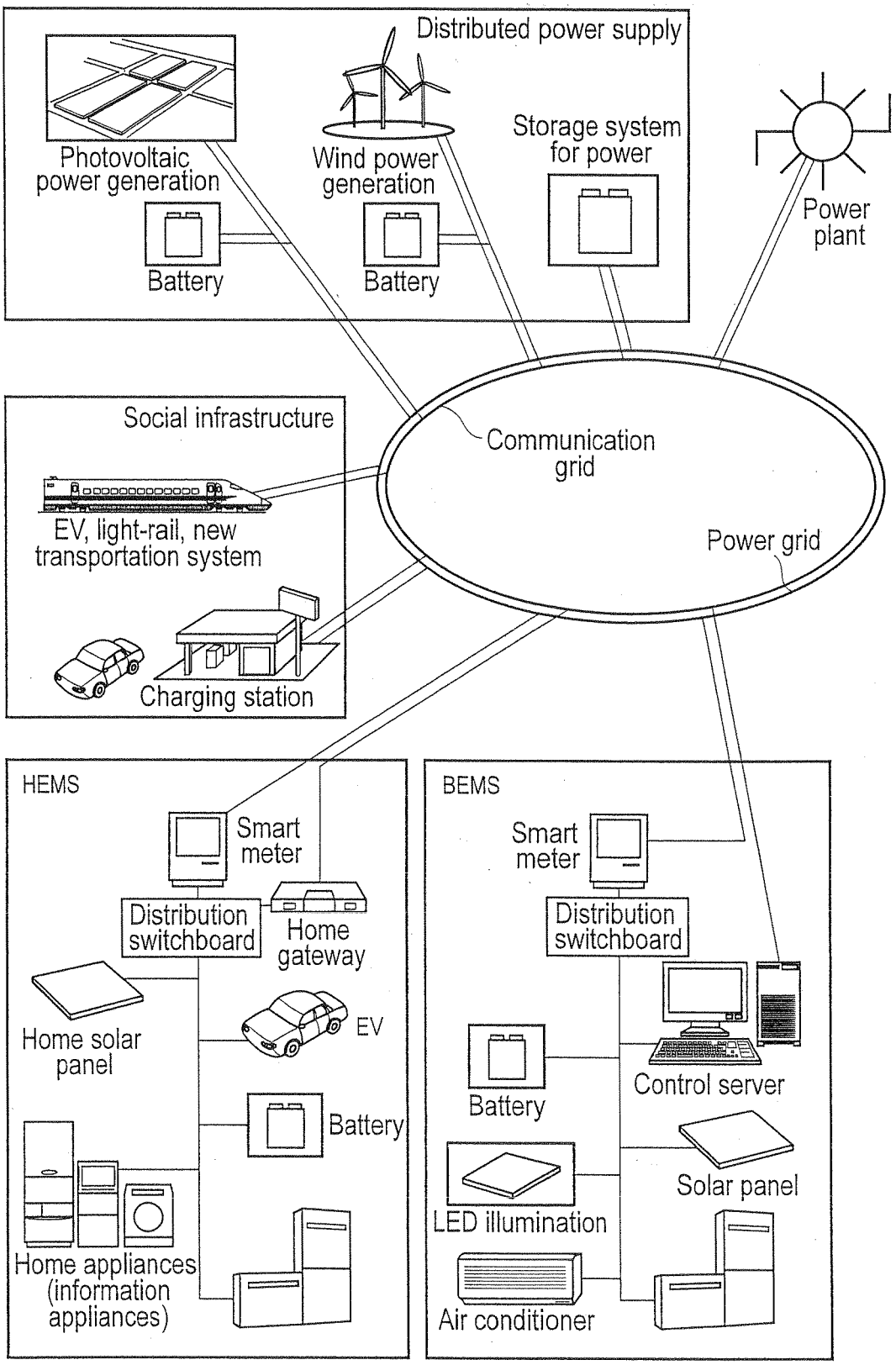

Distributed power supply
Photovoltaic power generation
Wind power generation
Storage system for power
Power plant
Battery
Battery
Social infrastructure
Communication grid
EV, light-rail, new transportation system
Power grid
Charging station
HEMS
Smart meter
Distribution switchboard
Home gateway
Home solar panel
EV
Battery
Home appliances (information appliances)
BEMS
Smart meter
Distribution switchboard
Control server
Battery
Solar panel
LED illumination
Air conditioner

