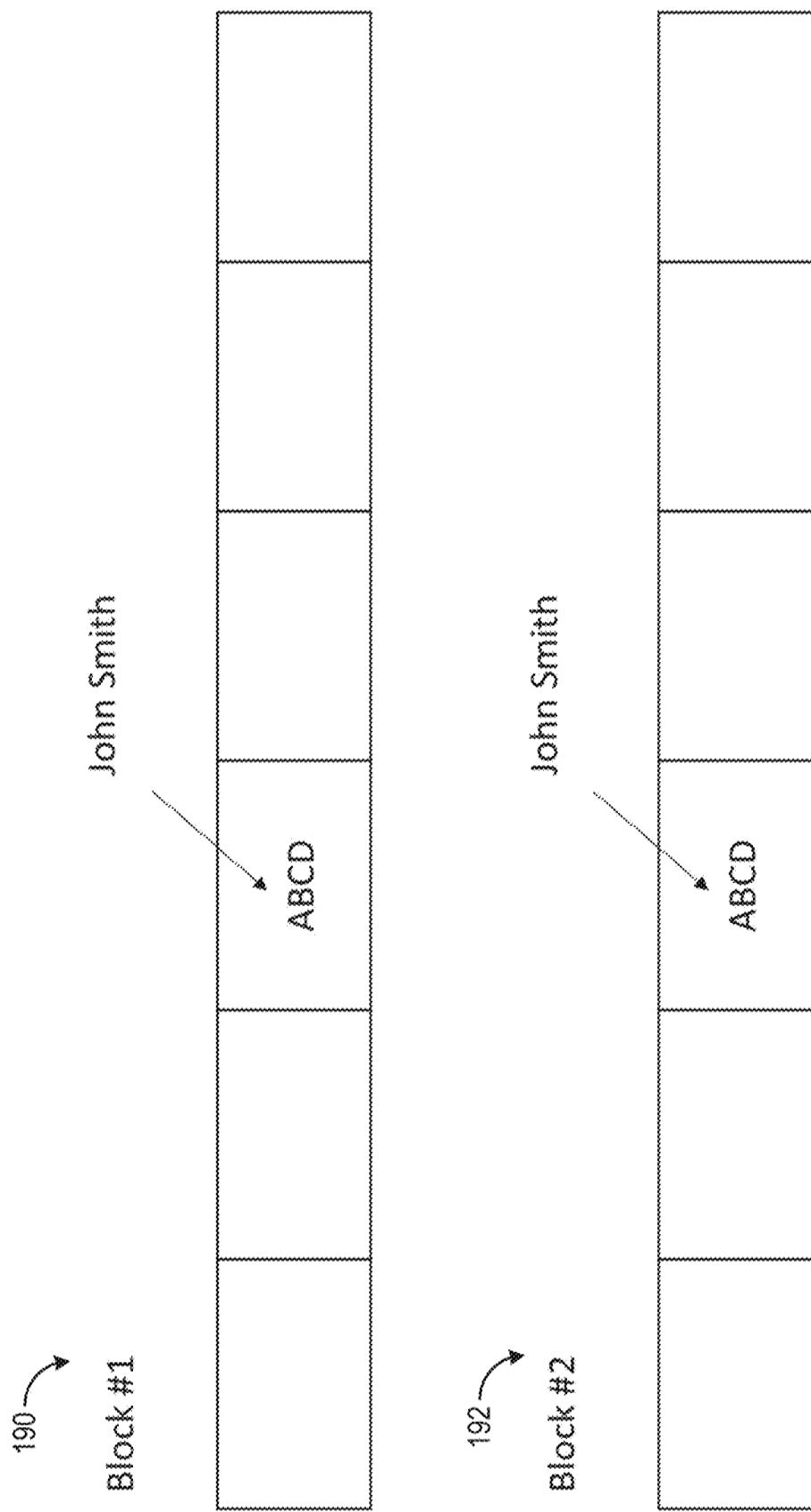


FIG. 1Z-2

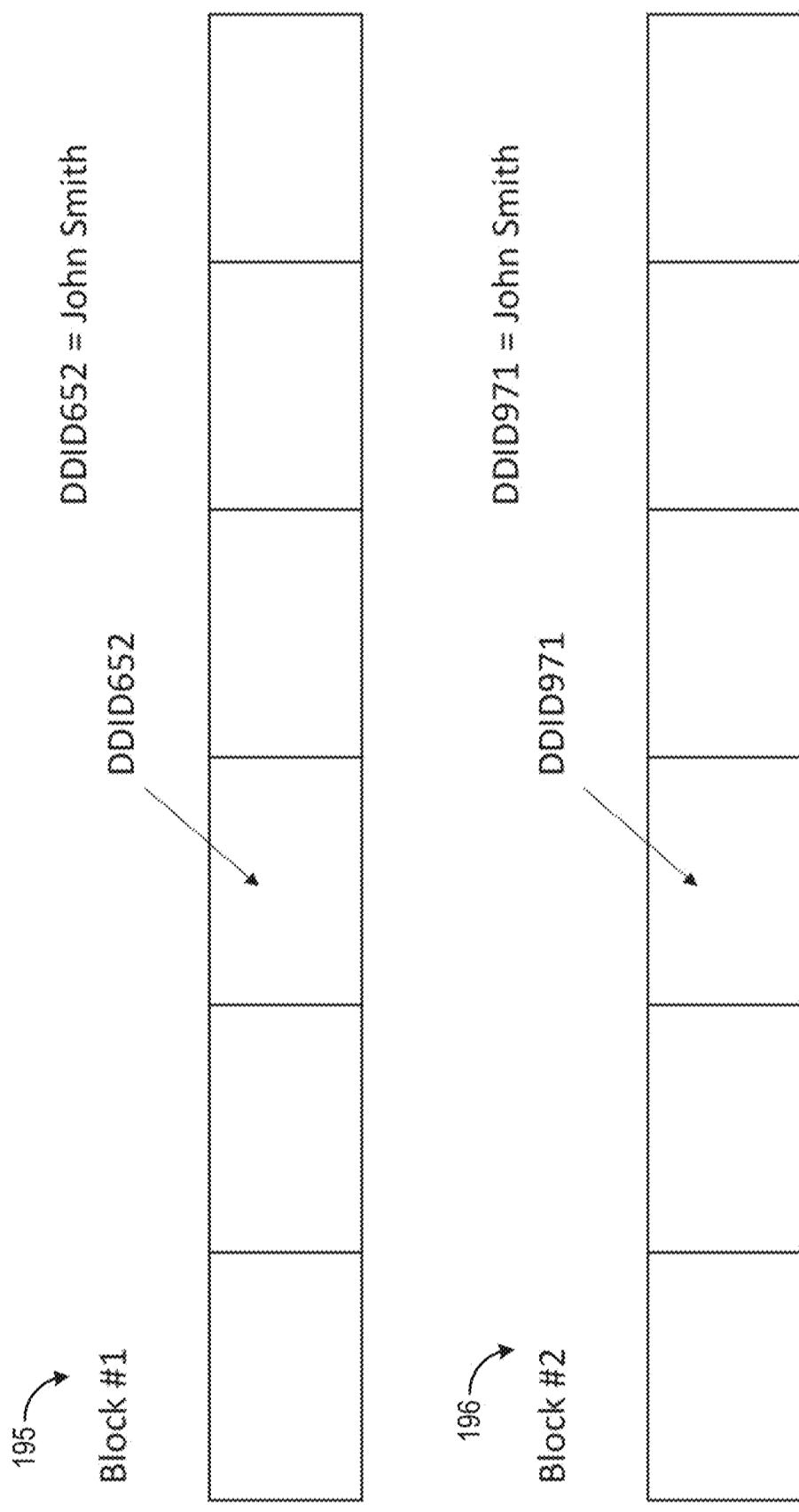


FIG. 1Z-3

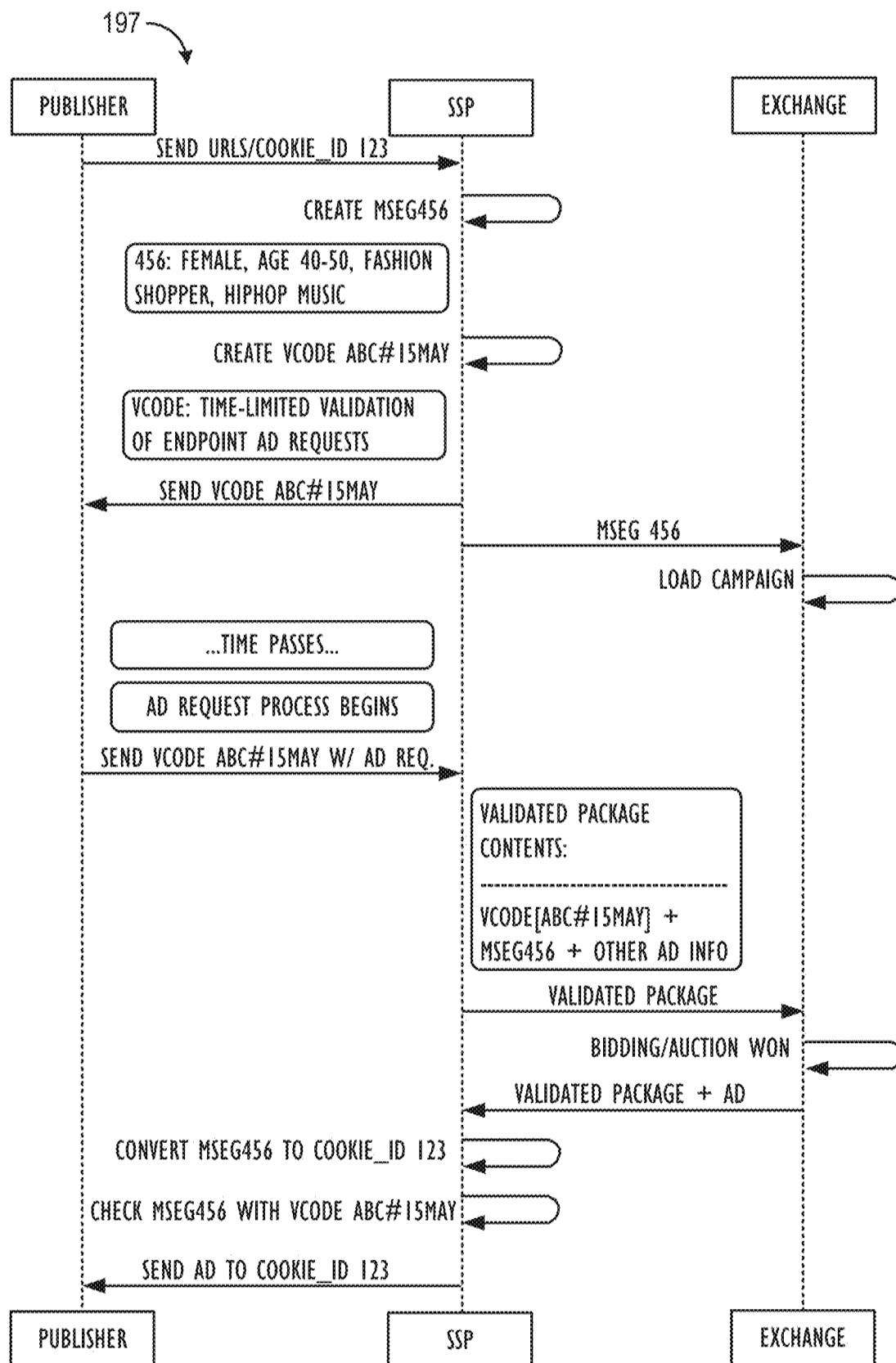


FIG. 1Z-4

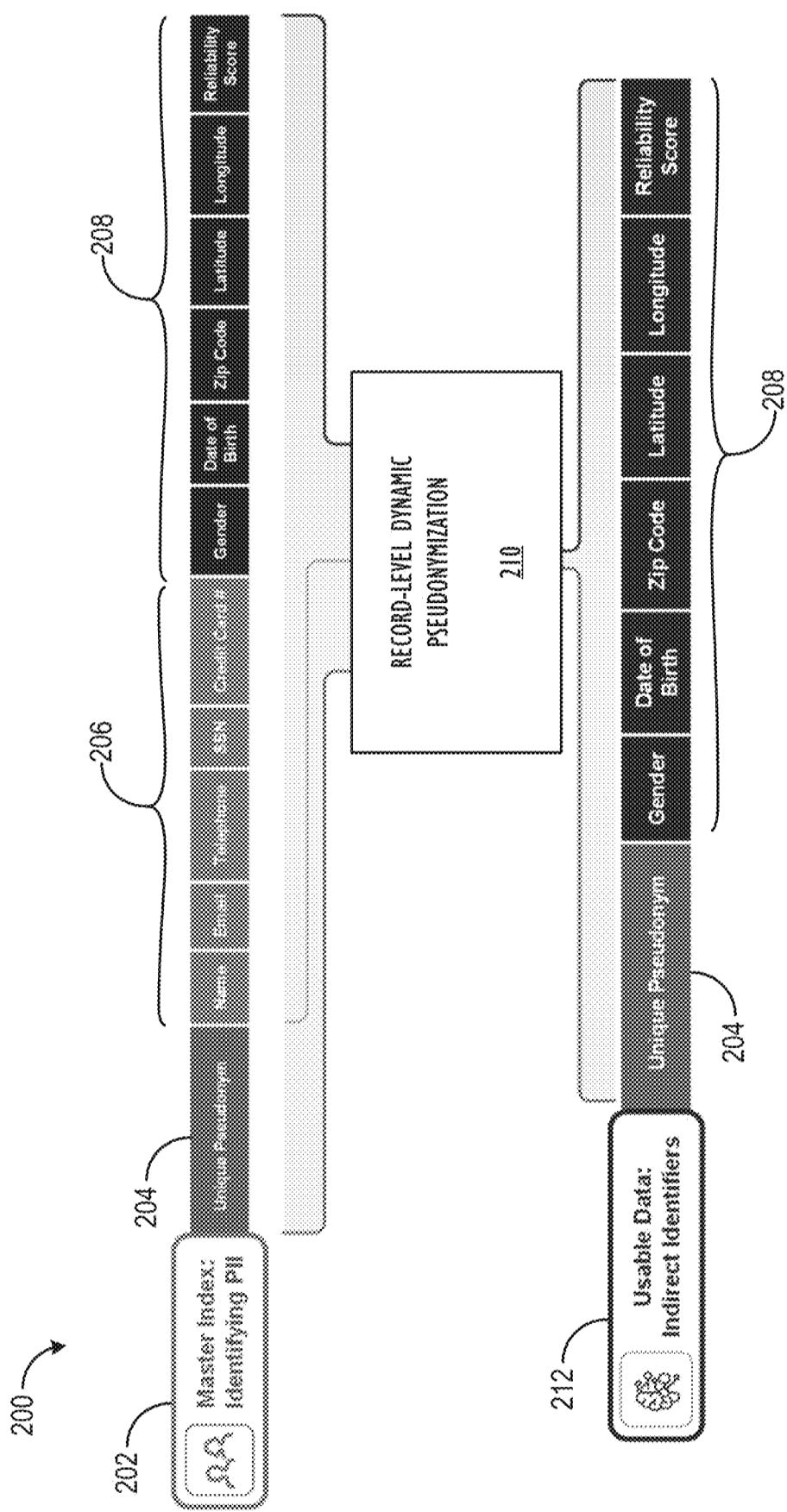


FIG. 1Z-5

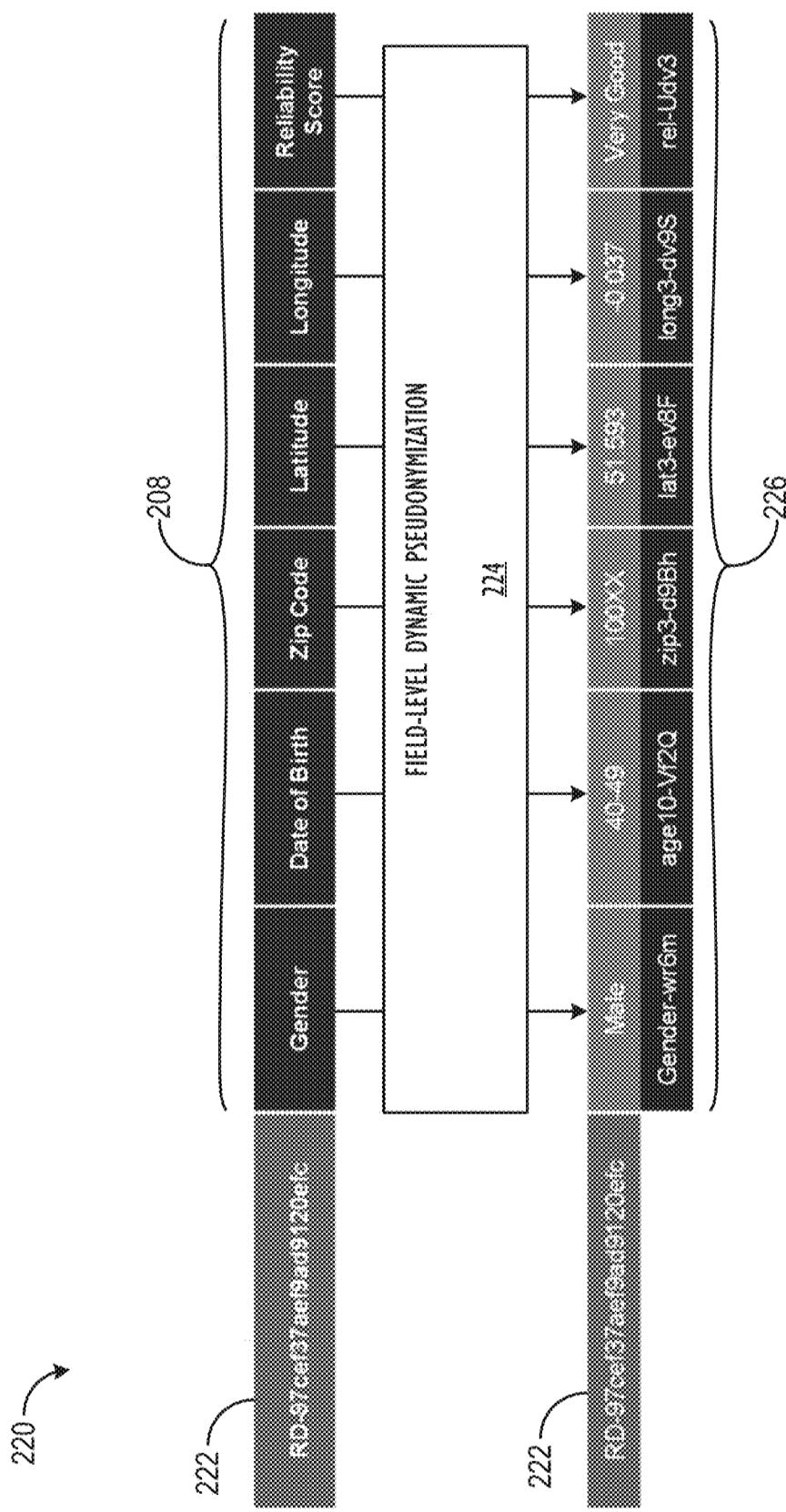


