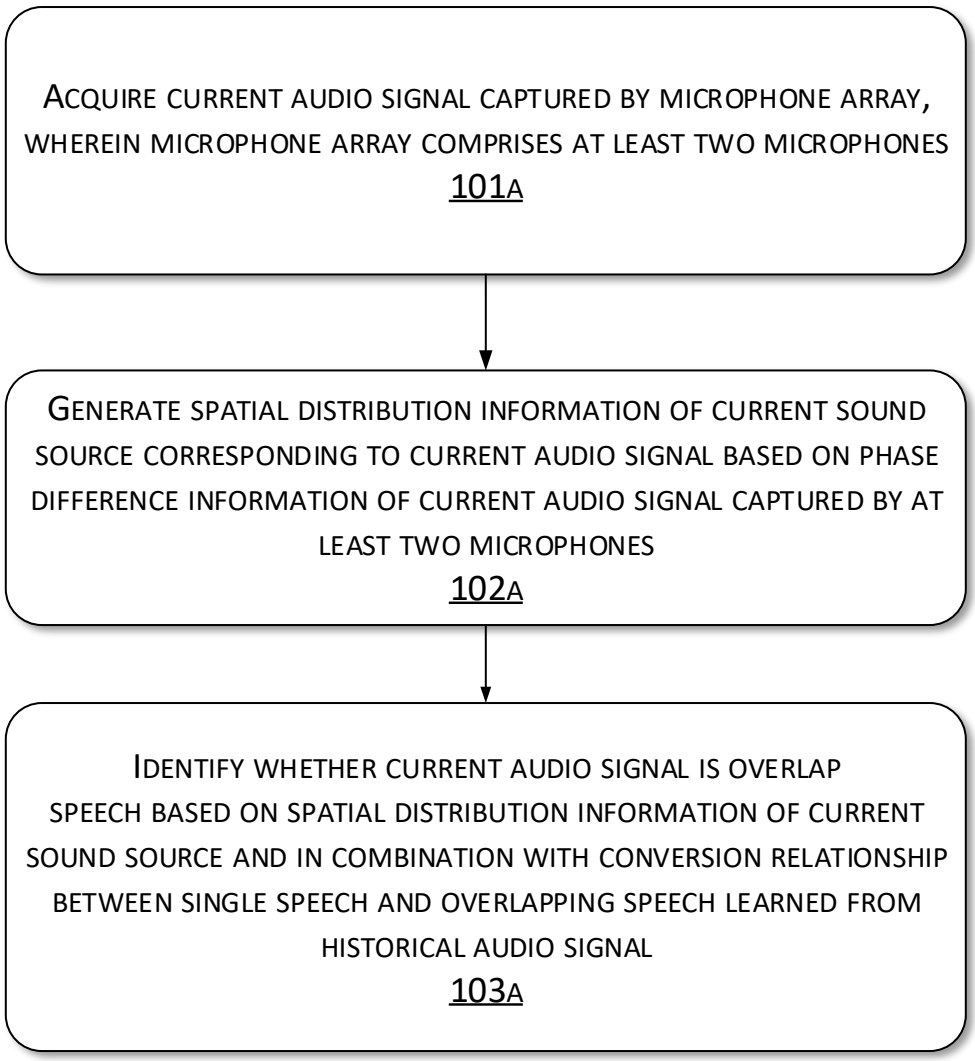

ACQUIRE CURRENT AUDIO SIGNAL CAPTURED BY MICROPHONE ARRAY, WHEREIN MICROPHONE ARRAY COMPRISES AT LEAST TWO MICROPHONES
101A
GENERATE SPATIAL DISTRIBUTION INFORMATION OF CURRENT SOUND SOURCE CORRESPONDING TO CURRENT AUDIO SIGNAL BASED ON PHASE DIFFERENCE INFORMATION OF CURRENT AUDIO SIGNAL CAPTURED BY AT LEAST TWO MICROPHONES
102A
IDENTIFY WHETHER CURRENT AUDIO SIGNAL IS OVERLAP SPEECH BASED ON SPATIAL DISTRIBUTION INFORMATION OF CURRENT SOUND SOURCE AND IN COMBINATION WITH CONVERSION RELATIONSHIP BETWEEN SINGLE SPEECH AND OVERLAPPING SPEECH LEARNED FROM HISTORICAL AUDIO SIGNAL
103A

