Fig. 3

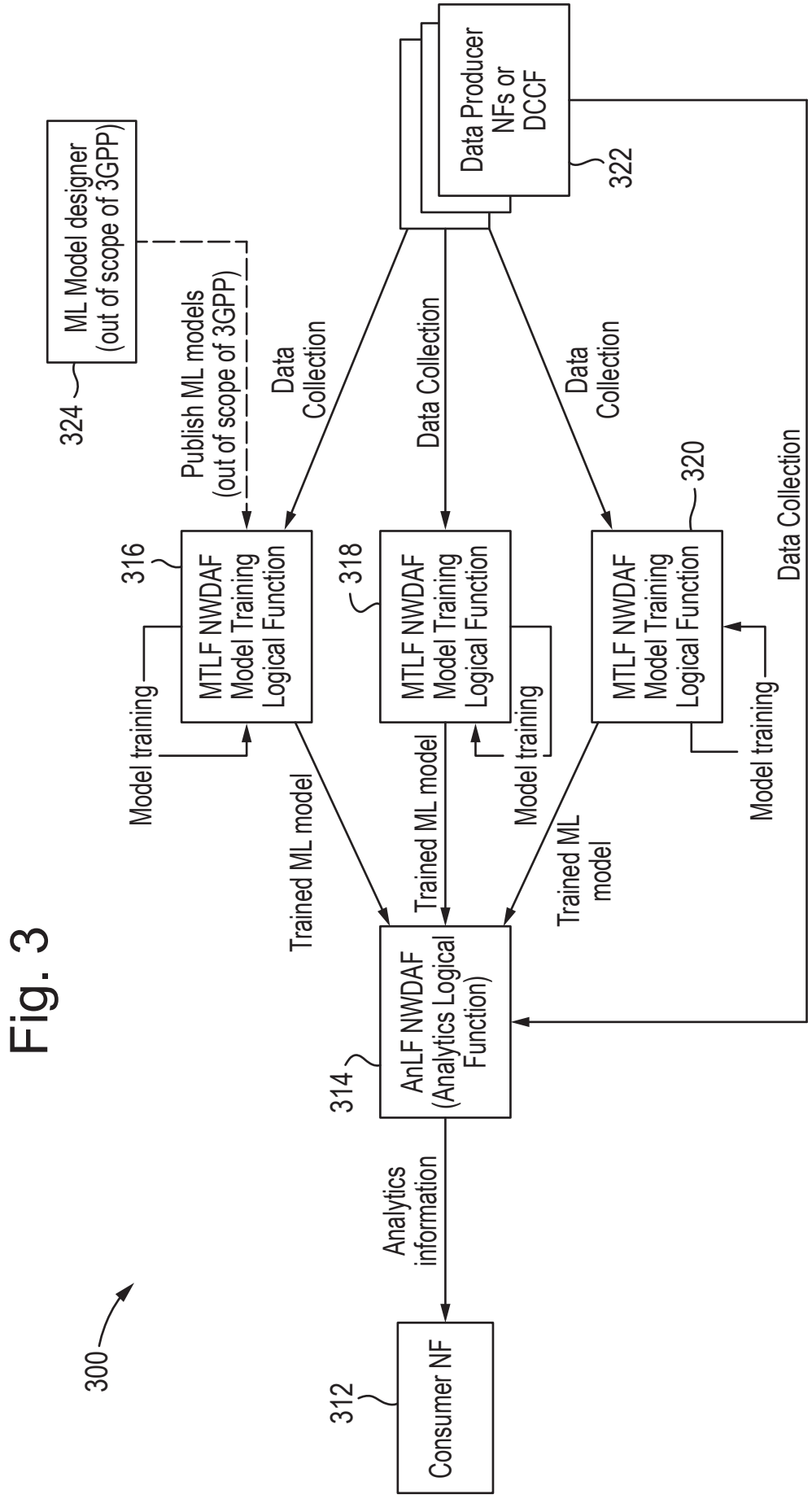

300
ML Model designer (out of scope of 3GPP)
324
Publish ML models (out of scope of 3GPP)
Data Producer NFs or DCCF
322
Data Collection
Data Collection
Data Collection
316
MTLF NWDAF Model Training Logical Function
318
MTLF NWDAF Model Training Logical Function
320
MTLF NWDAF Model Training Logical Function
Model training
Model training
Model training
Trained ML model
Trained ML model
Trained ML model
Data Collection
AnLF NWDAF (Analytics Logical Function)
314
Analytics information
312
Consumer NF