FIG. 1

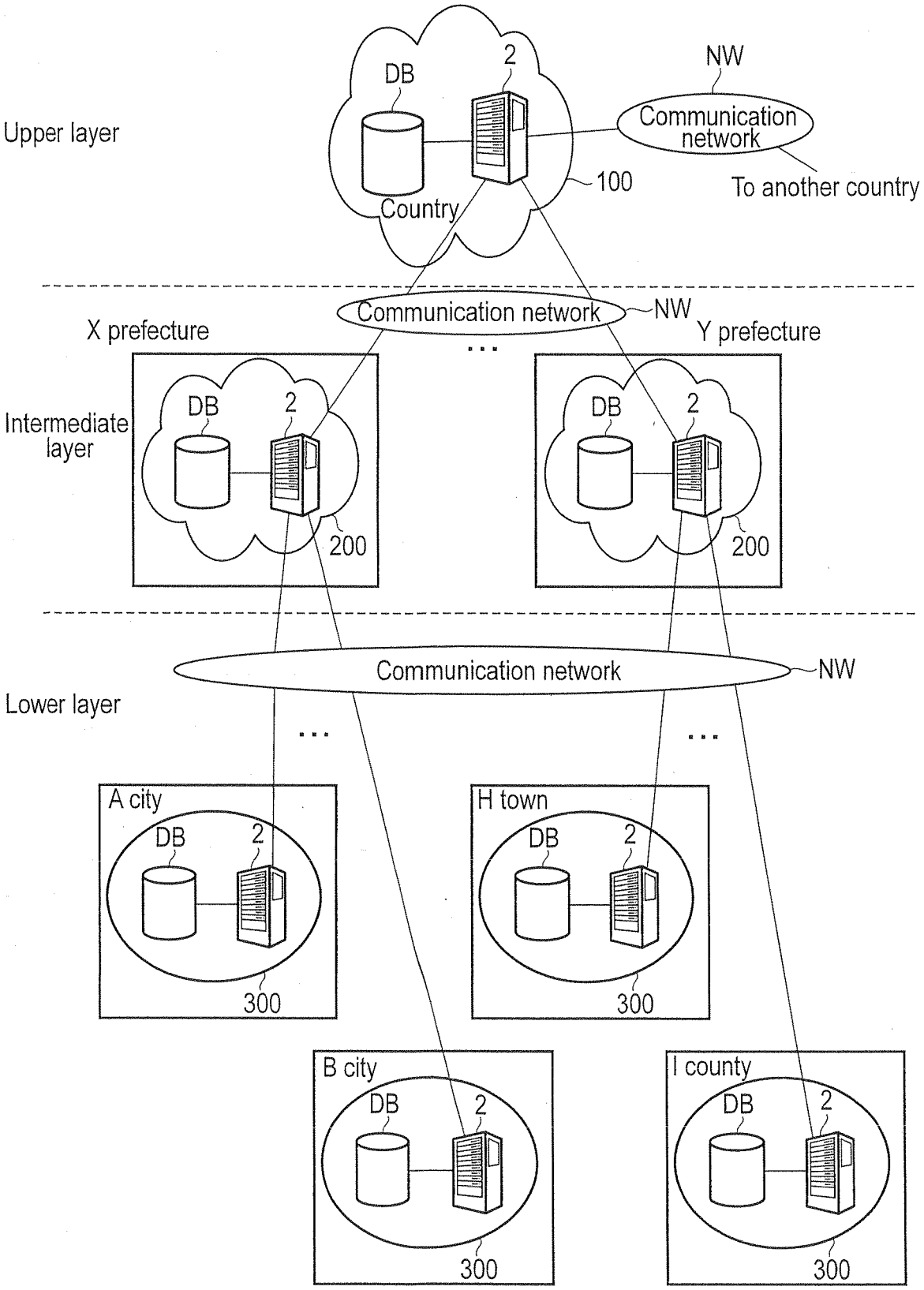

Upper layer
DB
2
NW
Communication network
To another country
100
Country
Communication network
NW
X prefecture
Y prefecture
Intermediate layer
DB
2
200
DB
2
200
Communication network
NW
Lower layer
A city
DB
2
300
H town
DB
2
300
B city
DB
2
300
I county
DB
2
300