FIG. 1Z-6

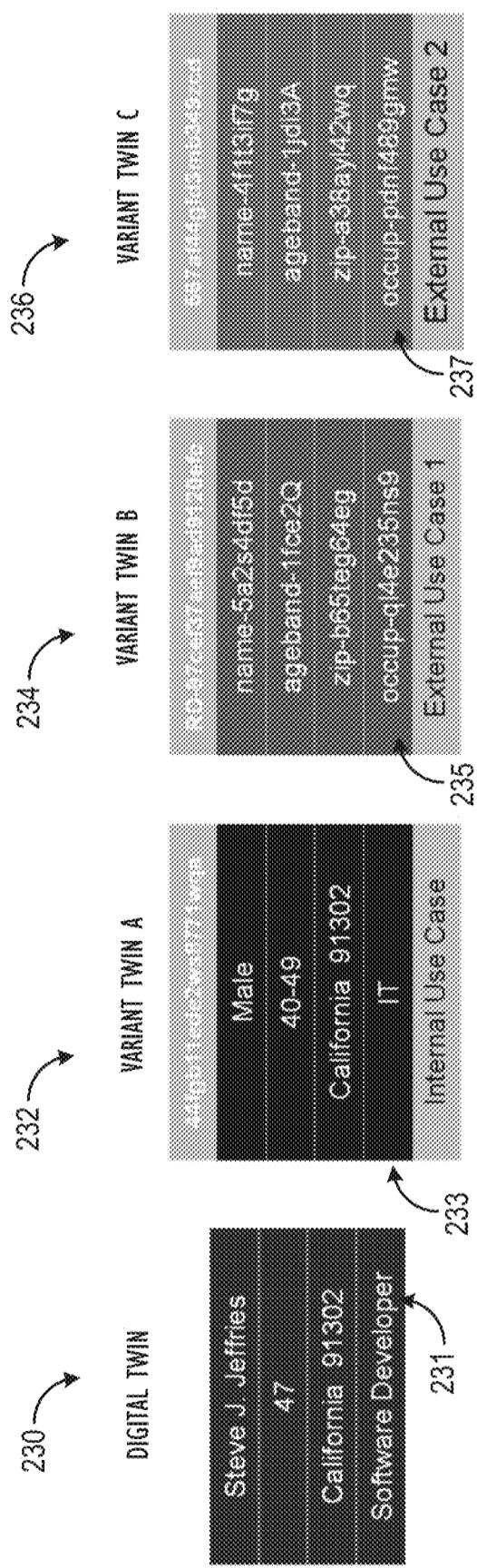


FIG. 1Z-7

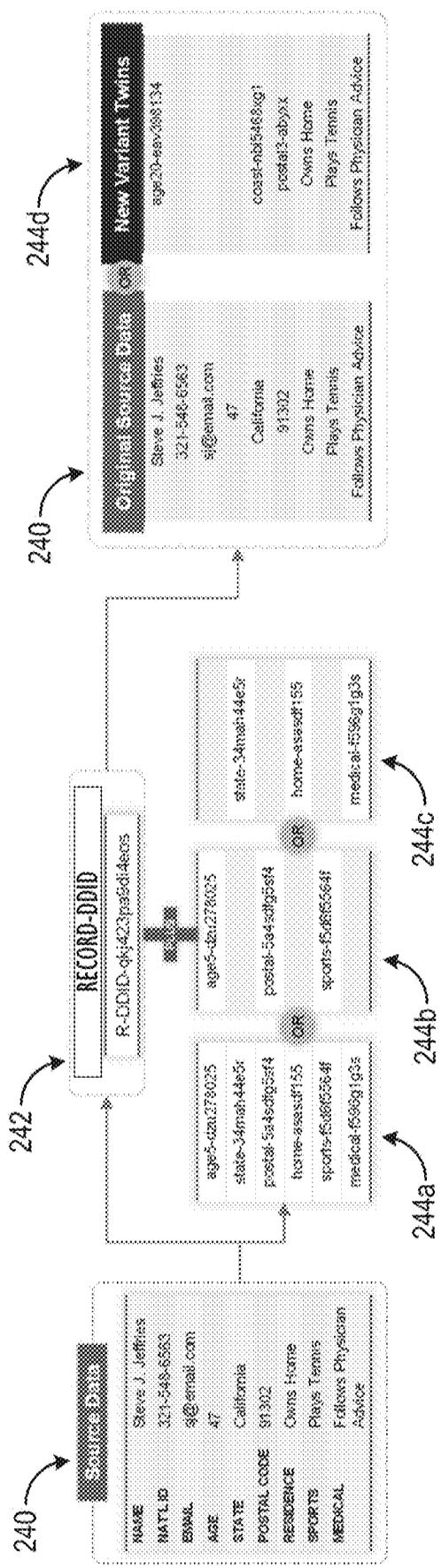


FIG. 1Z-8

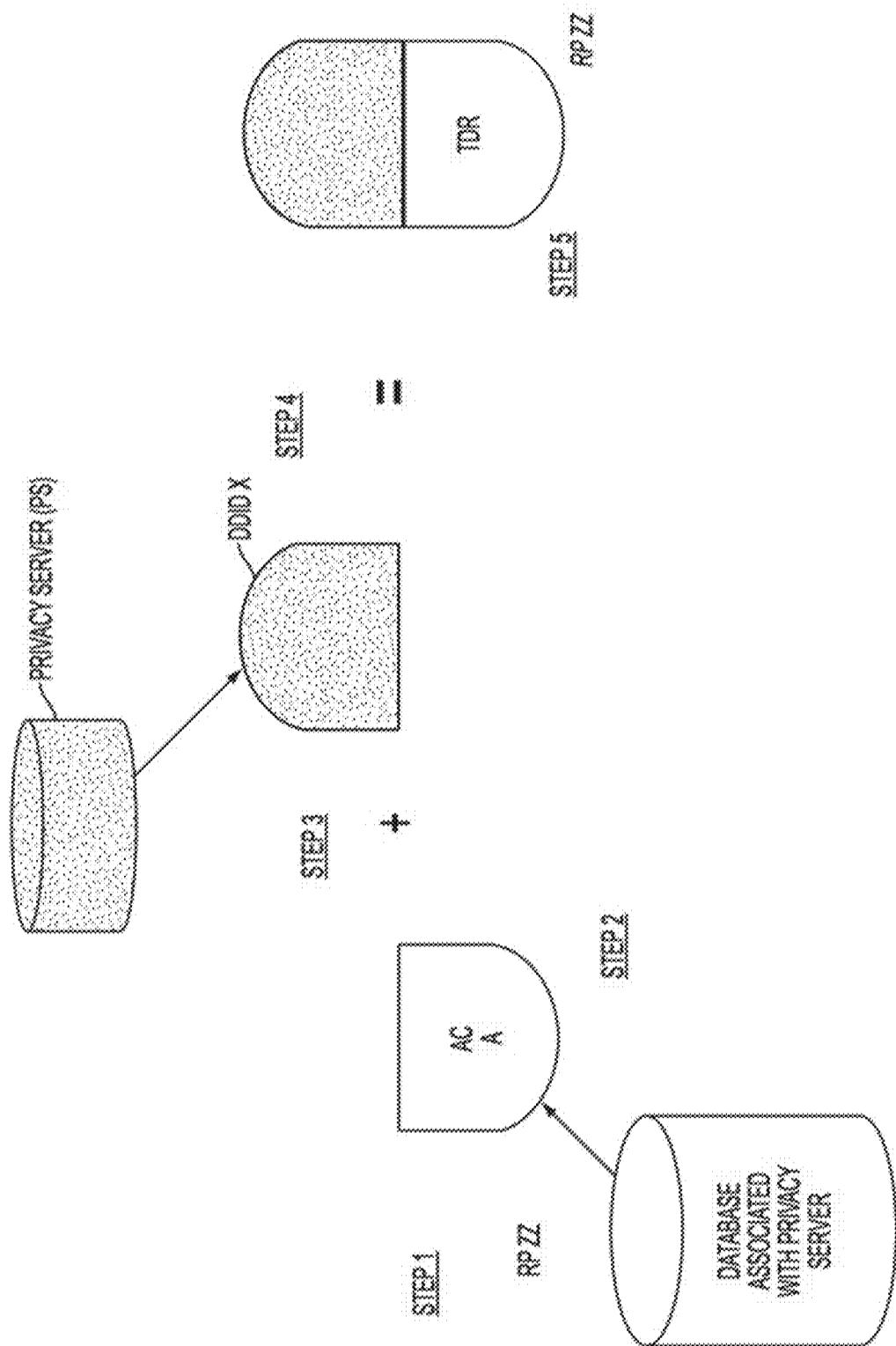


FIG. 2

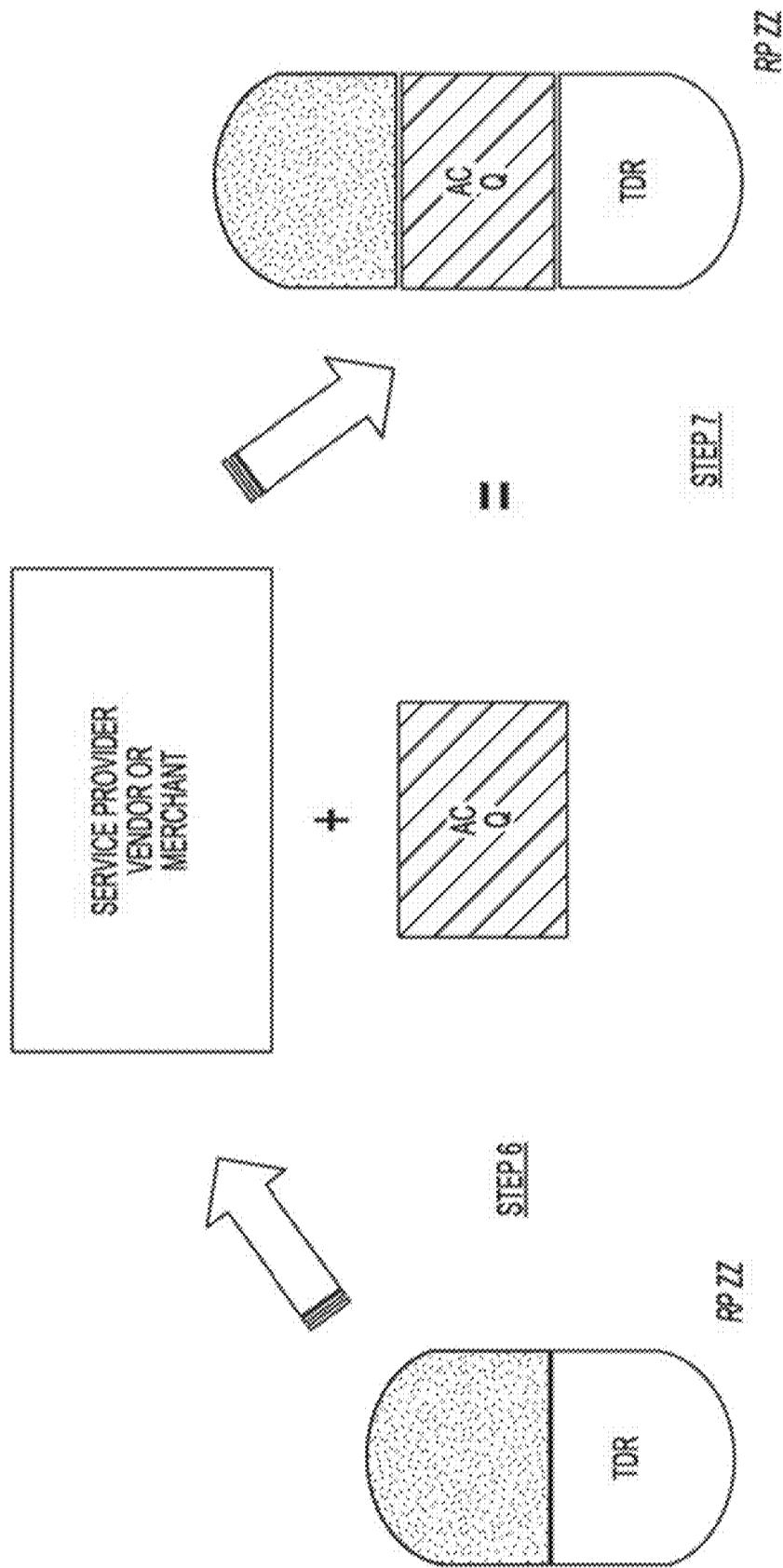


FIG. 3