FIG. 1A

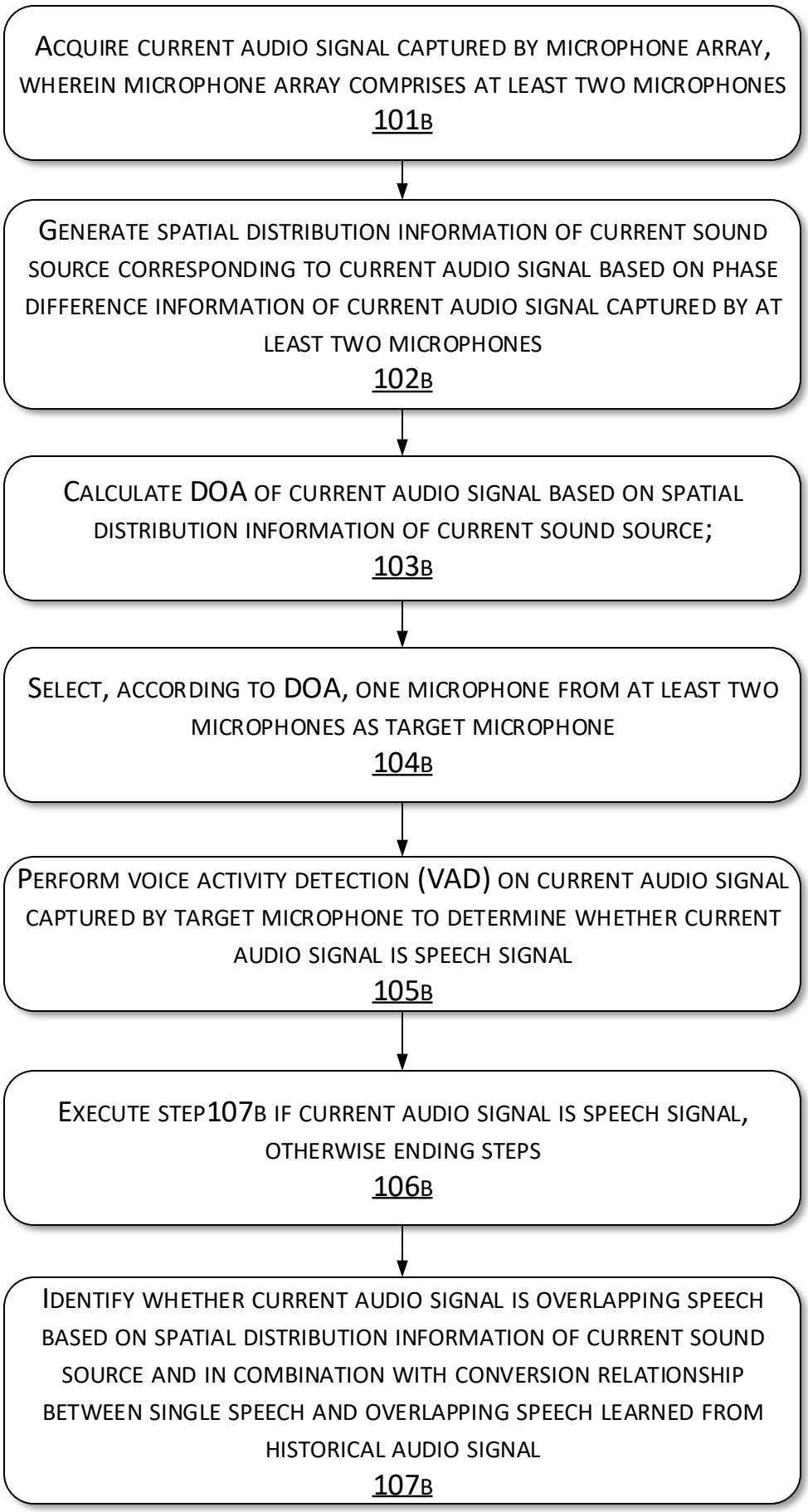

ACQUIRE CURRENT AUDIO SIGNAL CAPTURED BY MICROPHONE ARRAY, WHEREIN MICROPHONE ARRAY COMPRISES AT LEAST TWO MICROPHONES
101B
GENERATE SPATIAL DISTRIBUTION INFORMATION OF CURRENT SOUND SOURCE CORRESPONDING TO CURRENT AUDIO SIGNAL BASED ON PHASE DIFFERENCE INFORMATION OF CURRENT AUDIO SIGNAL CAPTURED BY AT LEAST TWO MICROPHONES
102B
CALCULATE DOA OF CURRENT AUDIO SIGNAL BASED ON SPATIAL DISTRIBUTION INFORMATION OF CURRENT SOUND SOURCE;
103B
SELECT, ACCORDING TO DOA, ONE MICROPHONE FROM AT LEAST TWO MICROPHONES AS TARGET MICROPHONE
104B
PERFORM VOICE ACTIVITY DETECTION (VAD) ON CURRENT AUDIO SIGNAL CAPTURED BY TARGET MICROPHONE TO DETERMINE WHETHER CURRENT AUDIO SIGNAL IS SPEECH SIGNAL
105B
EXECUTE STEP107B IF CURRENT AUDIO SIGNAL IS SPEECH SIGNAL, OTHERWISE ENDING STEPS
106B
IDENTIFY WHETHER CURRENT AUDIO SIGNAL IS OVERLAPPING SPEECH BASED ON SPATIAL DISTRIBUTION INFORMATION OF CURRENT SOUND SOURCE AND IN COMBINATION WITH CONVERSION RELATIONSHIP BETWEEN SINGLE SPEECH AND OVERLAPPING SPEECH LEARNED FROM HISTORICAL AUDIO SIGNAL
107B