FIG. 2

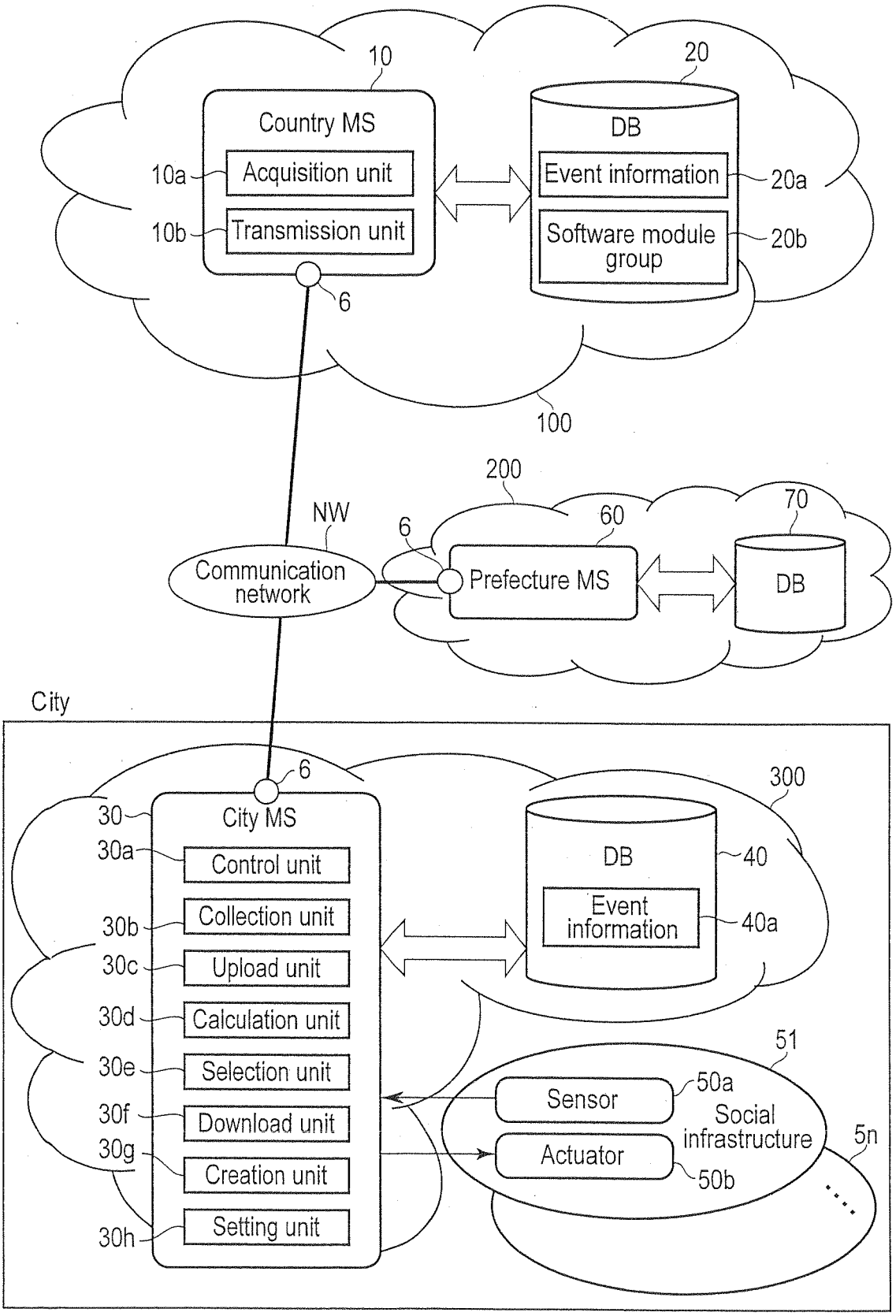

10
Country MS
10a
Acquisition unit
10b
Transmission unit
6
20
DB
Event information
20a
Software module group
20b
100
200
NW
6
60
70
Communication network
Prefecture MS
DB
City
6
300
30
City MS
30a
Control unit
30b
Collection unit
30c
Upload unit
30d
Calculation unit
30e
Selection unit
30f
Download unit
30g
Creation unit
30h
Setting unit
DB
40
Event information
40a
51
Sensor
50a
Social infrastructure
Actuator
50b
5n

FIG. 3

Sensor ID	Position information	Time stamp	Power consumption
0000001	Latitude: XX Longitude: YY	March 30, 2012 12 : 20 : 30	1.5kWh

FIG. 4

Sensor ID	Position information	Time stamp	Power consumption
0000001	Latitude: XX Longitude: YY	March 30, 2012 12 : 20 : 30	1.5kWh
		March 30, 2012 12 : 21 : 00	1.2kWh
		March 30, 2012 12 : 21 : 30	1.7kWh
		...	...
		⋮	
		...	...
0000002	Latitude: XZ Longitude: XY	March 30, 2012 12 : 20 : 30	2.0kWh
		March 30, 2012 12 : 21 : 00	0.2kWh
		March 30, 2012 12 : 21 : 30	0.1kWh
		...	...
		⋮	
		...	...
⋮	⋮	⋮	⋮