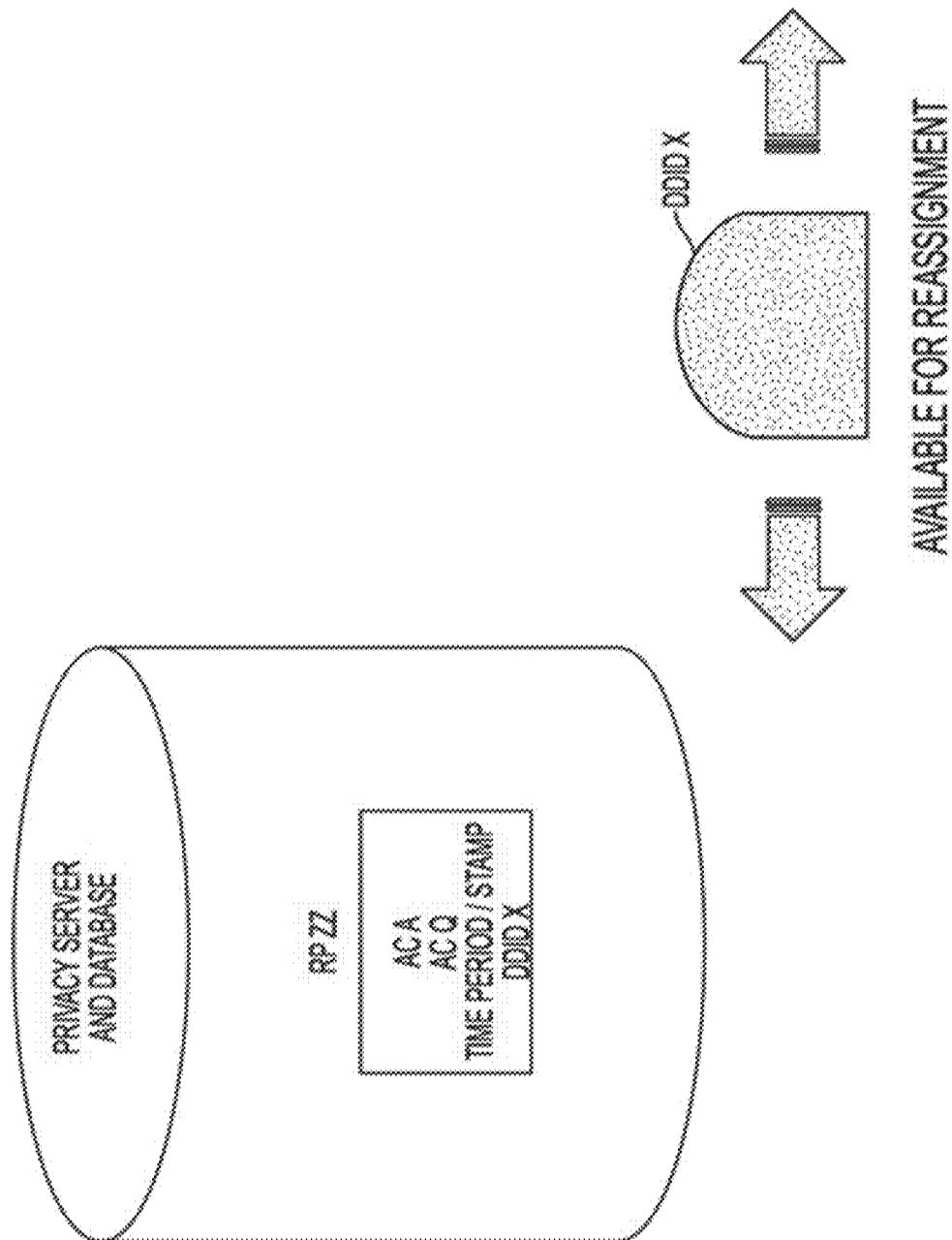


FIG. 4

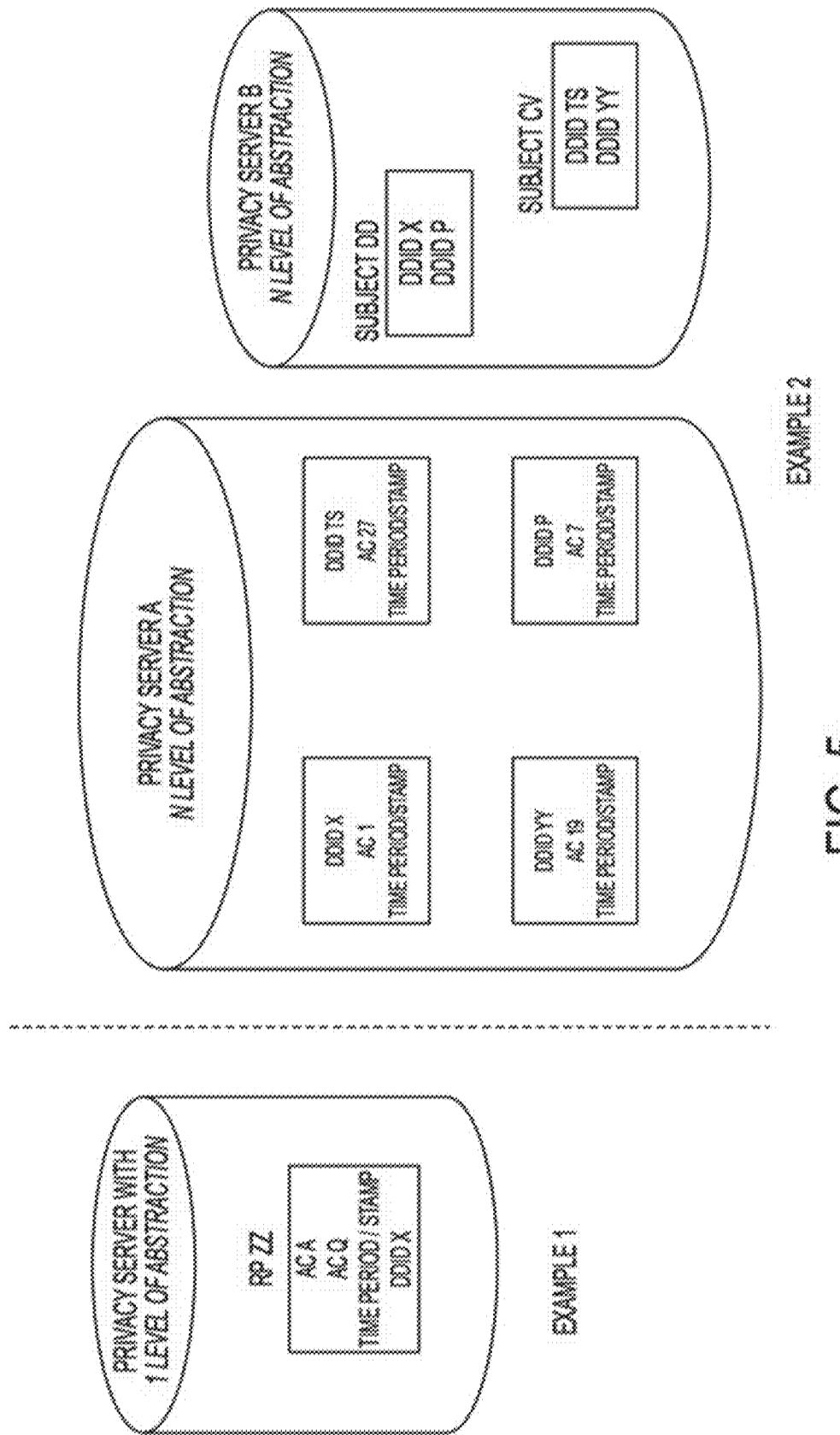


FIG. 5

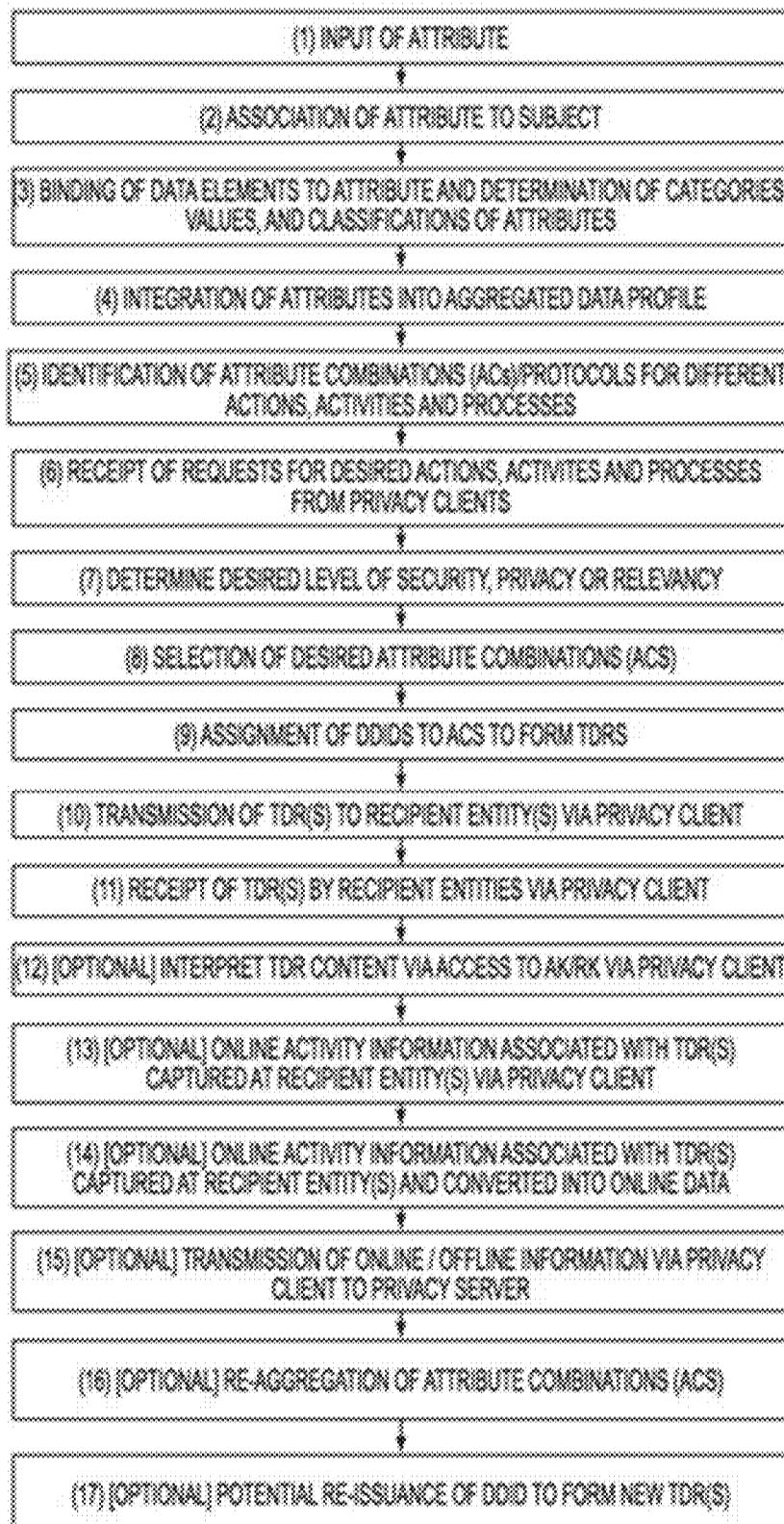


FIG. 6



FIG. 6A

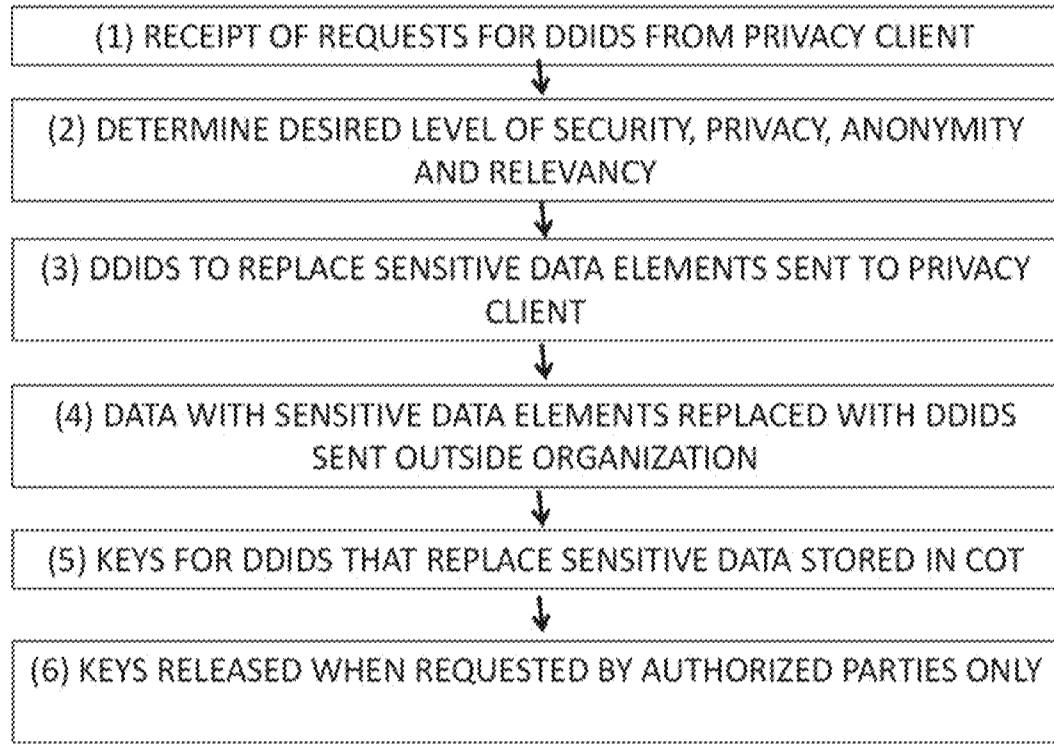


FIG. 6B

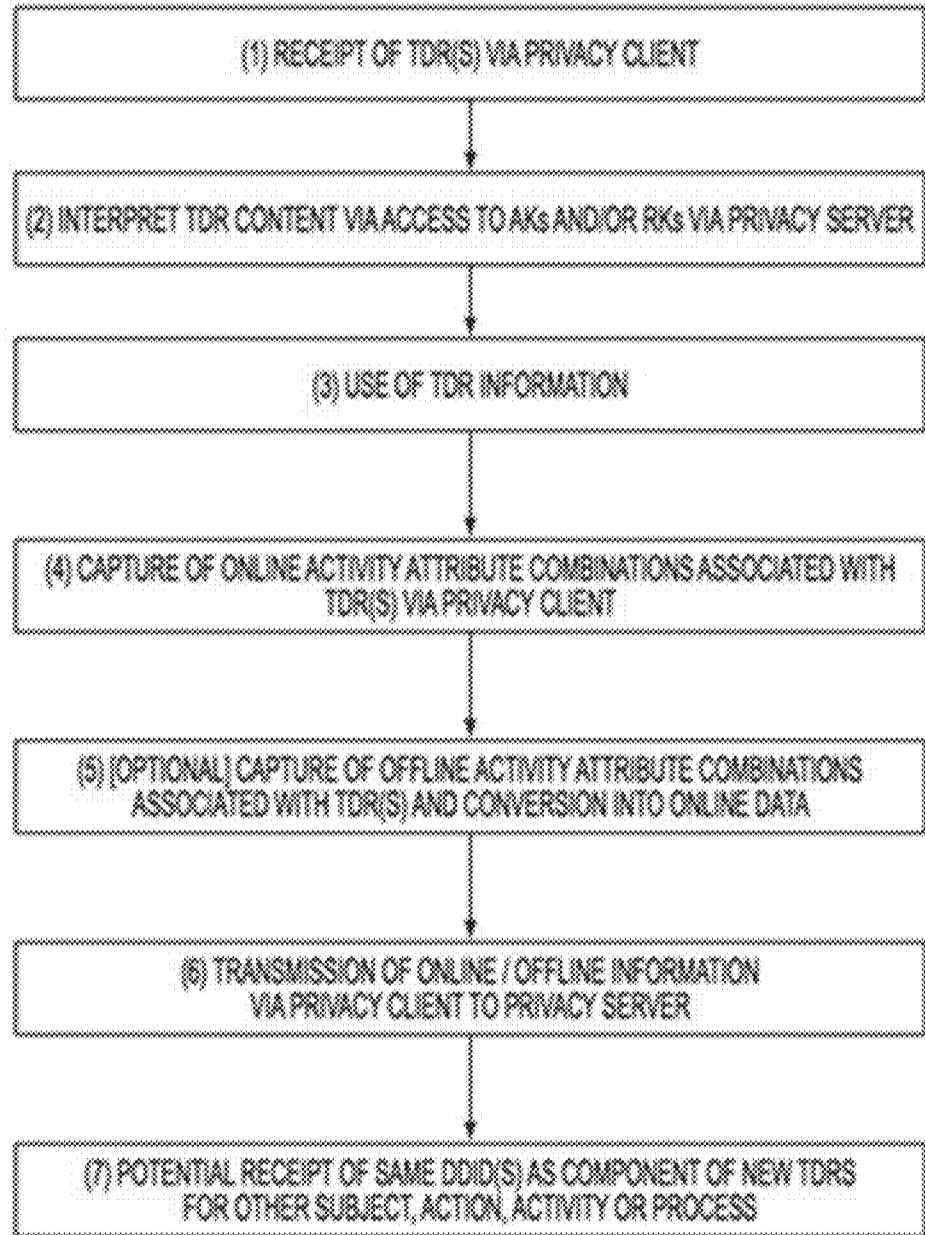