FIG. 1B

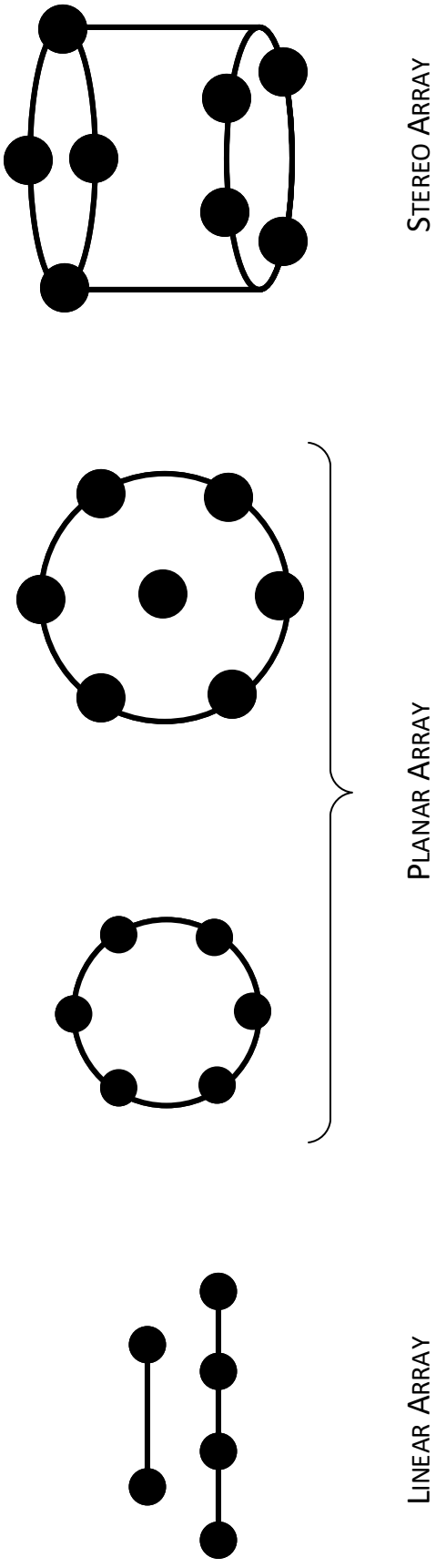


FIG. 2A

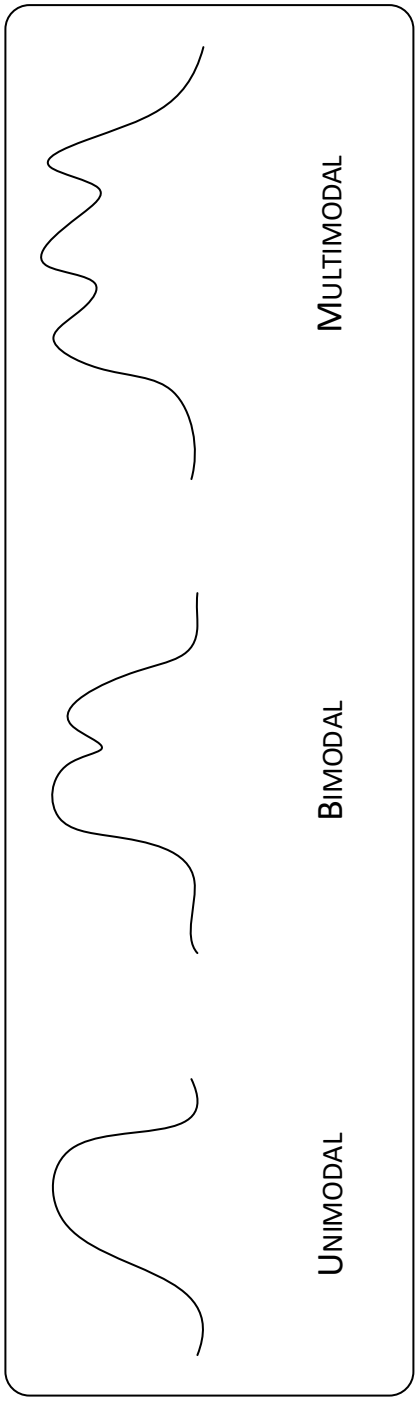


FIG. 2B

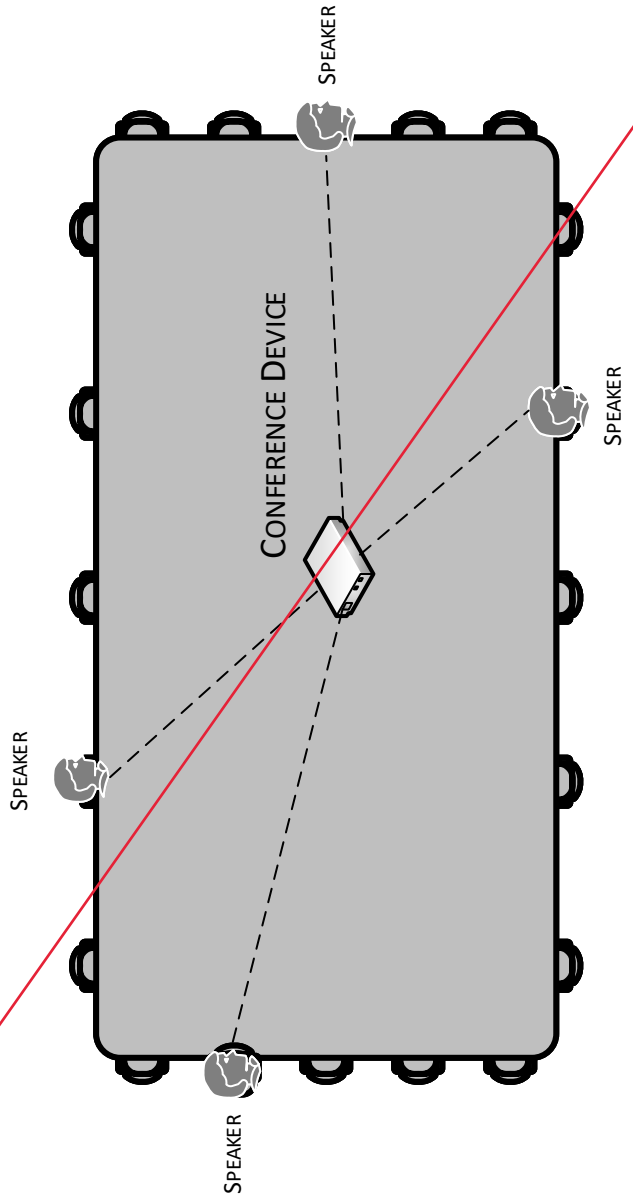


FIG. 3A

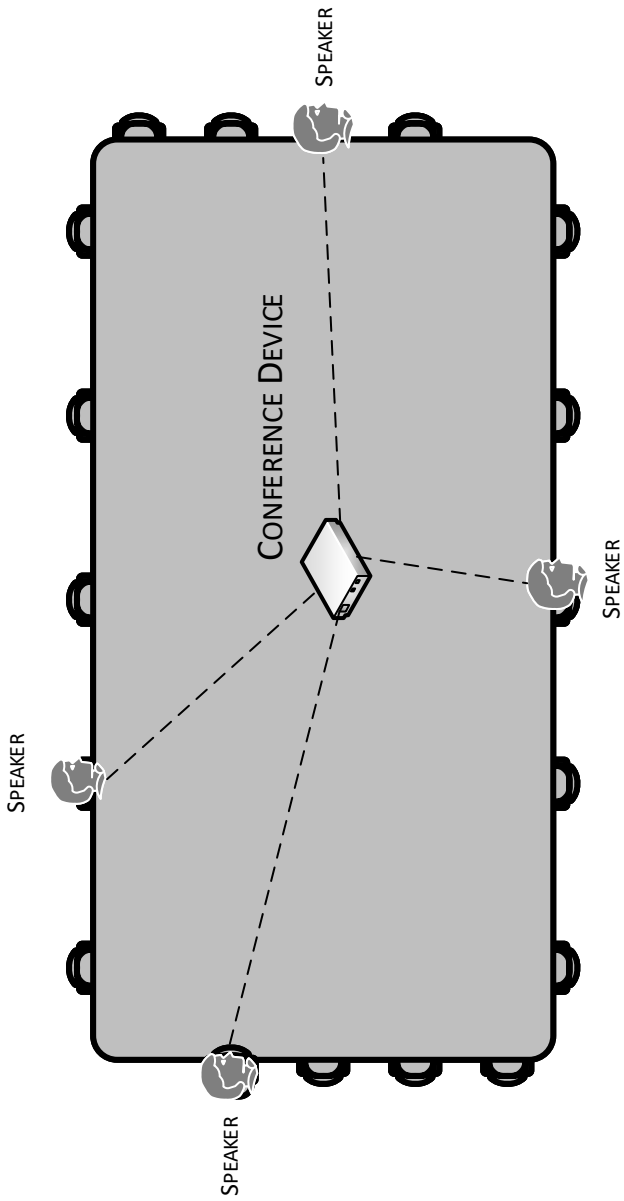


FIG. 3A

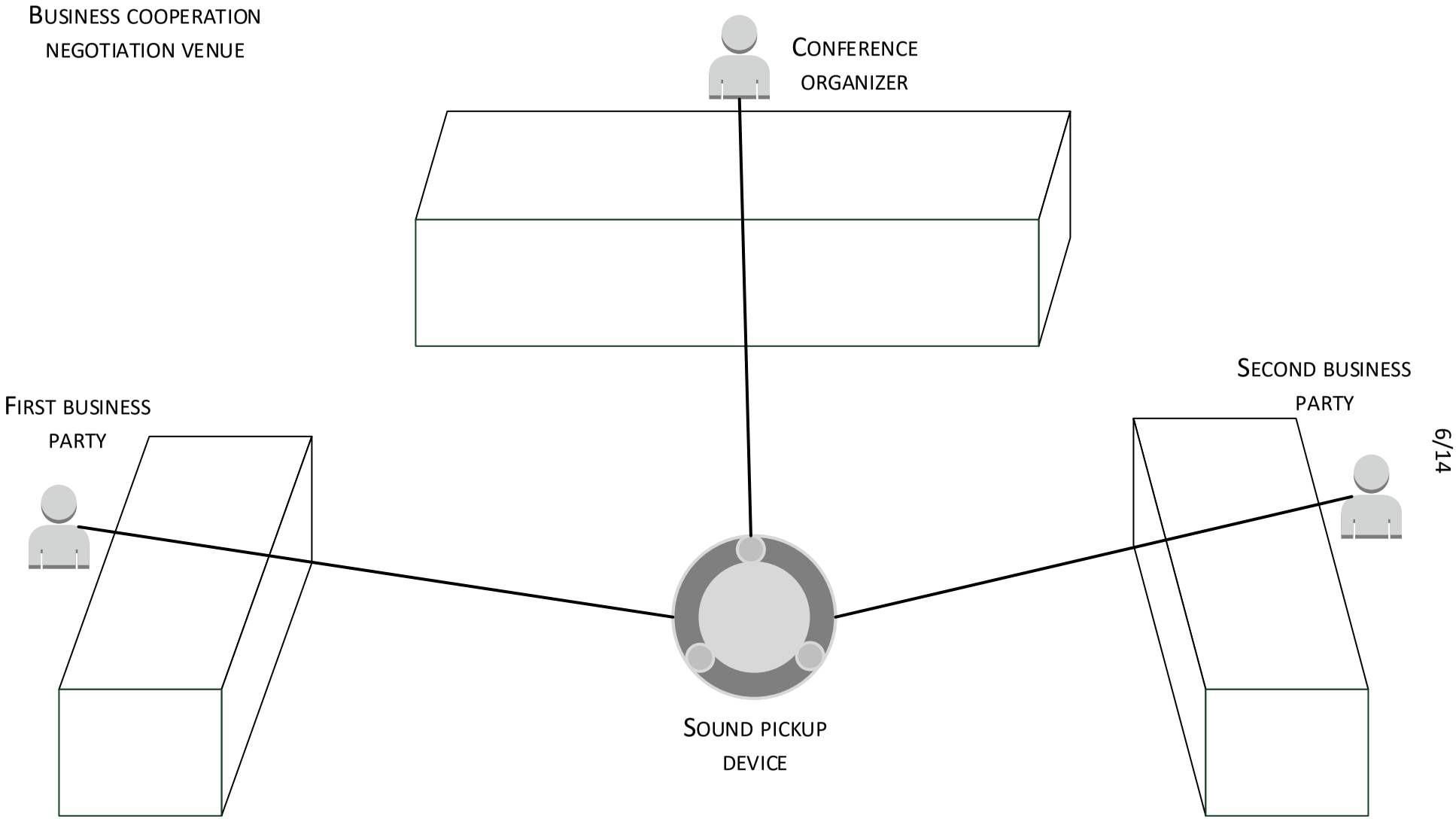

BUSINESS COOPERATION
NEGOTIATION VENUE
CONFERENCE
ORGANIZER
FIRST BUSINESS
PARTY
SECOND BUSINESS
PARTY
SOUND PICKUP
DEVICE