FIG. 5

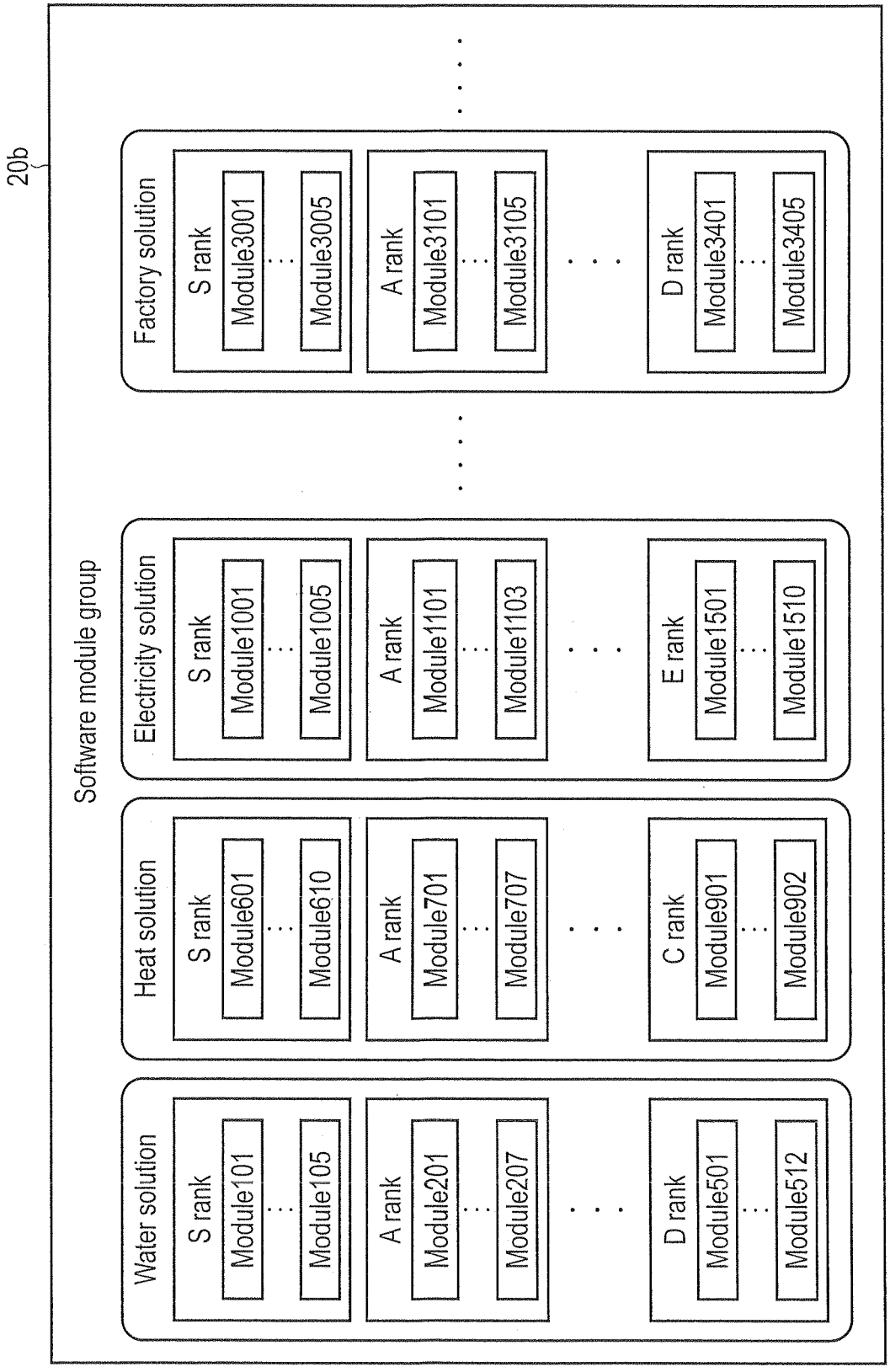

20b
Software module group
Water solution
S rank
Module101
Module105
A rank
Module201
Module207
D rank
Module501
Module512
Heat solution
S rank
Module601
Module610
A rank
Module701
Module707
C rank
Module901
Module902
Electricity solution
S rank
Module1001
Module1005
A rank
Module1101
Module1103
E rank
Module1501
Module1510
Factory solution
S rank
Module3001
Module3005
A rank
Module3101
Module3105
D rank
Module3401
Module3405