FIG. 7

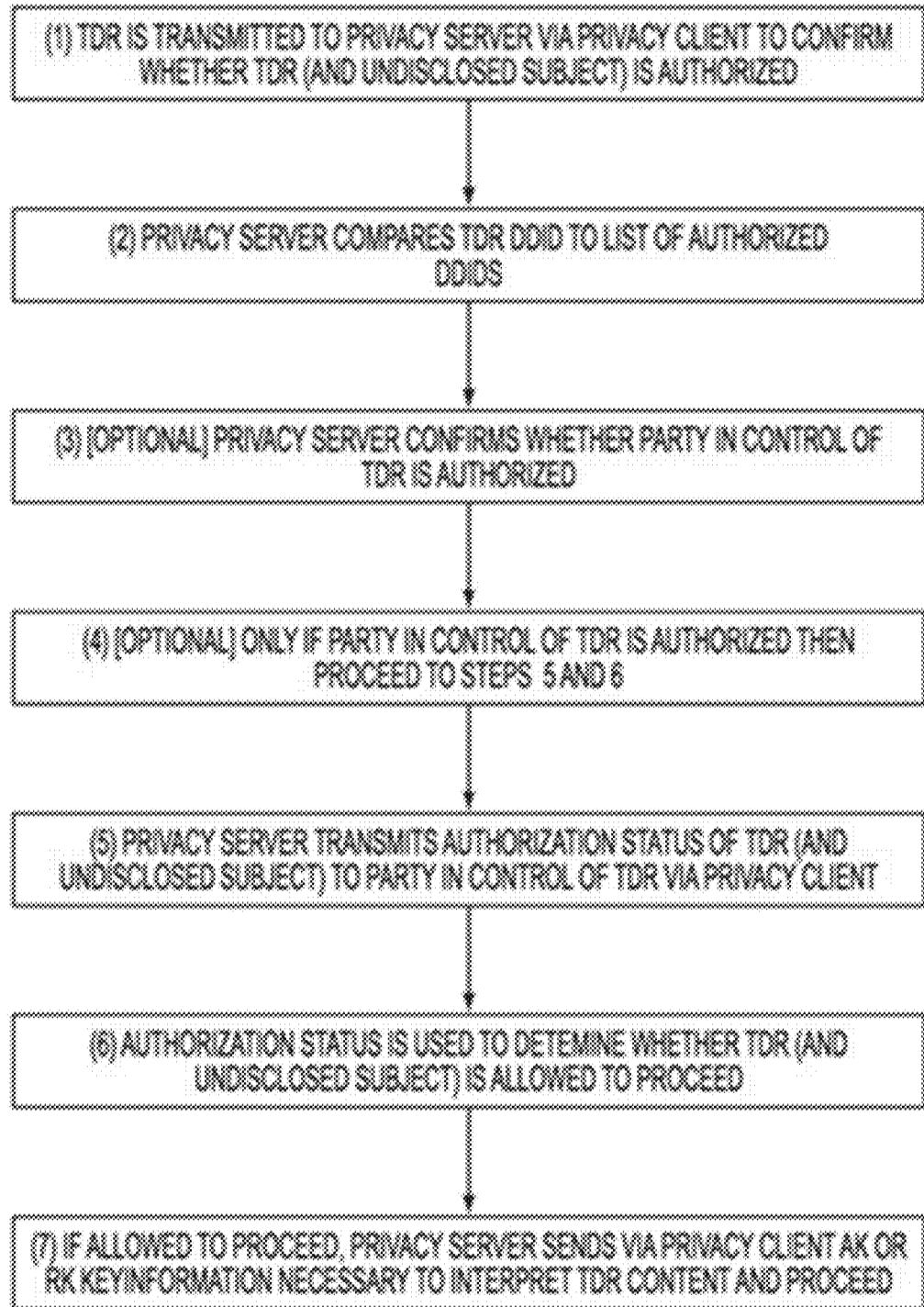


FIG. 8

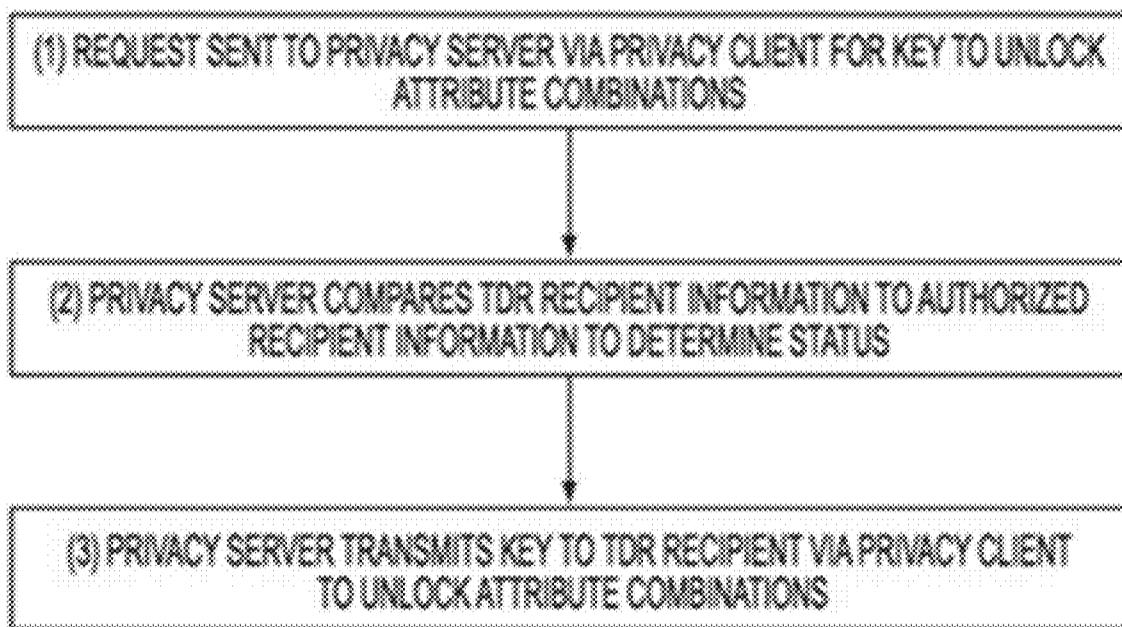


FIG. 9

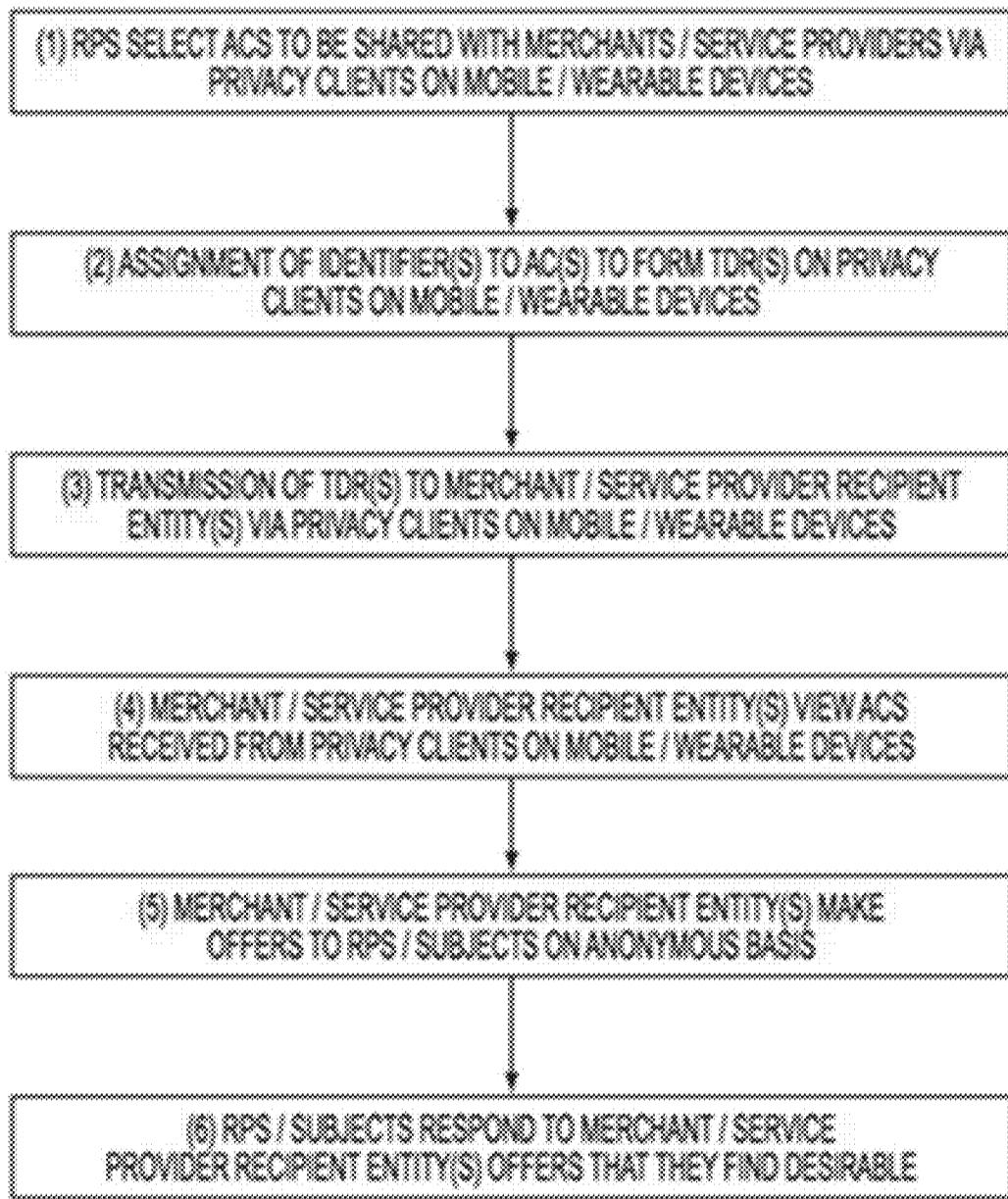


FIG. 10

FIG. 11

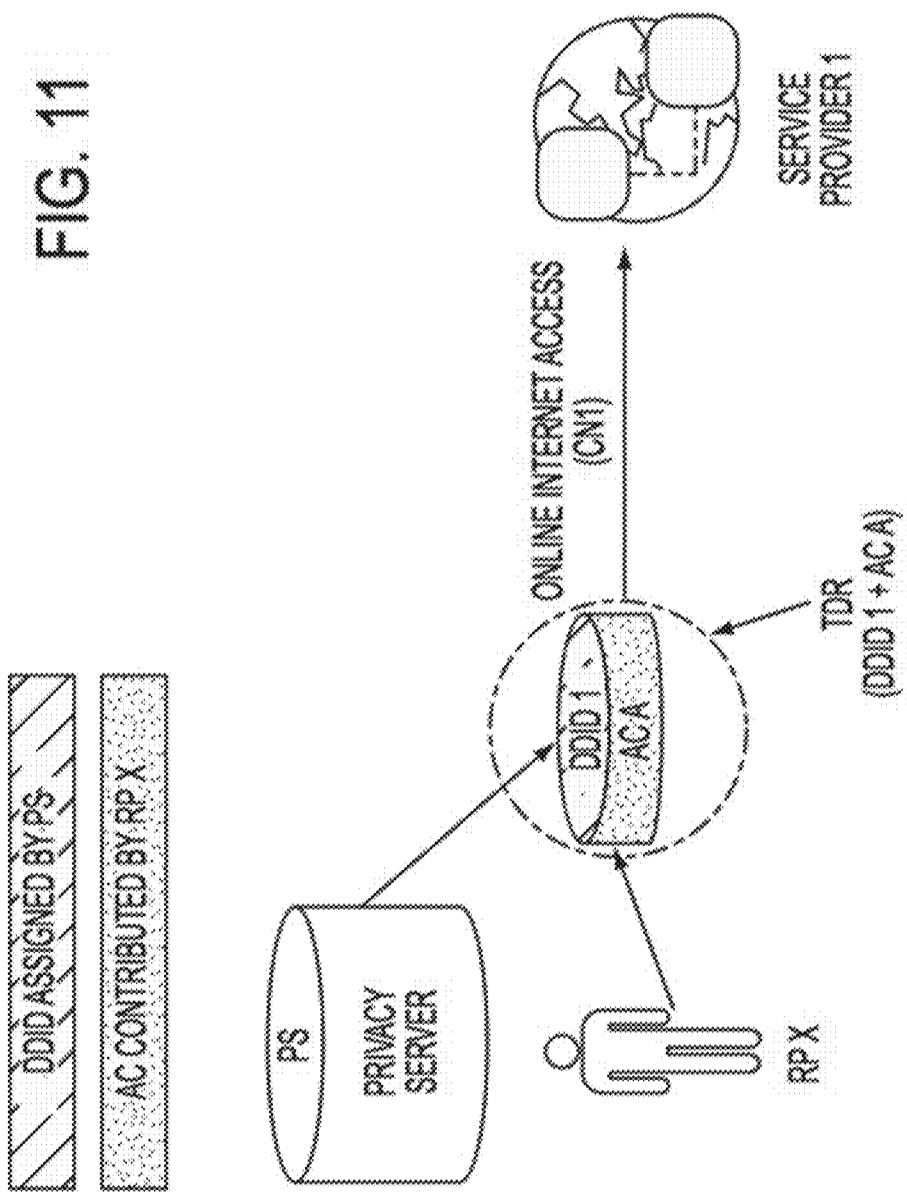


FIG. 12