FIG. 3B

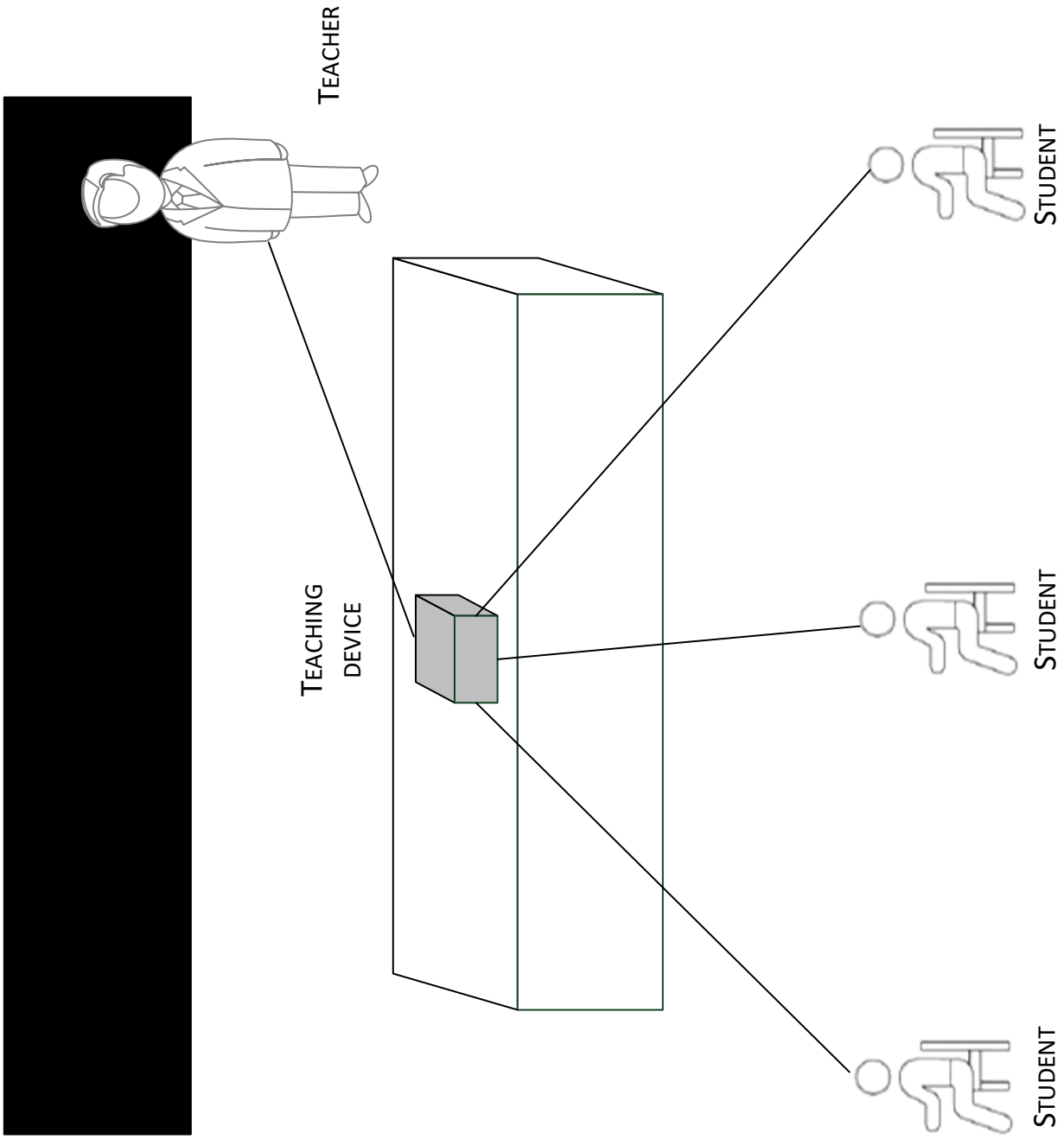


FIG. 3C

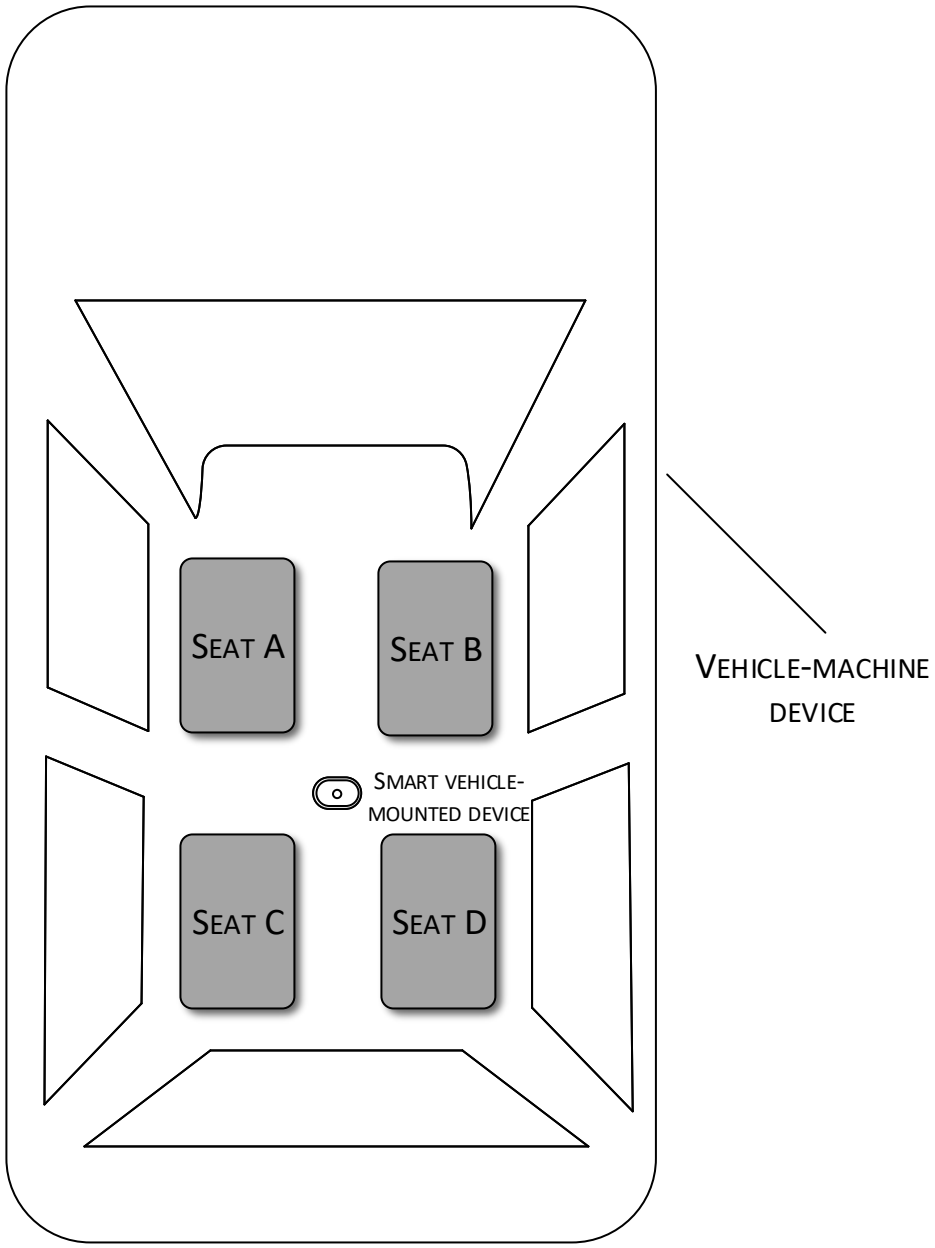

SEAT A
SEAT B
SEAT C
SEAT D
SMART VEHICLE-MOUNTED DEVICE
VEHICLE-MACHINE DEVICE

FIG. 3D

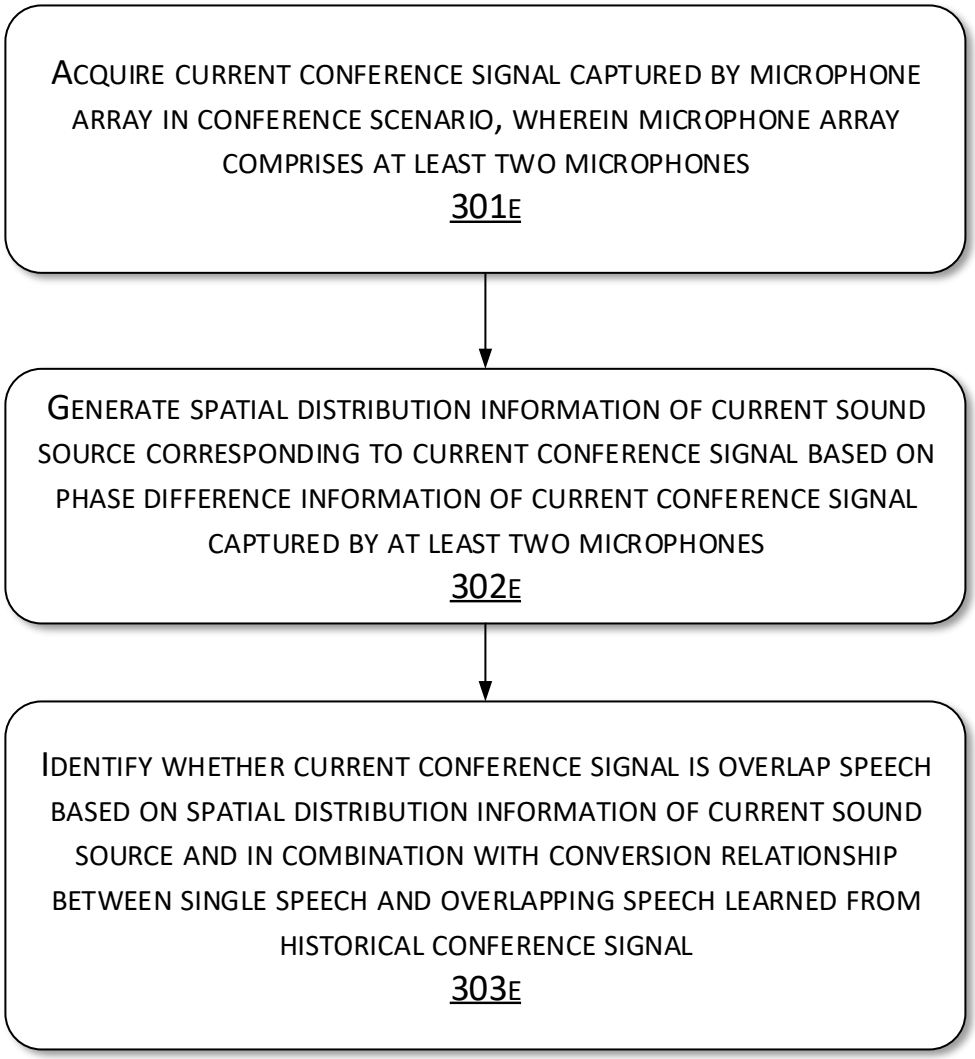

ACQUIRE CURRENT CONFERENCE SIGNAL CAPTURED BY MICROPHONE ARRAY IN CONFERENCE SCENARIO, WHEREIN MICROPHONE ARRAY COMPRISES AT LEAST TWO MICROPHONES
301E
GENERATE SPATIAL DISTRIBUTION INFORMATION OF CURRENT SOUND SOURCE CORRESPONDING TO CURRENT CONFERENCE SIGNAL BASED ON PHASE DIFFERENCE INFORMATION OF CURRENT CONFERENCE SIGNAL CAPTURED BY AT LEAST TWO MICROPHONES
302E
IDENTIFY WHETHER CURRENT CONFERENCE SIGNAL IS OVERLAP SPEECH BASED ON SPATIAL DISTRIBUTION INFORMATION OF CURRENT SOUND SOURCE AND IN COMBINATION WITH CONVERSION RELATIONSHIP BETWEEN SINGLE SPEECH AND OVERLAPPING SPEECH LEARNED FROM HISTORICAL CONFERENCE SIGNAL