FIG. 6

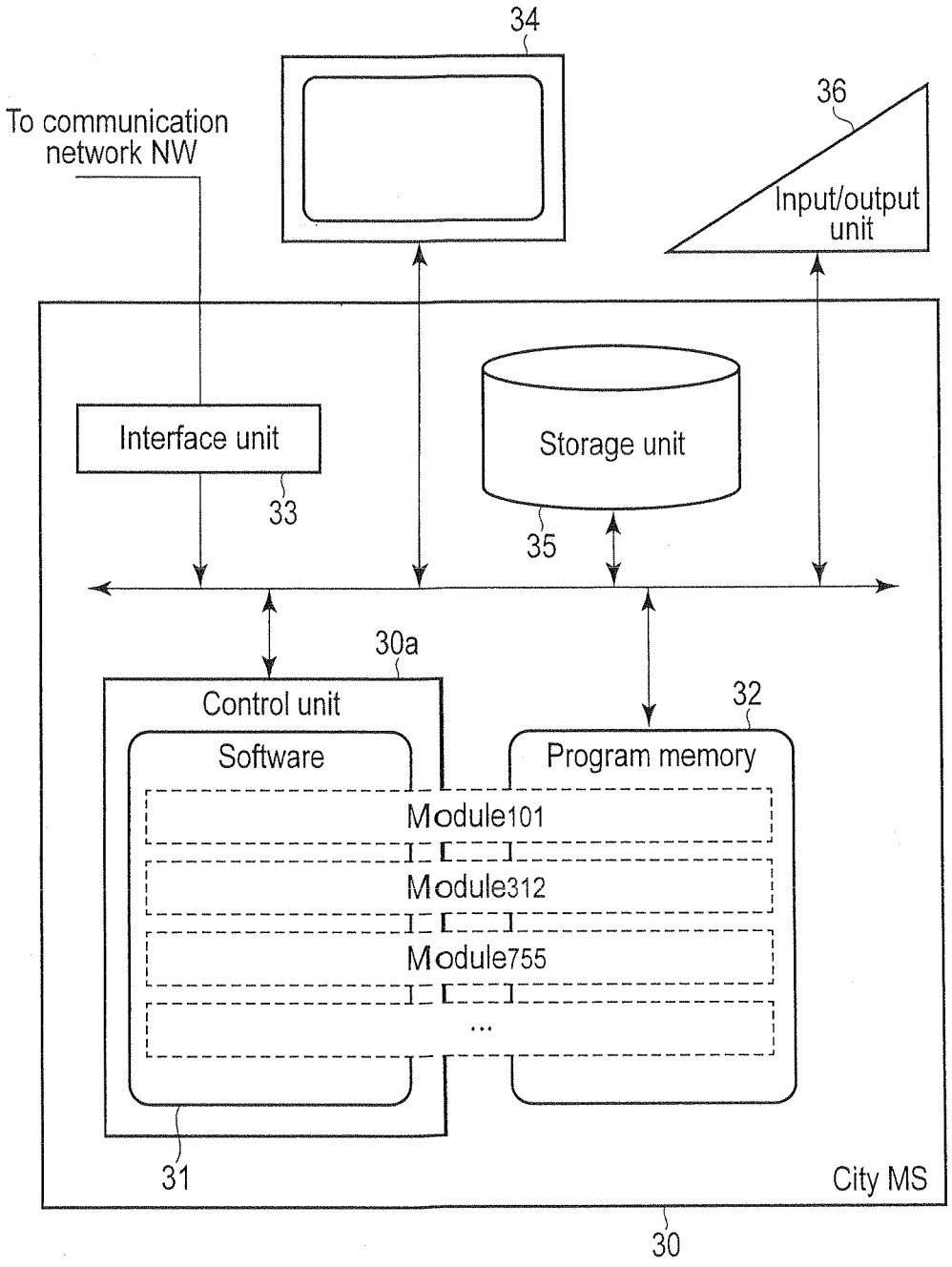

34
To communication network NW
36
Input/output unit
Interface unit
33
Storage unit
35
30a