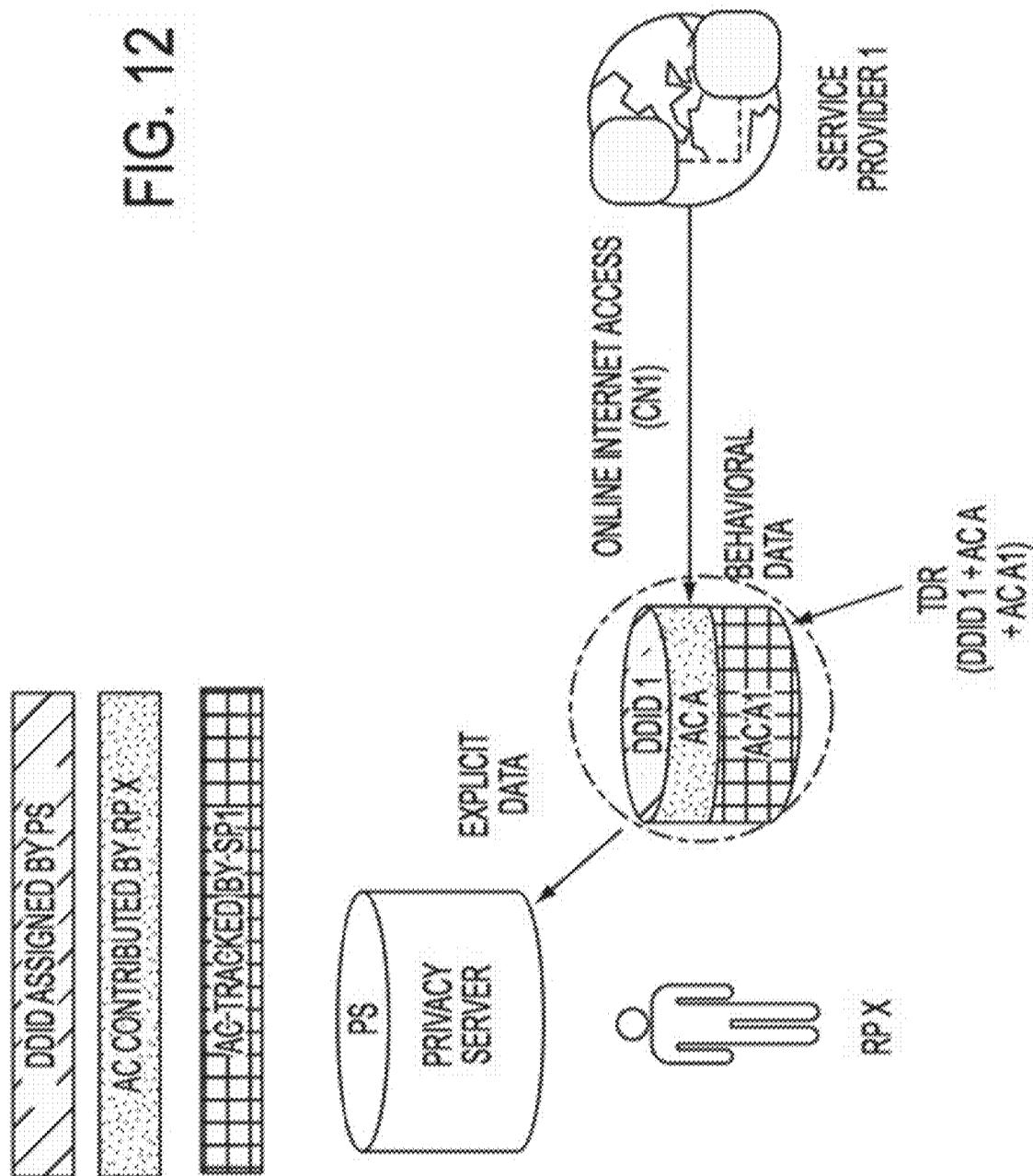


FIG. 13

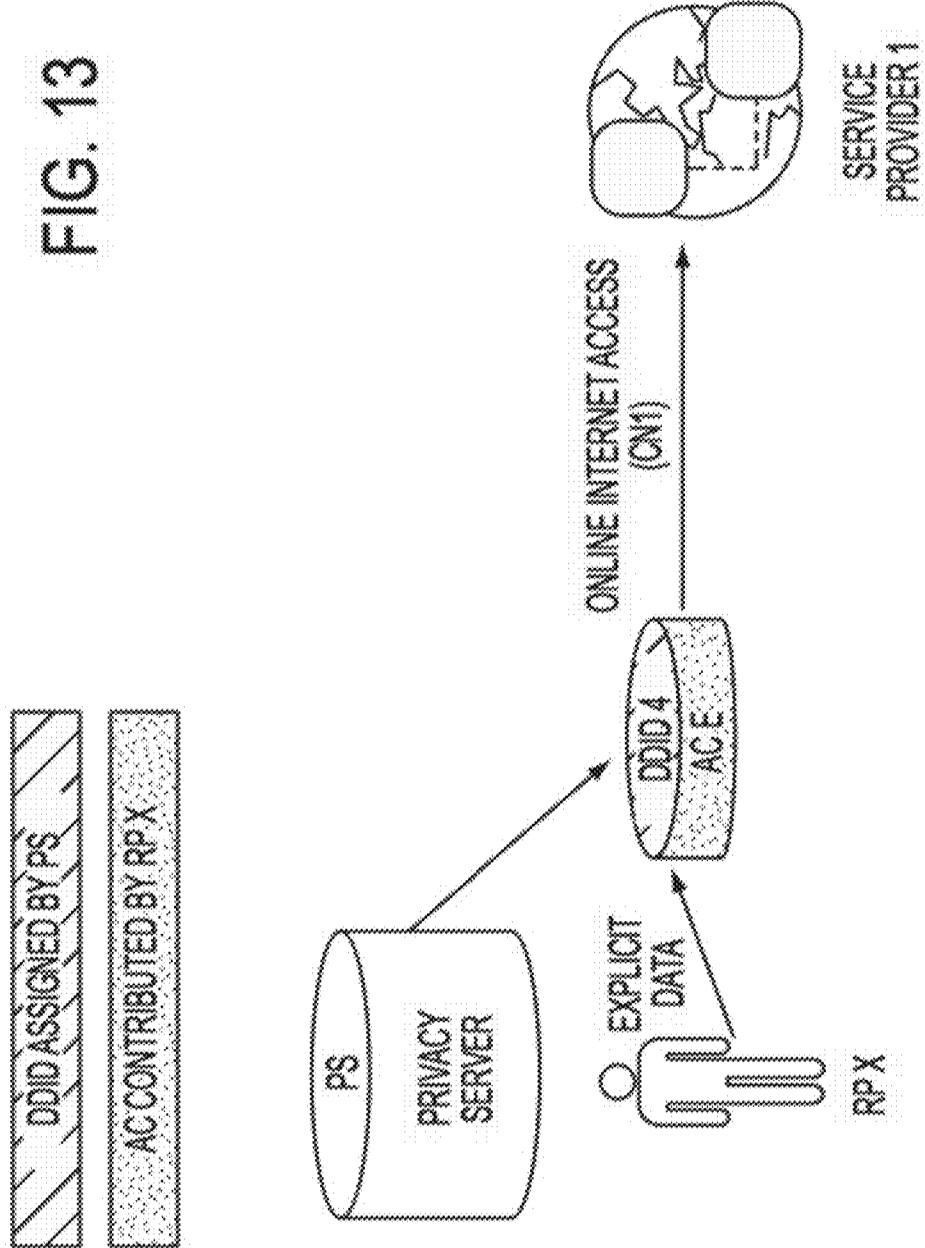


FIG. 14

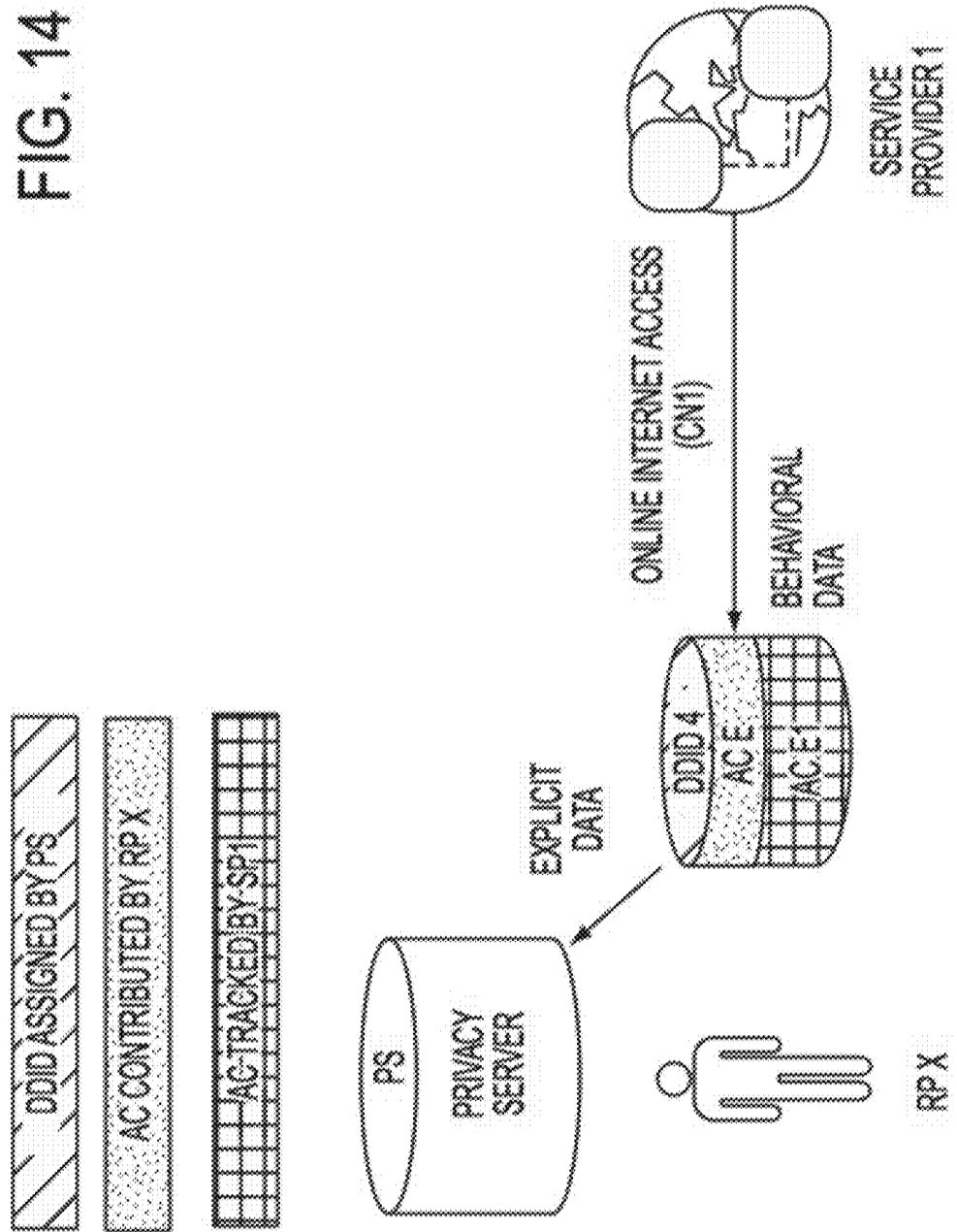


FIG. 15

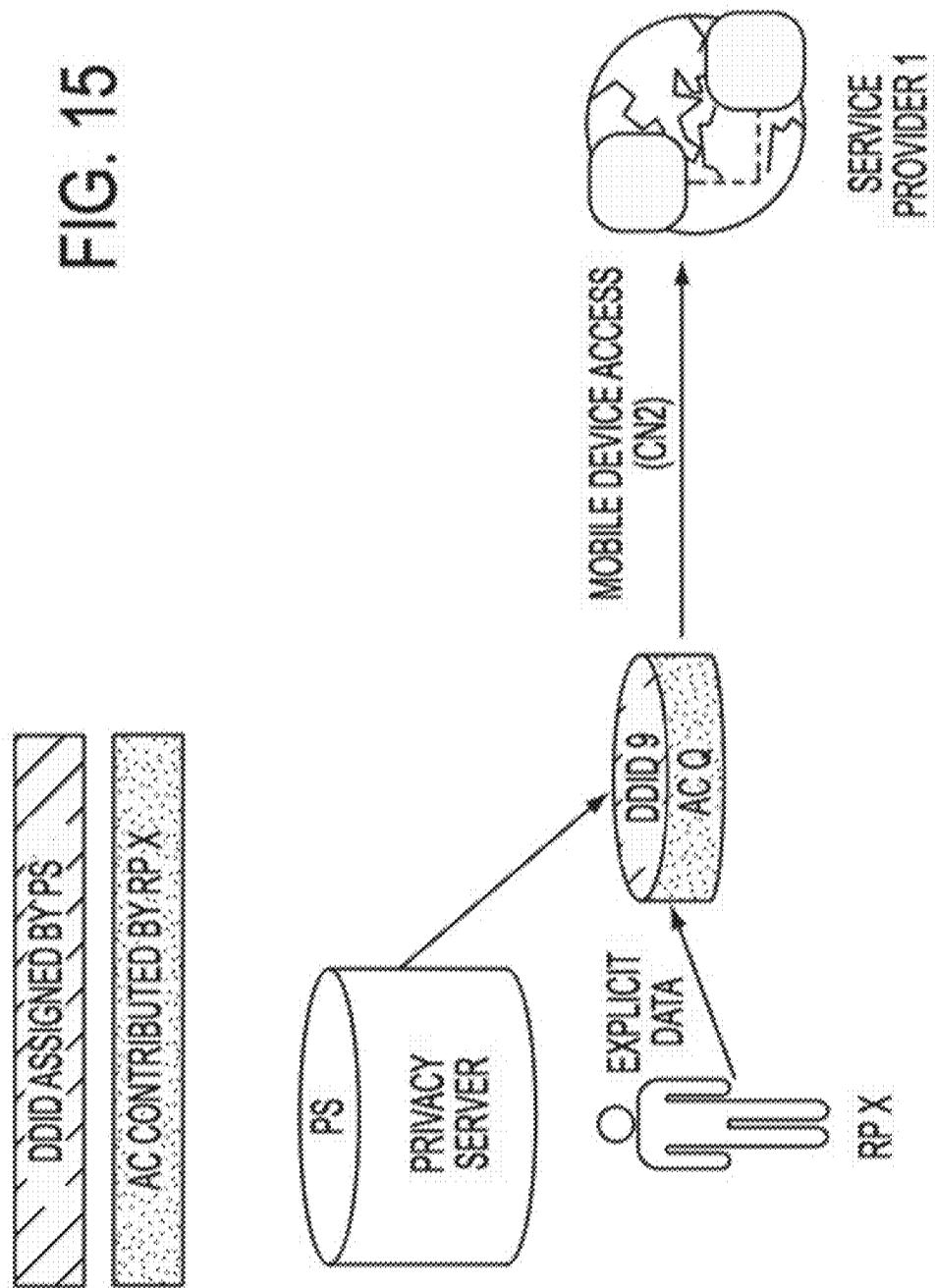


FIG. 16

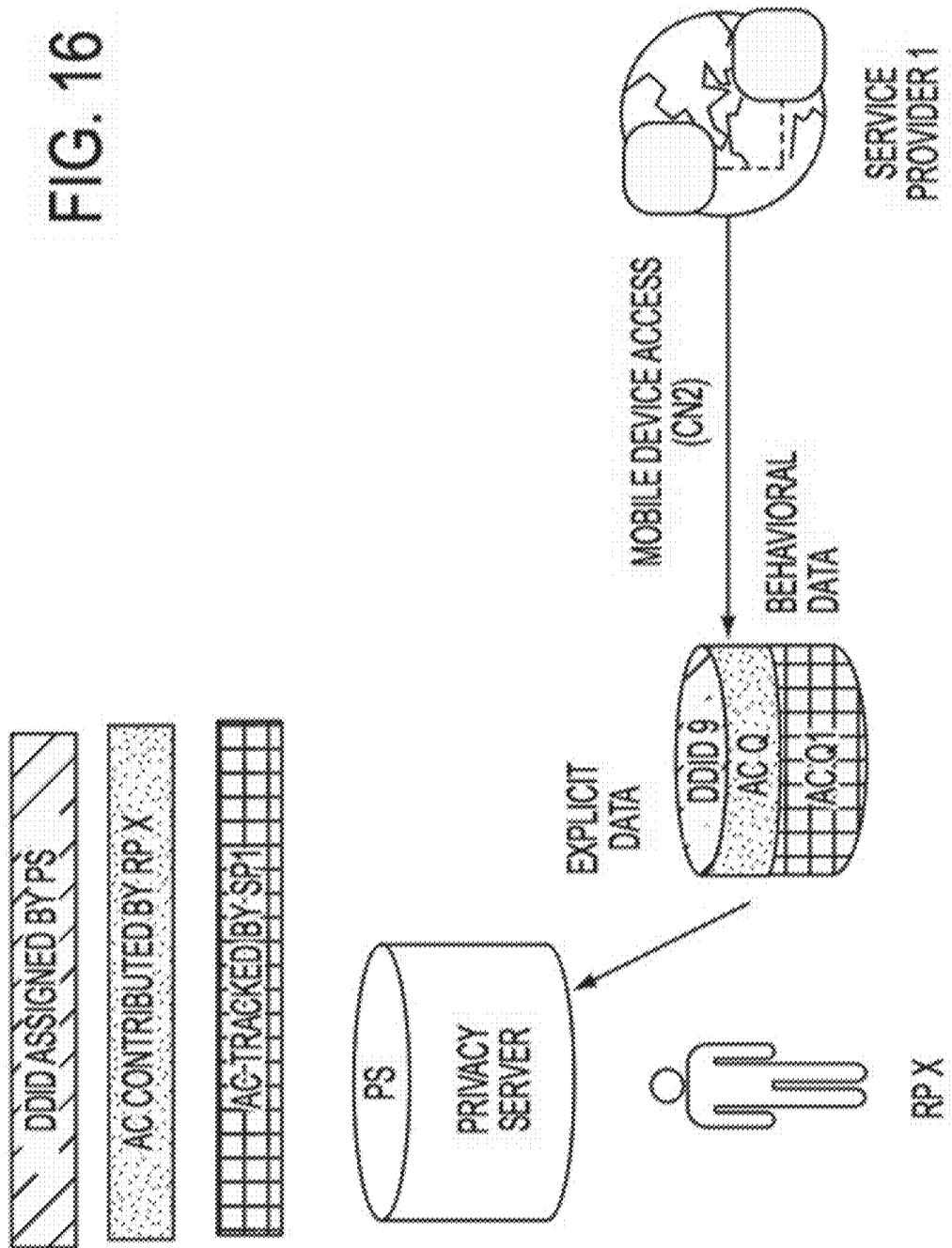