303E

FIG. 3E

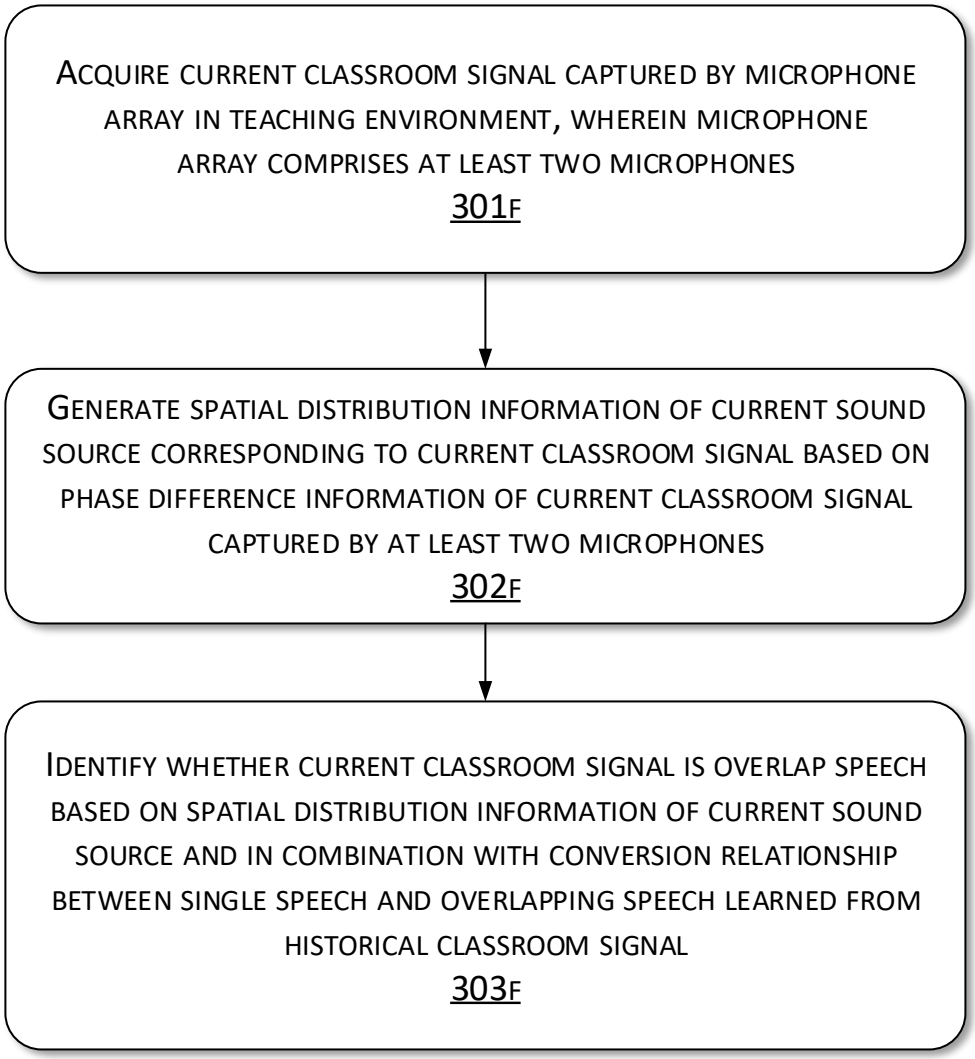

ACQUIRE CURRENT CLASSROOM SIGNAL CAPTURED BY MICROPHONE ARRAY IN TEACHING ENVIRONMENT, WHEREIN MICROPHONE ARRAY COMPRISES AT LEAST TWO MICROPHONES
301F
GENERATE SPATIAL DISTRIBUTION INFORMATION OF CURRENT SOUND SOURCE CORRESPONDING TO CURRENT CLASSROOM SIGNAL BASED ON PHASE DIFFERENCE INFORMATION OF CURRENT CLASSROOM SIGNAL CAPTURED BY AT LEAST TWO MICROPHONES
302F
IDENTIFY WHETHER CURRENT CLASSROOM SIGNAL IS OVERLAP SPEECH BASED ON SPATIAL DISTRIBUTION INFORMATION OF CURRENT SOUND SOURCE AND IN COMBINATION WITH CONVERSION RELATIONSHIP BETWEEN SINGLE SPEECH AND OVERLAPPING SPEECH LEARNED FROM HISTORICAL CLASSROOM SIGNAL
303F