Fig. 11

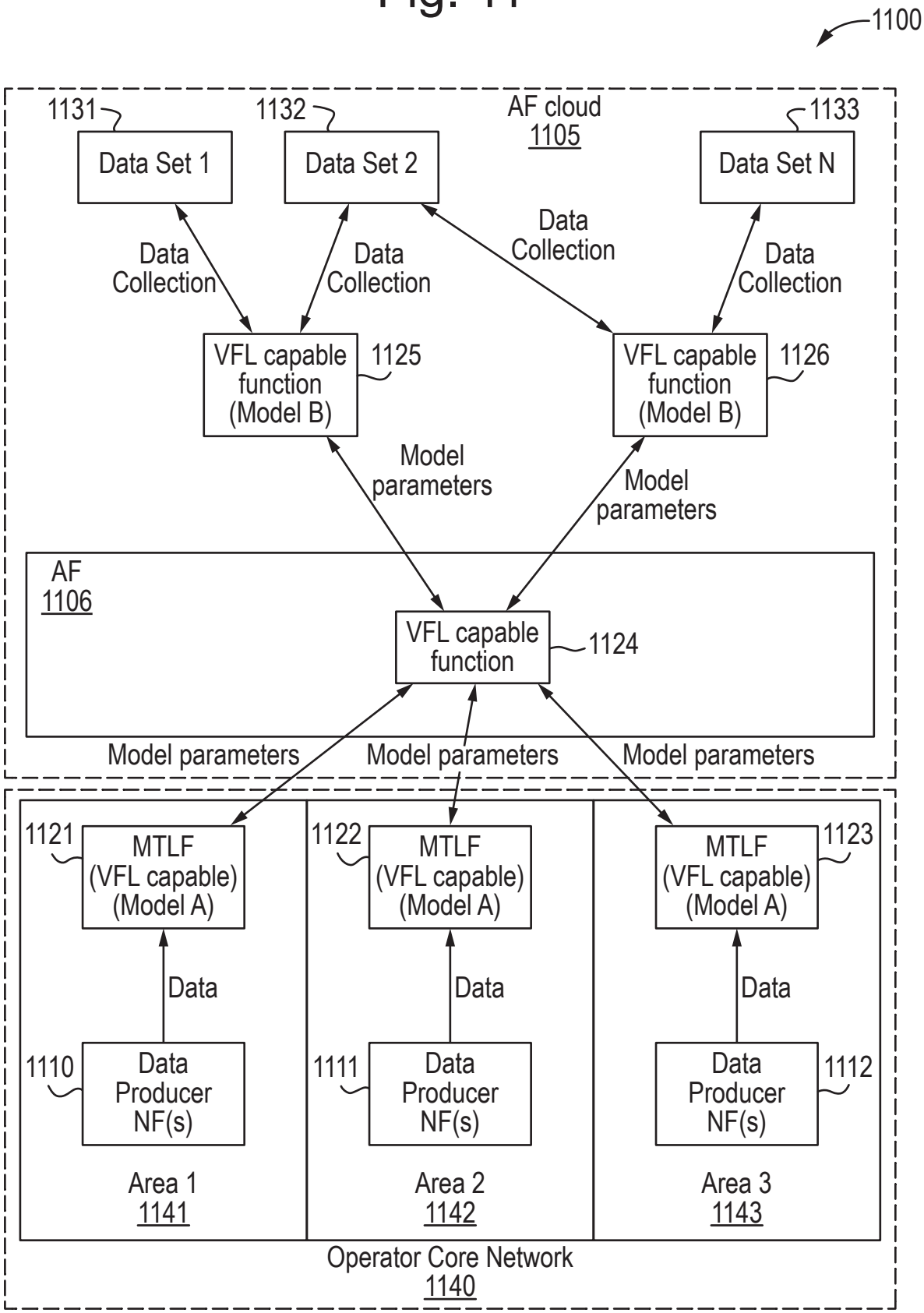

1100
1131
Data Set 1
1132
Data Set 2
AF cloud
1105
1133
Data Set N
Data Collection
Data Collection
Data Collection
Data Collection
VFL capable function (Model B)
1125
VFL capable function (Model B)
1126
Model parameters
Model parameters
AF
1106
VFL capable function
1124
Model parameters
Model parameters
Model parameters
1121
MTLF (VFL capable) (Model A)
1122
MTLF (VFL capable) (Model A)
1123
MTLF (VFL capable) (Model A)
Data
Data
Data
1110
Data Producer NF(s)
1111
Data Producer NF(s)
1112
Data Producer NF(s)
Area 1
1141
Area 2
1142
Area 3
1143
Operator Core Network
1140