FIG. 17

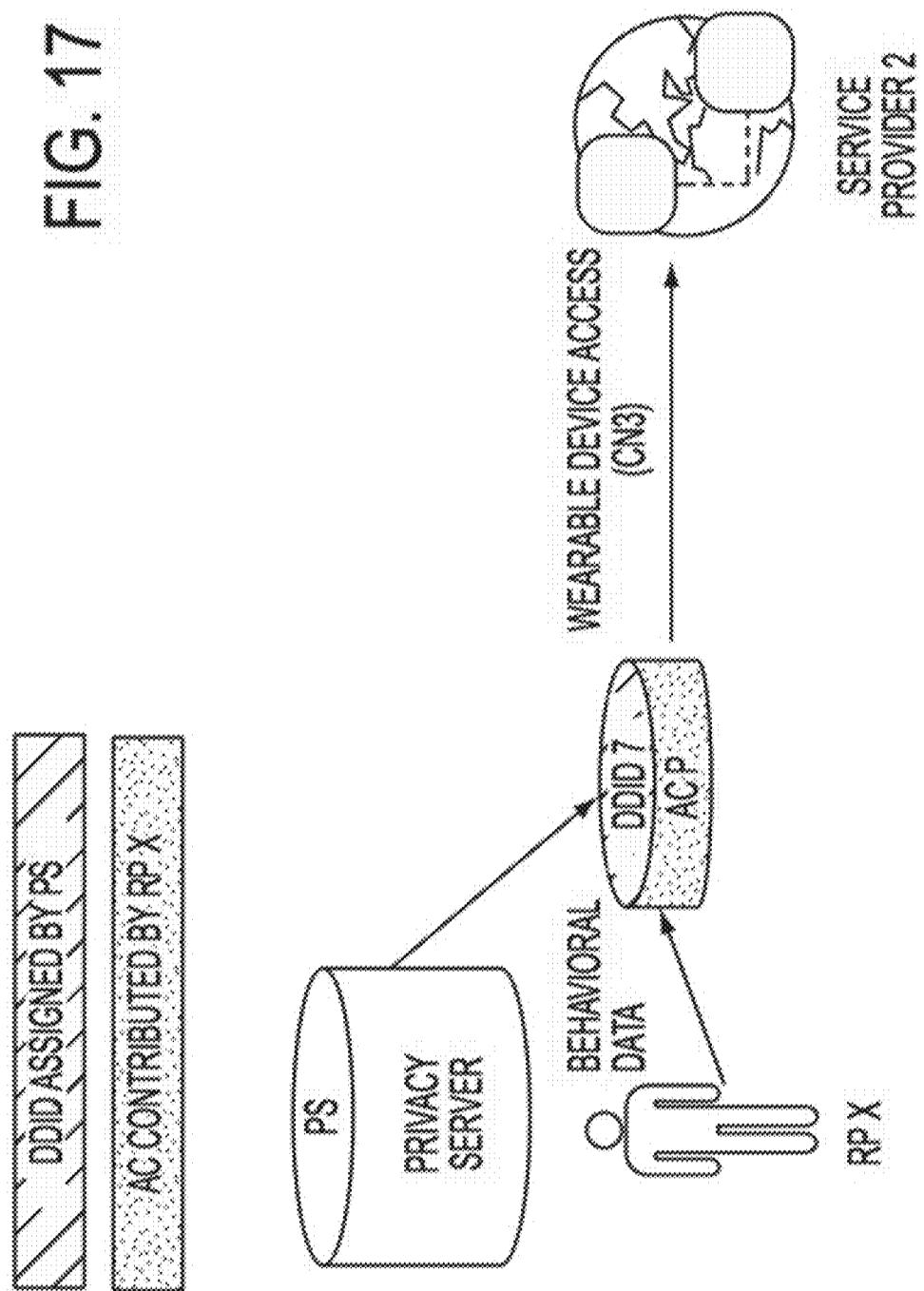


FIG. 18

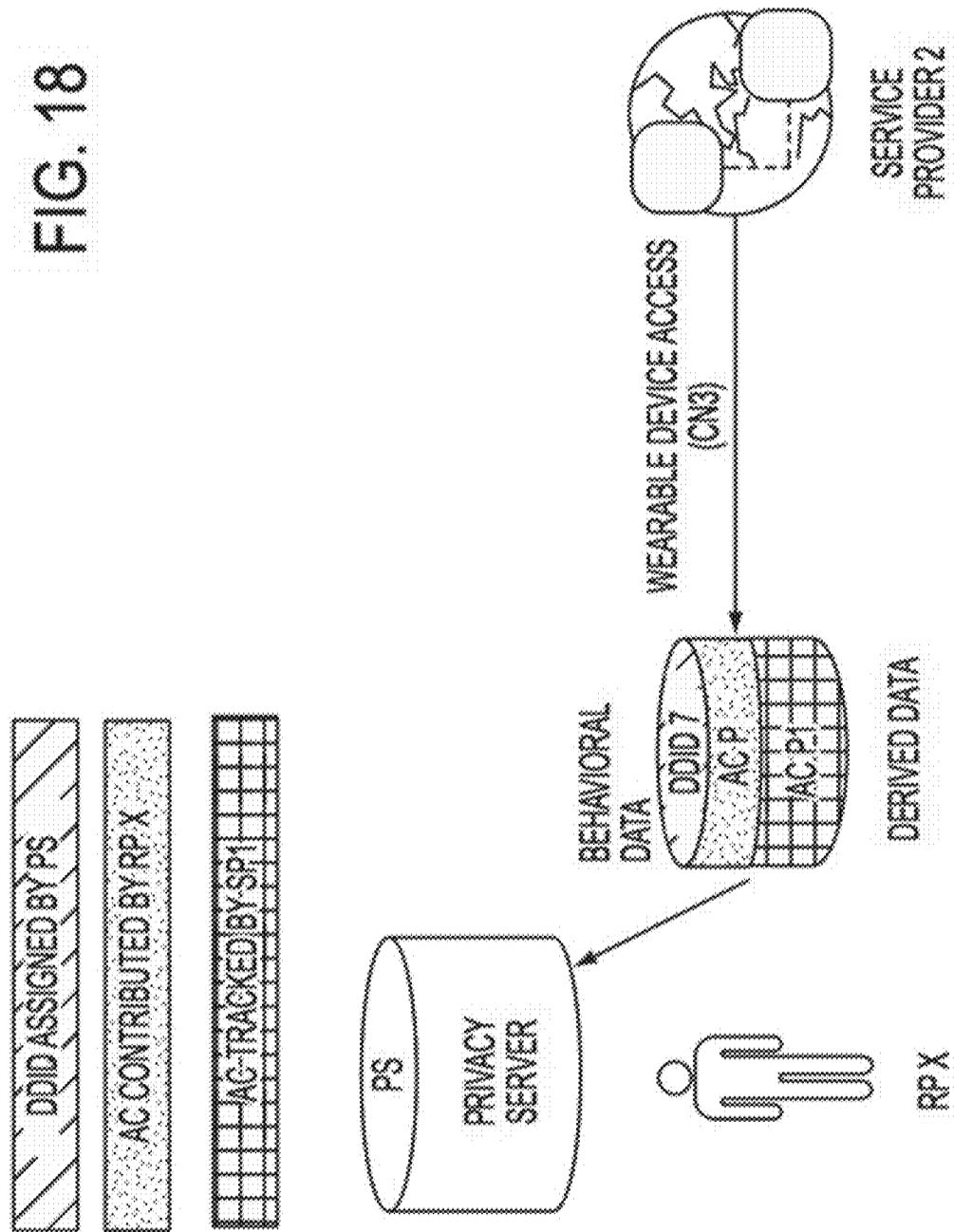


FIG. 19

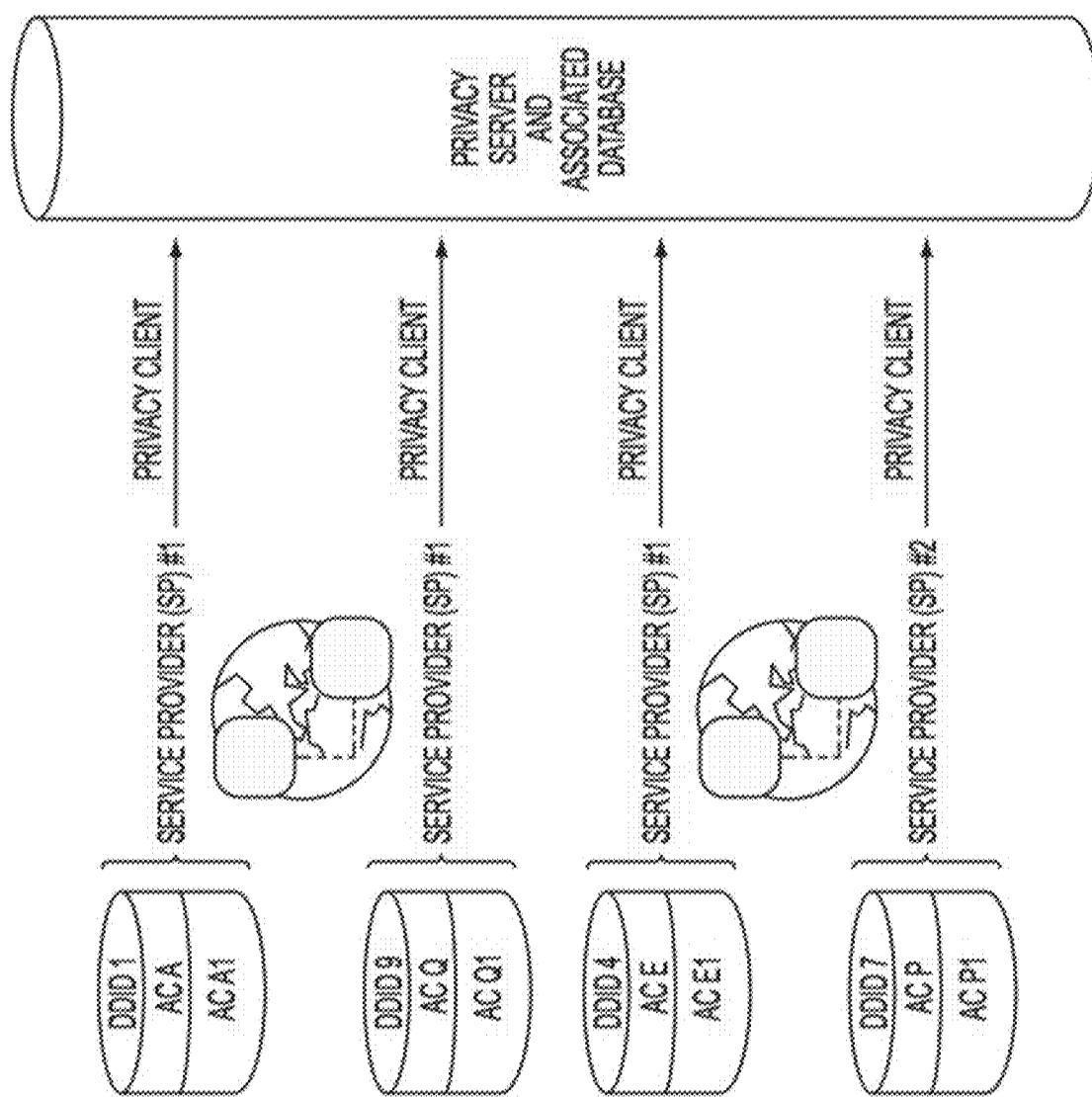
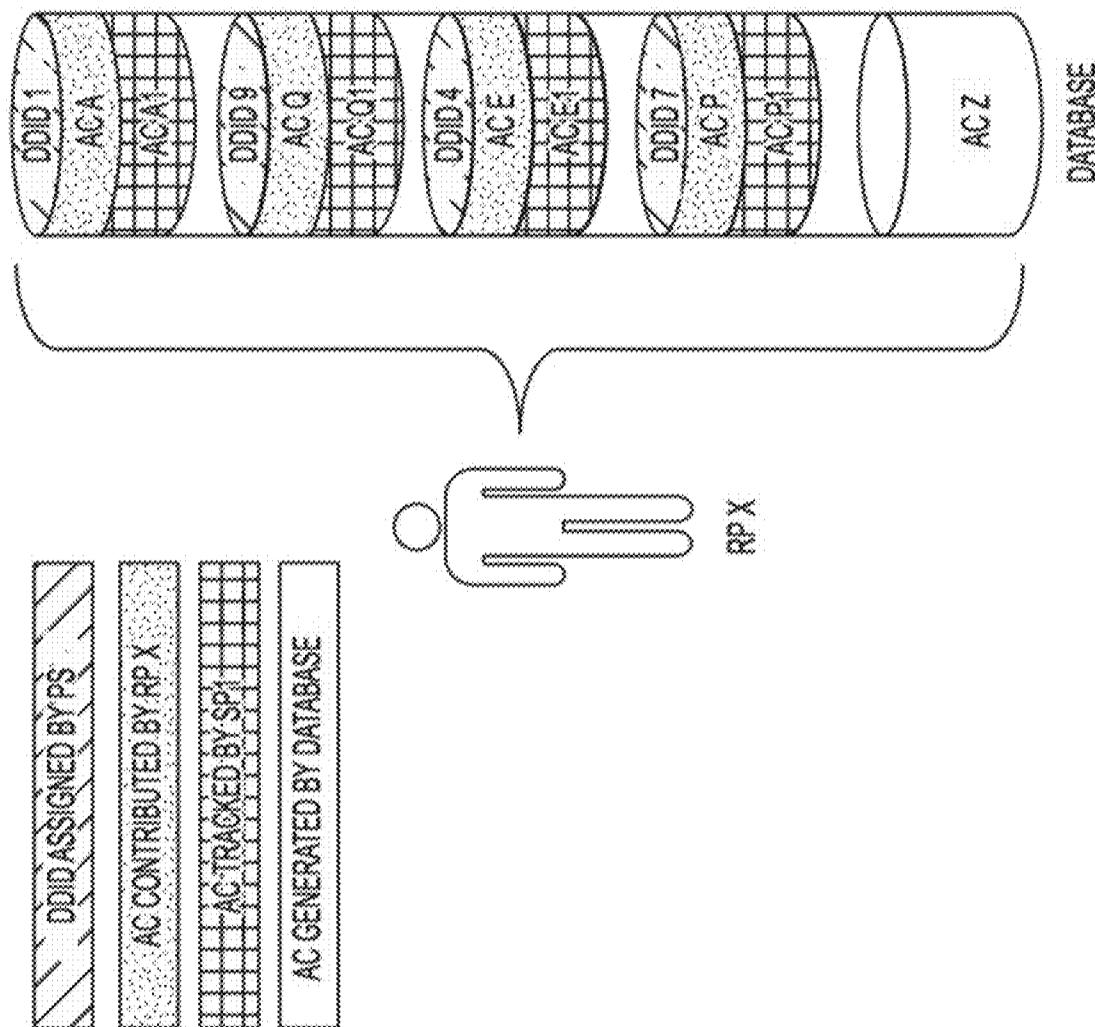


FIG. 20