FIG. 3F

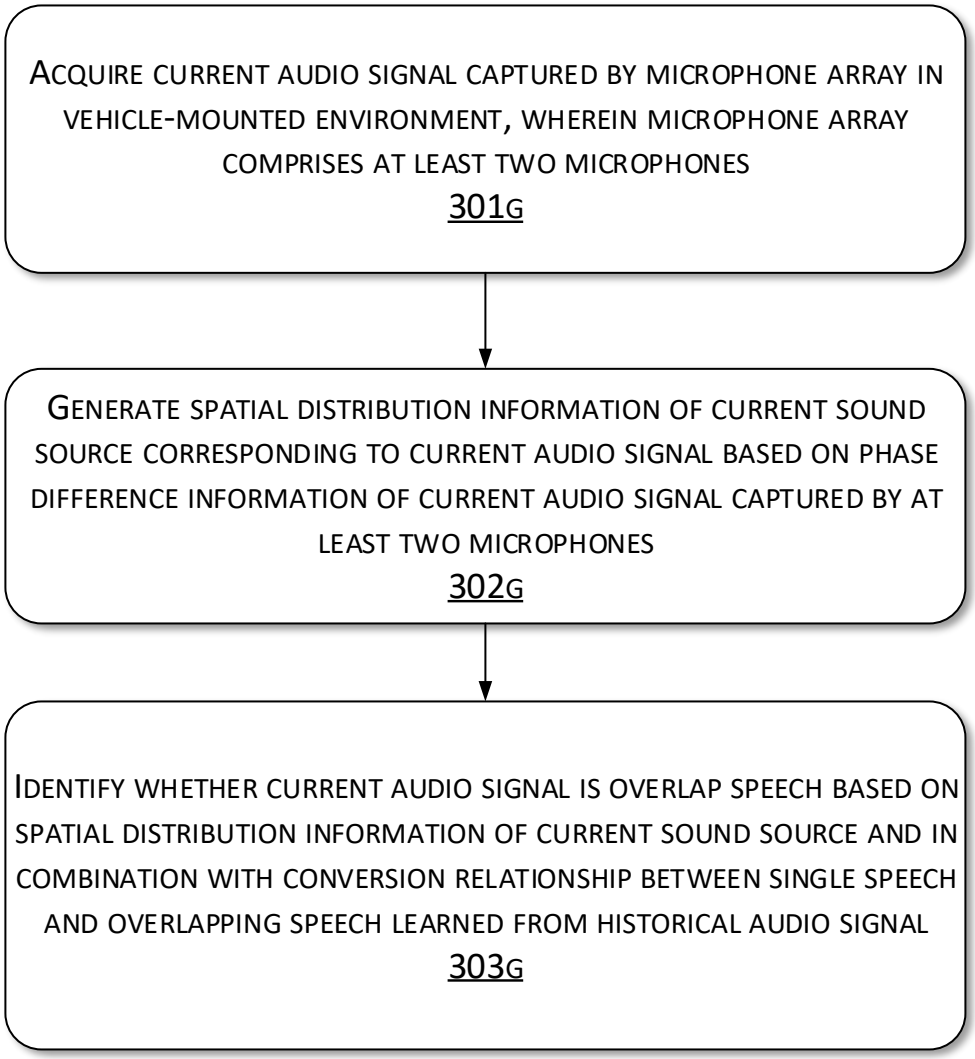

ACQUIRE CURRENT AUDIO SIGNAL CAPTURED BY MICROPHONE ARRAY IN VEHICLE-MOUNTED ENVIRONMENT, WHEREIN MICROPHONE ARRAY COMPRISES AT LEAST TWO MICROPHONES
301G
GENERATE SPATIAL DISTRIBUTION INFORMATION OF CURRENT SOUND SOURCE CORRESPONDING TO CURRENT AUDIO SIGNAL BASED ON PHASE DIFFERENCE INFORMATION OF CURRENT AUDIO SIGNAL CAPTURED BY AT LEAST TWO MICROPHONES
302G
IDENTIFY WHETHER CURRENT AUDIO SIGNAL IS OVERLAP SPEECH BASED ON SPATIAL DISTRIBUTION INFORMATION OF CURRENT SOUND SOURCE AND IN COMBINATION WITH CONVERSION RELATIONSHIP BETWEEN SINGLE SPEECH AND OVERLAPPING SPEECH LEARNED FROM HISTORICAL AUDIO SIGNAL
303G

FIG. 3G

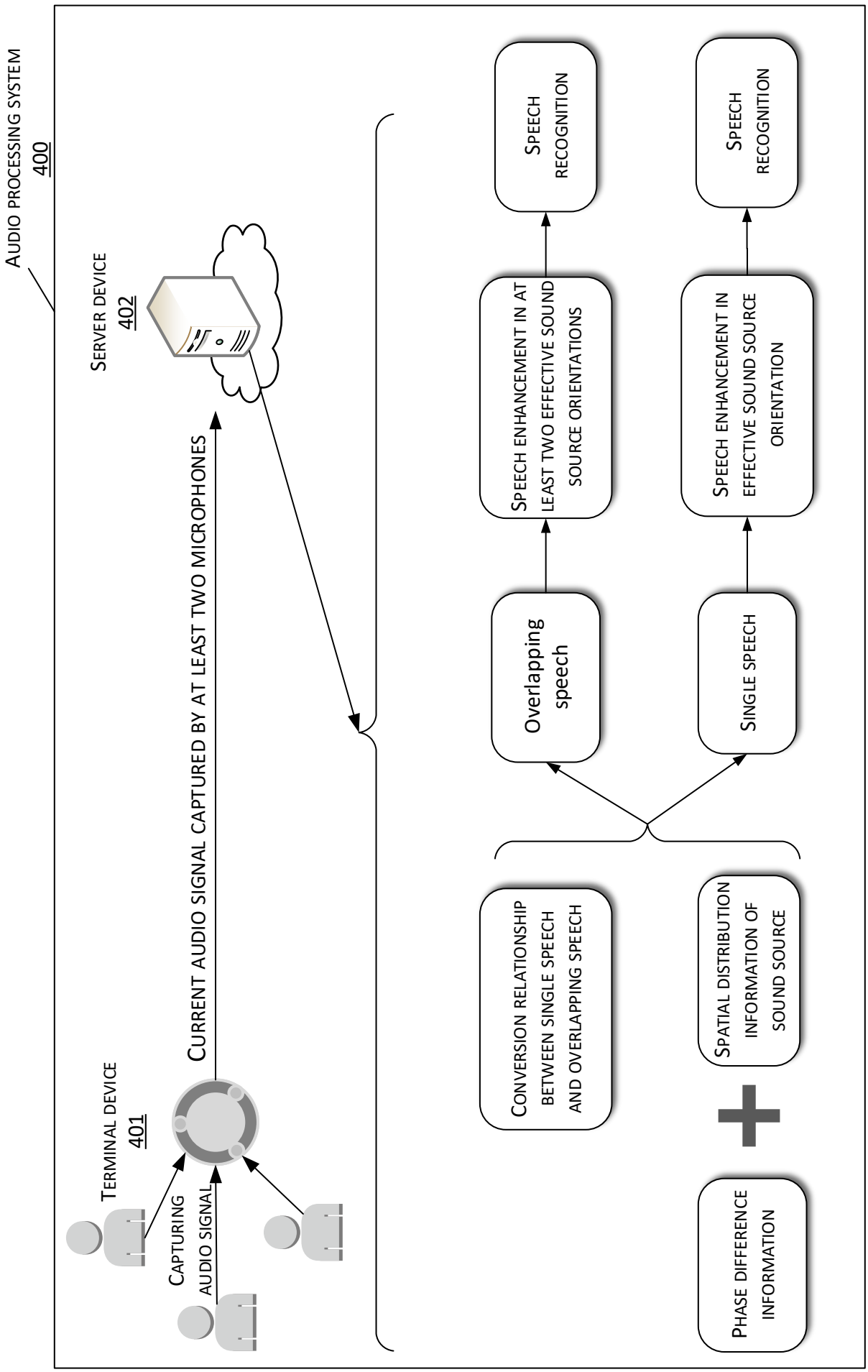

AUDIO PROCESSING SYSTEM
400
SERVER DEVICE
402
TERMINAL DEVICE
401
CAPTURING AUDIO SIGNAL
CURRENT AUDIO SIGNAL CAPTURED BY AT LEAST TWO MICROPHONES
CONVERSION RELATIONSHIP BETWEEN SINGLE SPEECH AND OVERLAPPING SPEECH
SPATIAL DISTRIBUTION INFORMATION OF SOUND SOURCE
PHASE DIFFERENCE INFORMATION
Overlapping speech
SINGLE SPEECH
SPEECH ENHANCEMENT IN AT LEAST TWO EFFECTIVE SOUND SOURCE ORIENTATIONS
SPEECH ENHANCEMENT IN EFFECTIVE SOUND SOURCE ORIENTATION
SPEECH RECOGNITION
SPEECH RECOGNITION