Fig. 17a

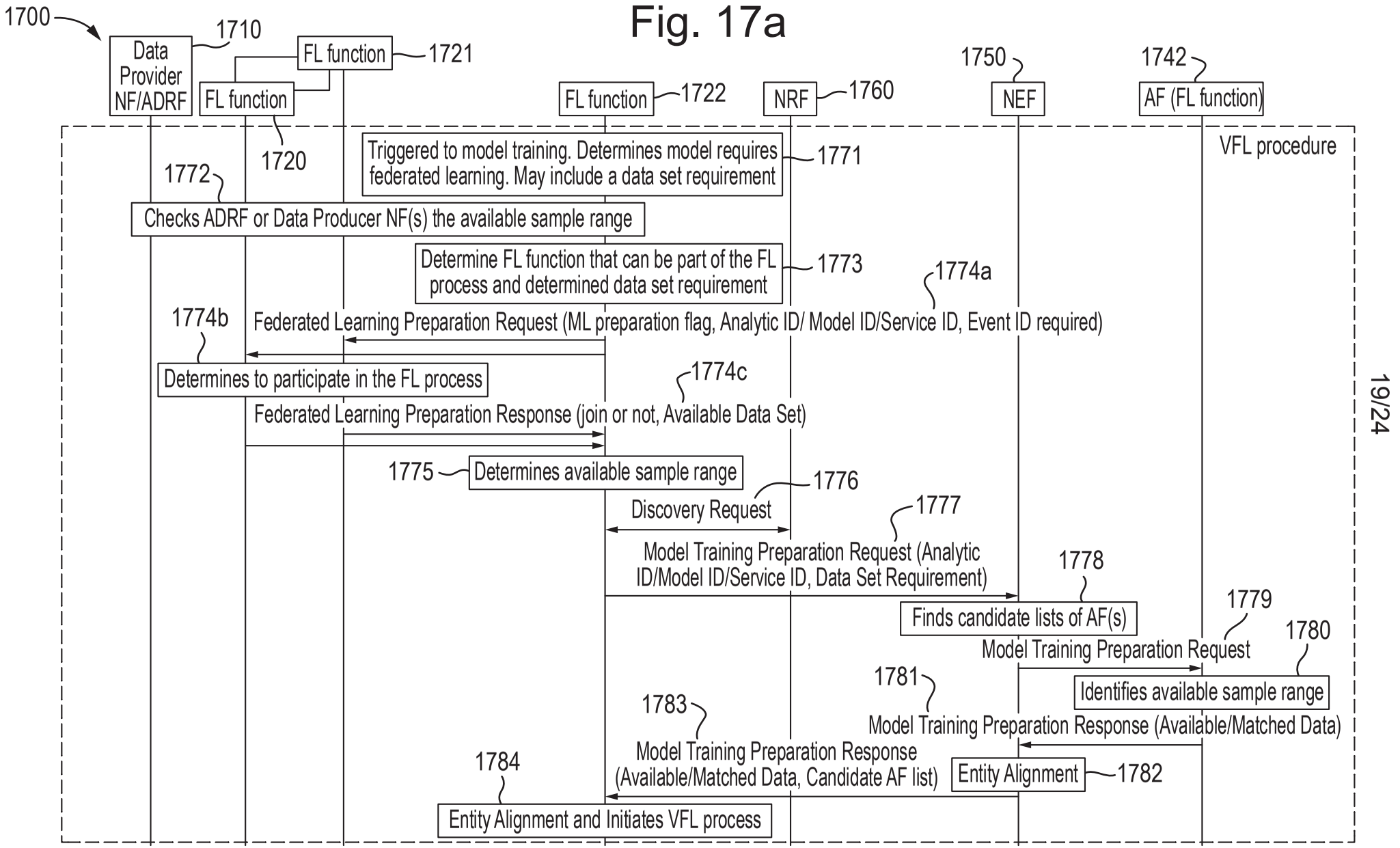
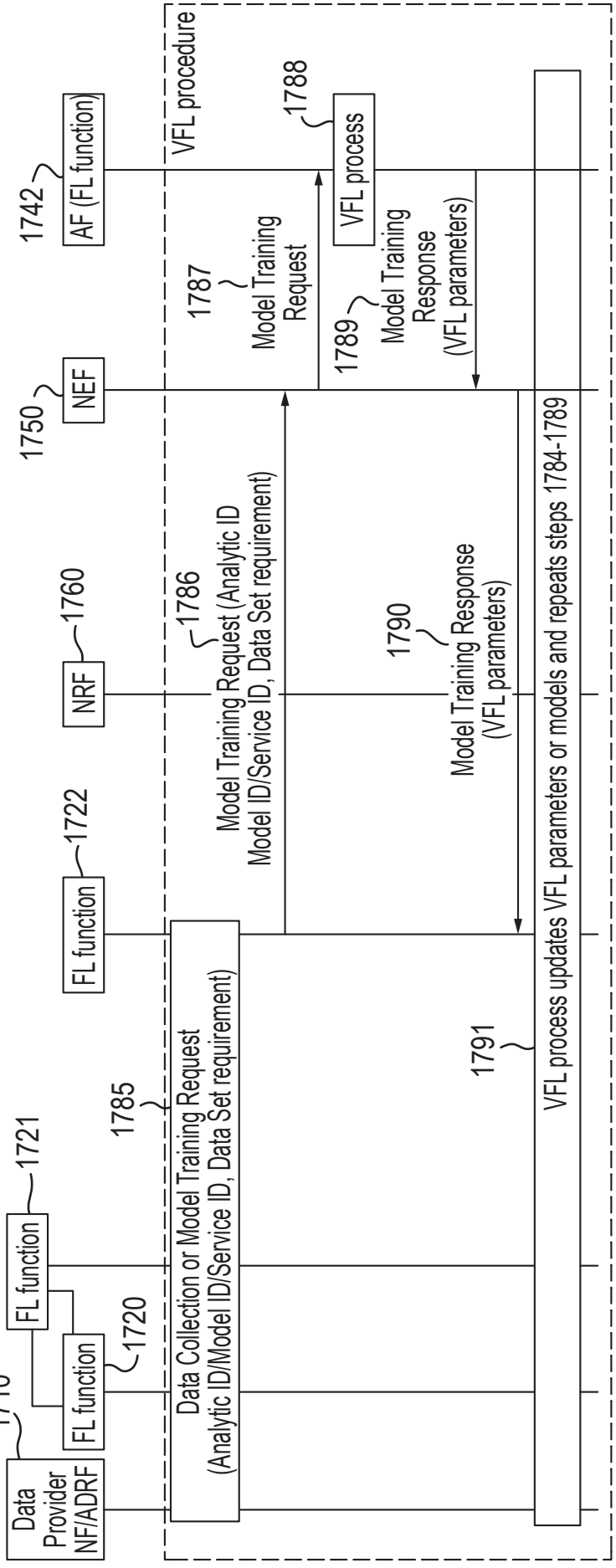