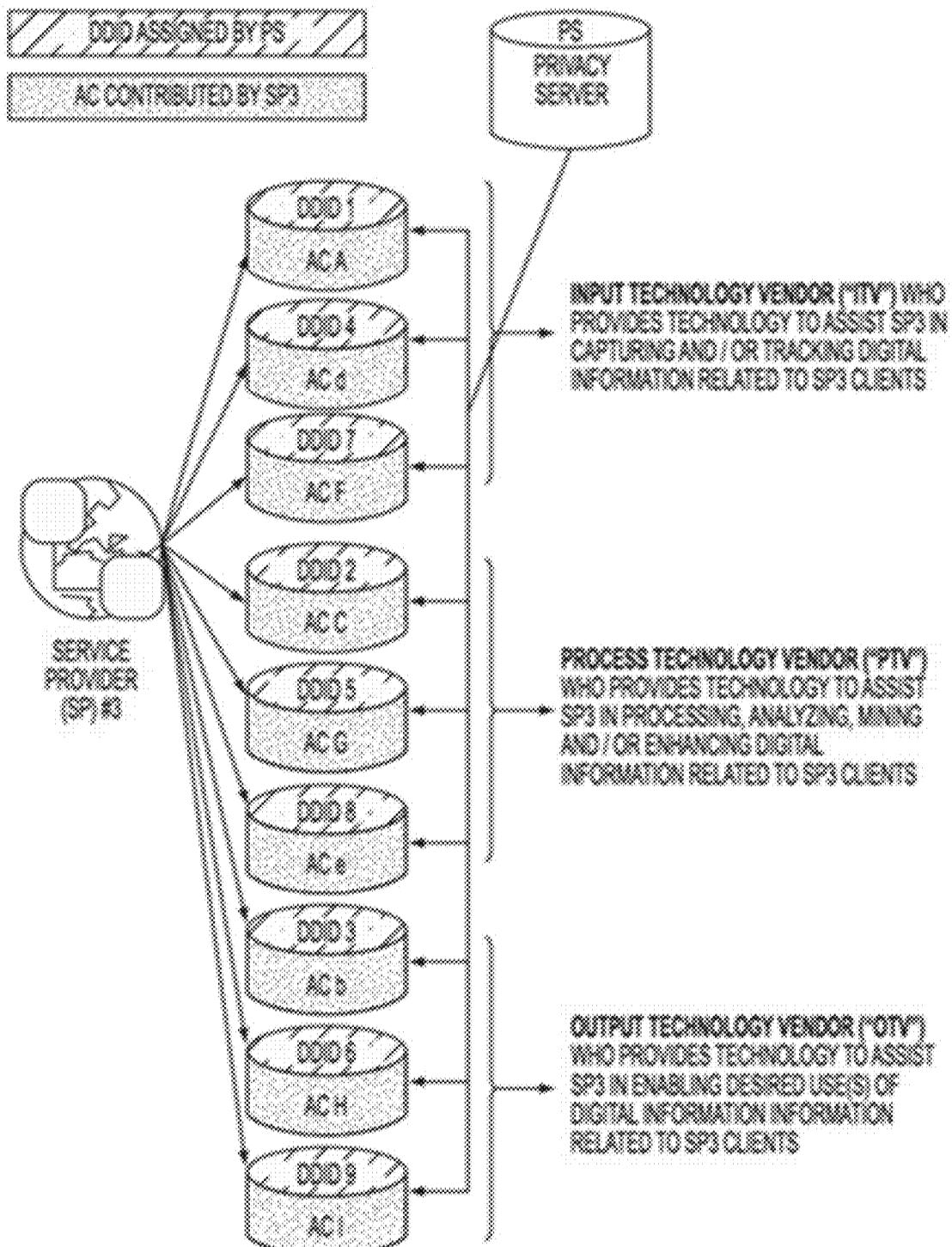
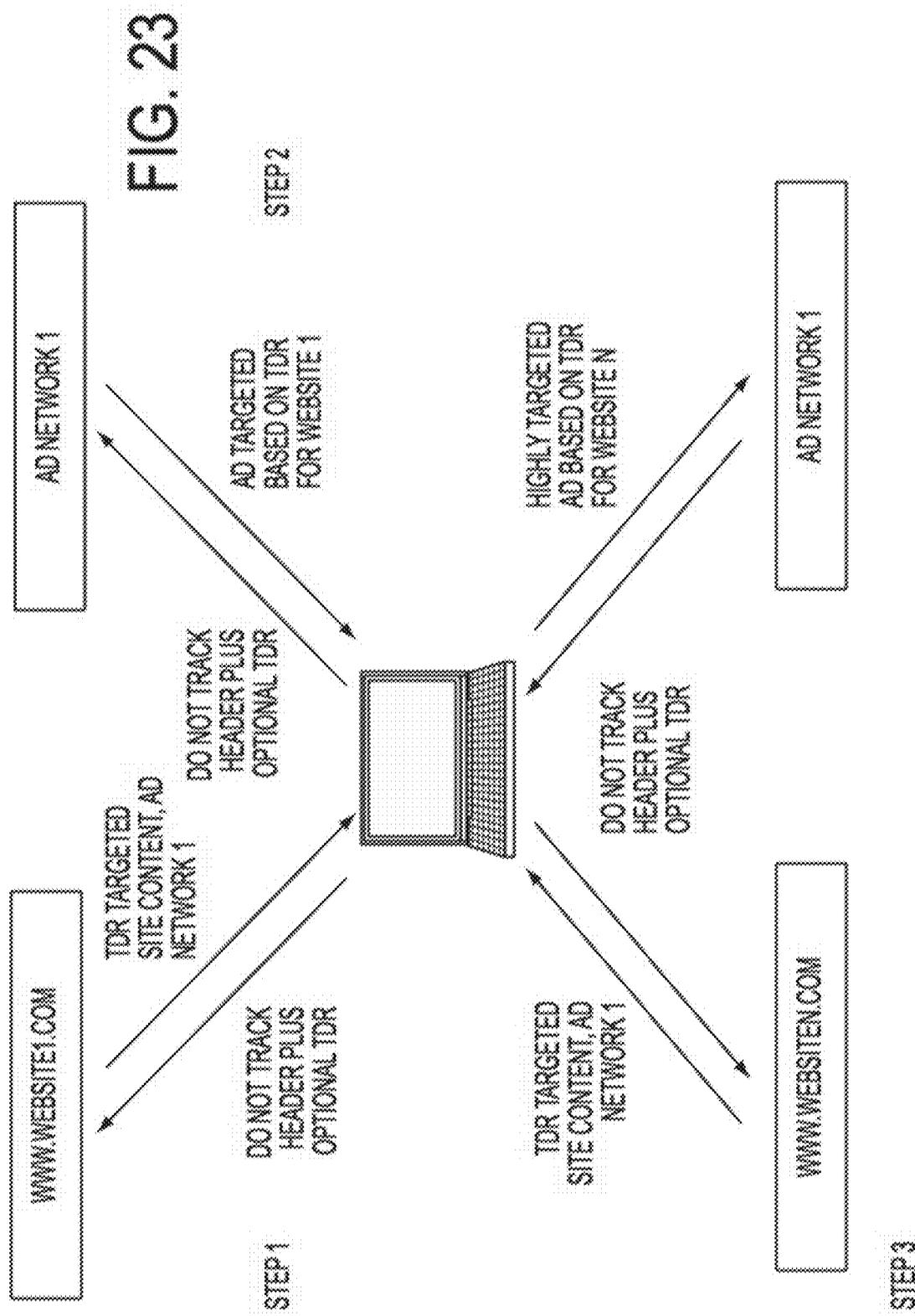


FIG. 21

FIG. 22

ATTRIBUTE COMBINATIONS		DDIDs	
INPUT TECHNOLOGY PROVIDER		PROCESS TECHNOLOGY PROVIDER	
OUTPUT TECHNOLOGY PROVIDER			
A	1	C	2
D	4	G	5
F	7	e	8
b	3	H	6
I	9		