FIG. 4

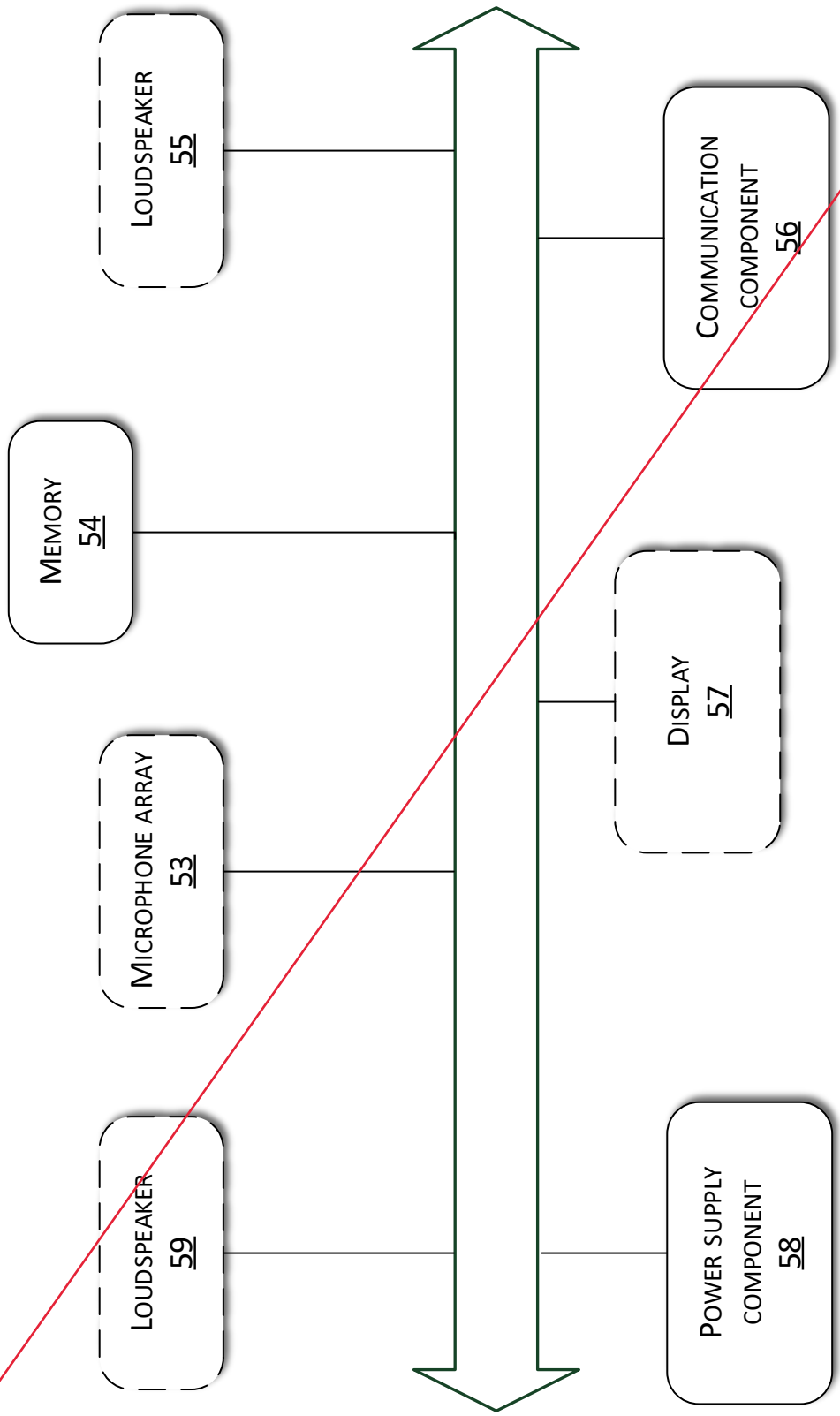

LOUDSPEAKER
55
COMMUNICATION
COMPONENT
56
MEMORY
54
DISPLAY
57
MICROPHONE ARRAY
53
LOUDSPEAKER
59
POWER SUPPLY
COMPONENT
58

FIG. 5

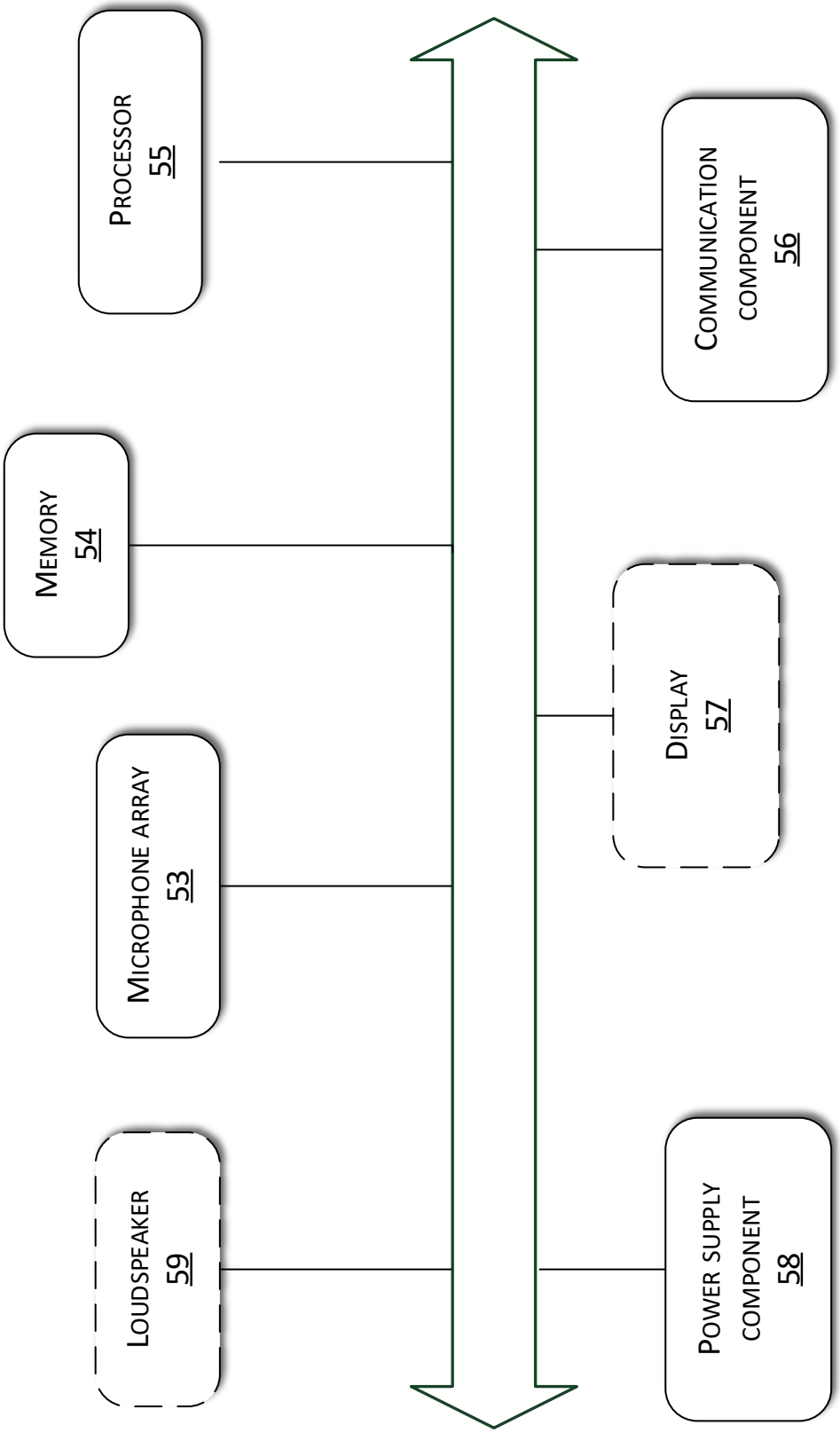

PROCESSOR
55
MEMORY
54
MICROPHONE ARRAY
53
LOUDSPEAKER
59
COMMUNICATION COMPONENT
56
DISPLAY
57
POWER SUPPLY COMPONENT
58