1700
1710
Data Provider NF/ADRF
FL function
1721
FL function
1720
FL function
1722
NRF
1760
1750
NEF
1742
AF (FL function)
VFL procedure
1771
Triggered to model training. Determines model requires federated learning. May include a data set requirement
1772
Checks ADRF or Data Producer NF(s) the available sample range
1773
Determine FL function that can be part of the FL process and determined data set requirement
1774a
Federated Learning Preparation Request (ML preparation flag, Analytic ID/ Model ID/Service ID, Event ID required)
1774b
Determines to participate in the FL process
1774c
Federated Learning Preparation Response (join or not, Available Data Set)
1775
Determines available sample range
1776
Discovery Request
1777
Model Training Preparation Request (Analytic ID/Model ID/Service ID, Data Set Requirement)
1778
Finds candidate lists of AF(s)
1779
Model Training Preparation Request
1780
Identifies available sample range
1781
Model Training Preparation Response (Available/Matched Data)
1783
Model Training Preparation Response (Available/Matched Data, Candidate AF list)
1784
Entity Alignment and Initiates VFL process
Entity Alignment
1782

Fig. 17b


1701
VFL procedure
1710
Data Provider NF/ADRF
1720
FL function
1721
FL function
1722
FL function
1742
AF (FL function)
1750
NEF
1760
NRF
1785
Data Collection or Model Training Request (Analytic ID/Model ID/Service ID, Data Set requirement)
1786
Model Training Request (Analytic ID Model ID/Service ID, Data Set requirement)
1787
Model Training Request
1788
VFL process
1789
Model Training Response (VFL parameters)
1790
Model Training Response (VFL parameters)
1791
VFL process updates VFL parameters or models and repeats steps 1784-1789