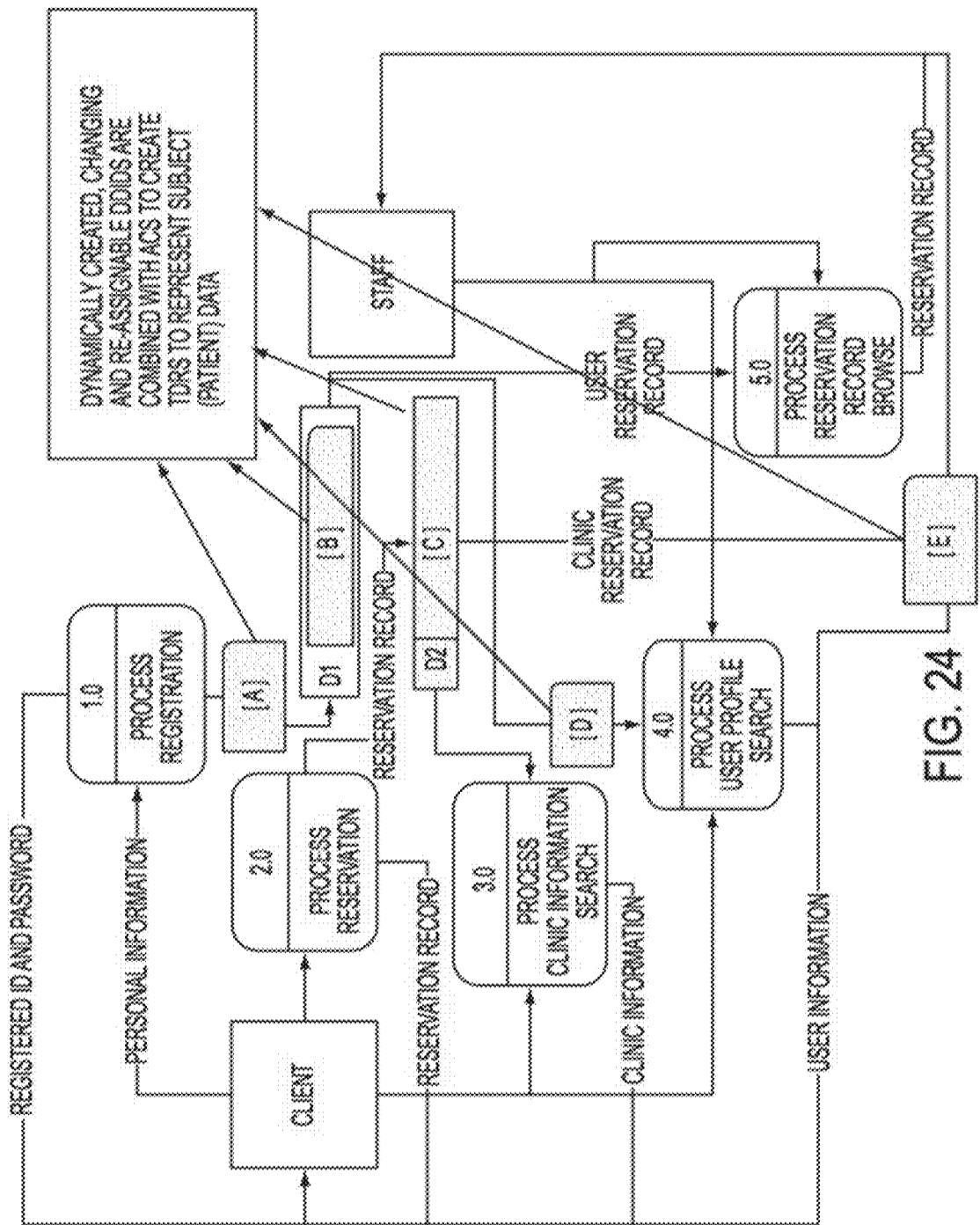
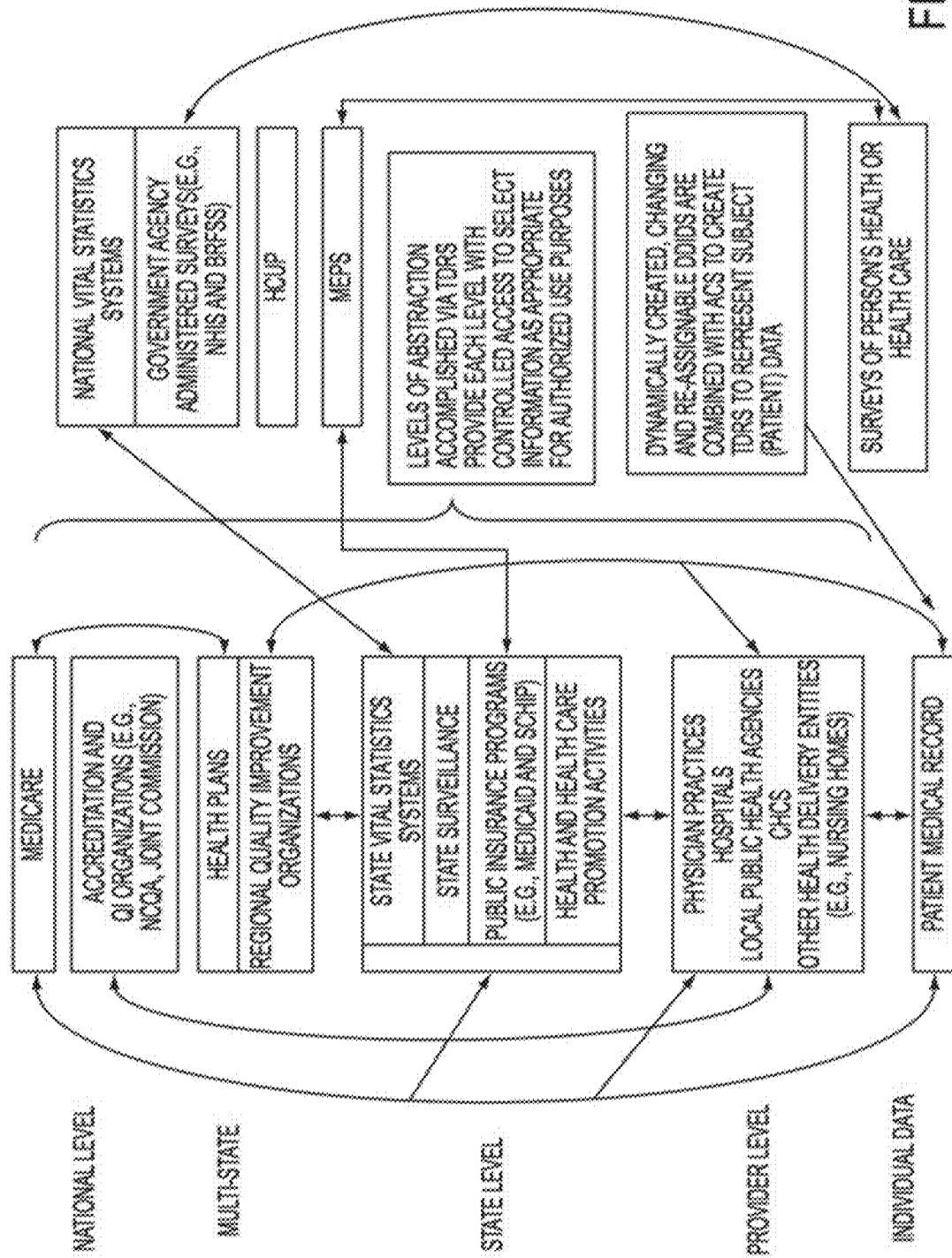
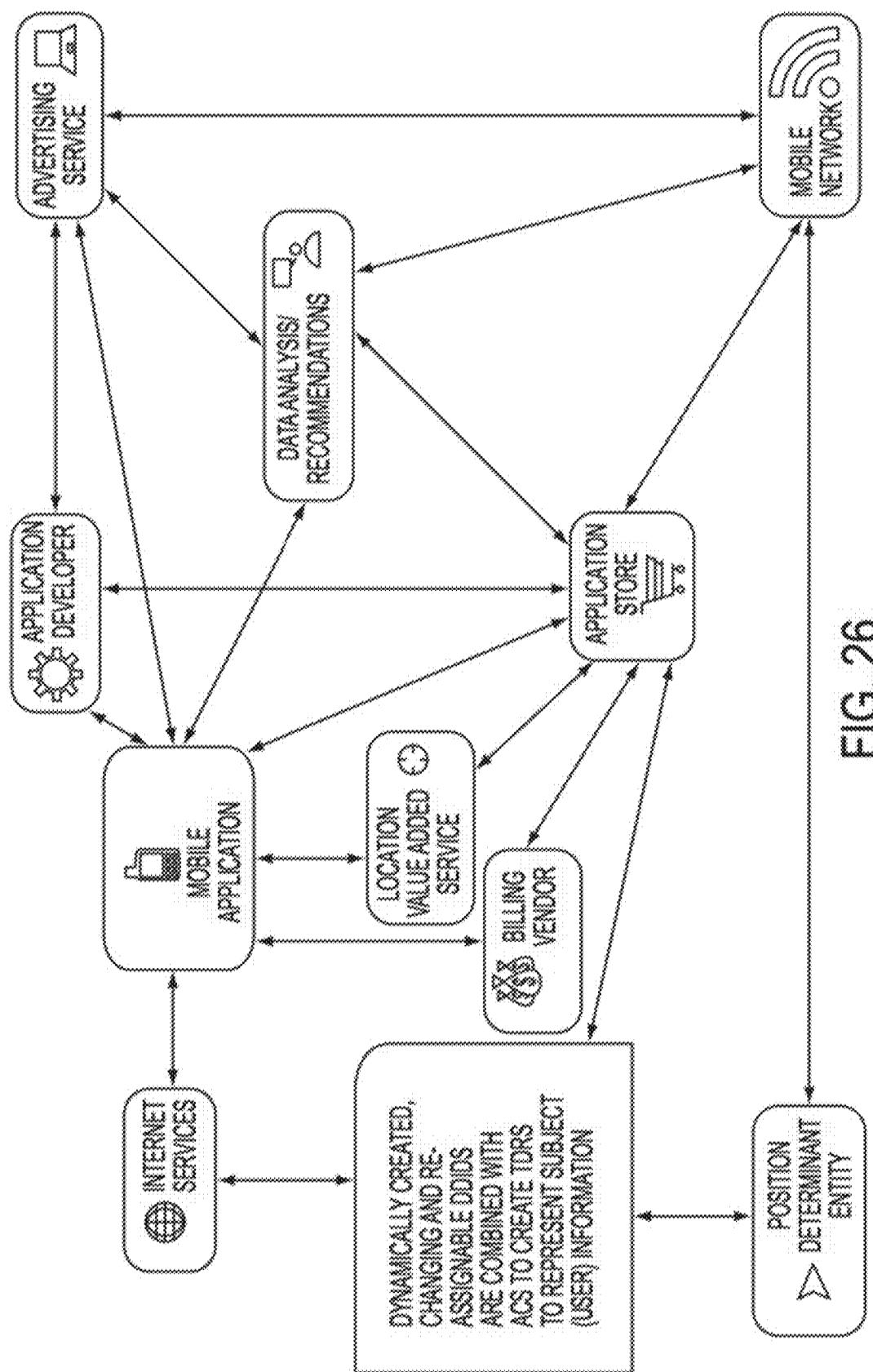


FIG. 24

FIG. 25





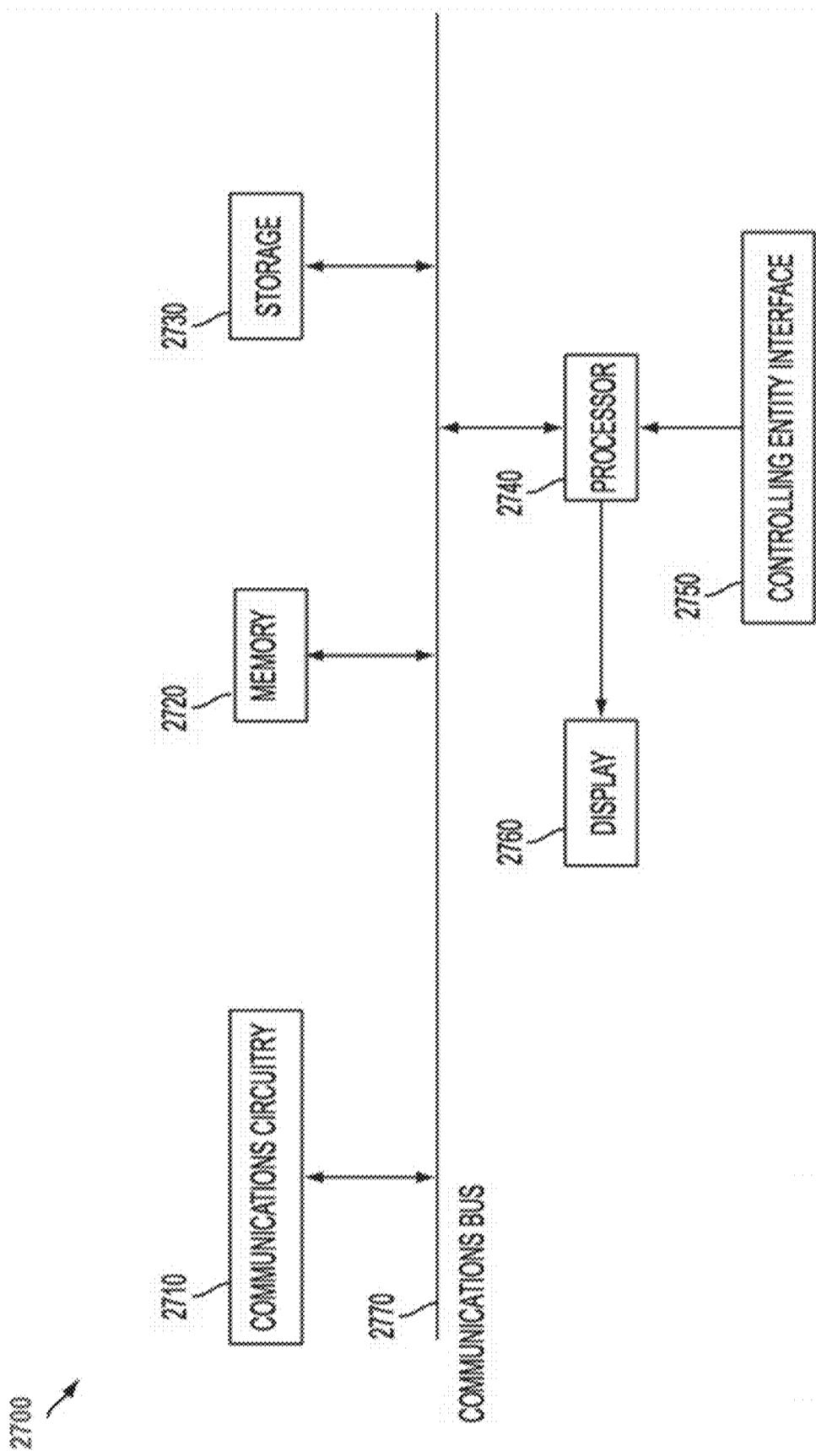


FIG. 27

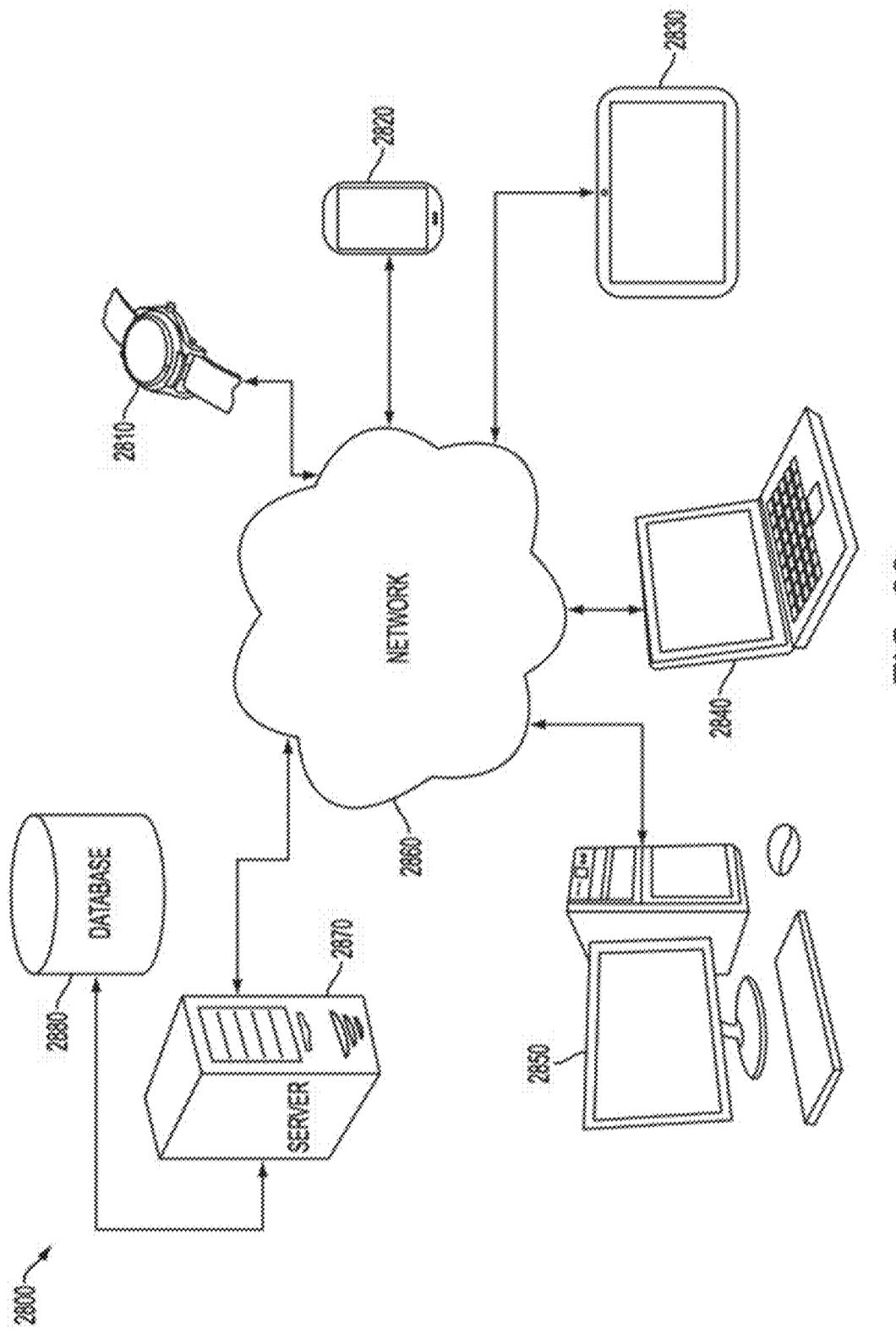


FIG. 28