FIG. 5

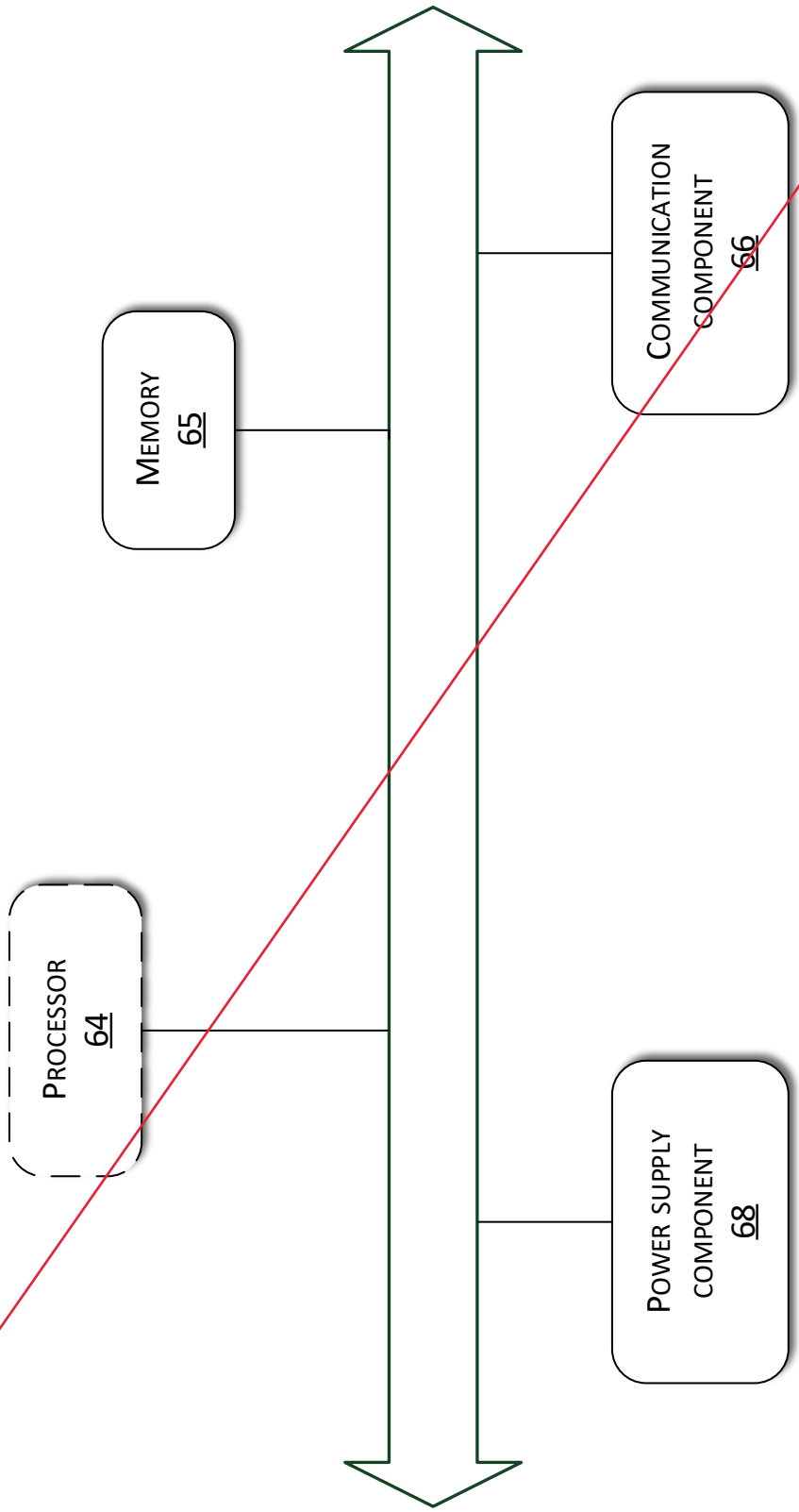

PROCESSOR
64
MEMORY
65
COMMUNICATION
COMPONENT
66
POWER SUPPLY
COMPONENT
68

FIG. 6

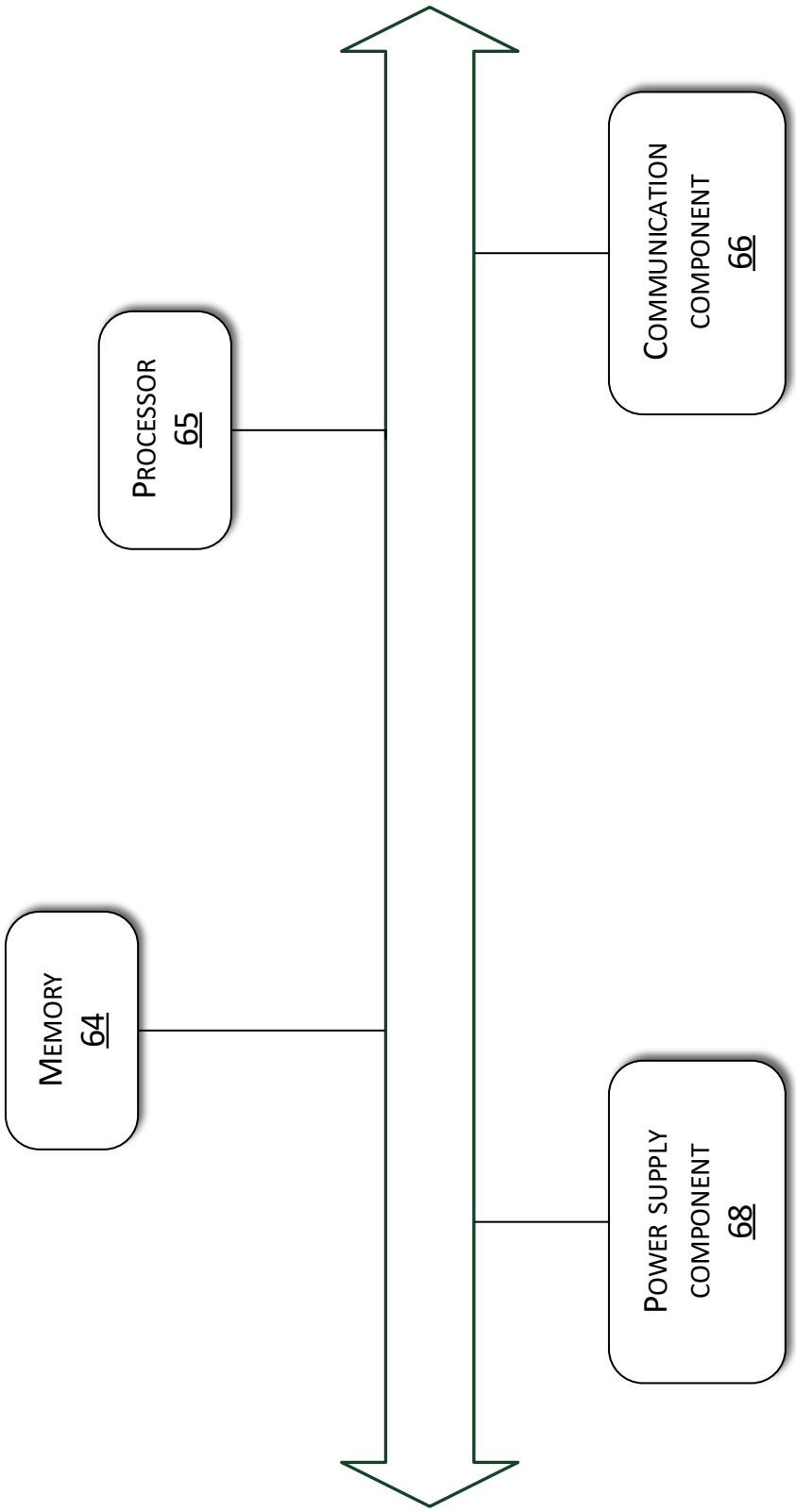

MEMORY
64
PROCESSOR
65
COMMUNICATION
COMPONENT
66
POWER SUPPLY
COMPONENT
68

FIG. 6