Control unit
Software
32
Program memory
Module101
Module312
Module755
...
31
City MS
30

FIG. 7

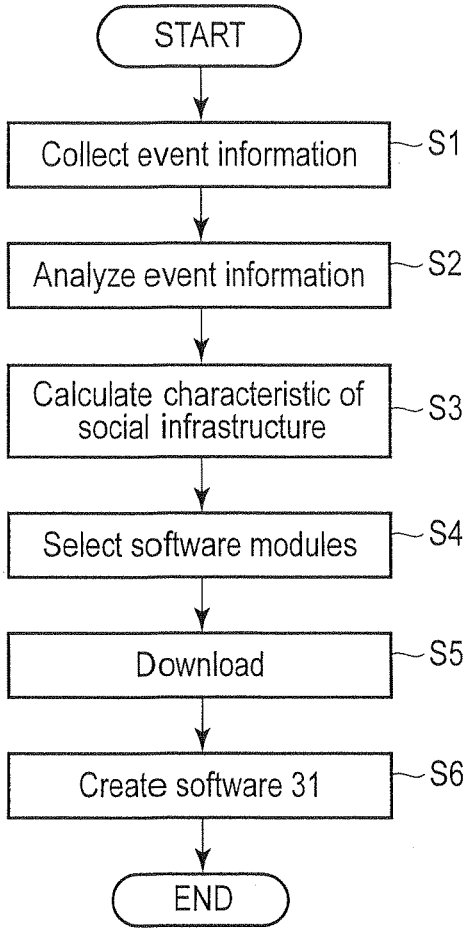
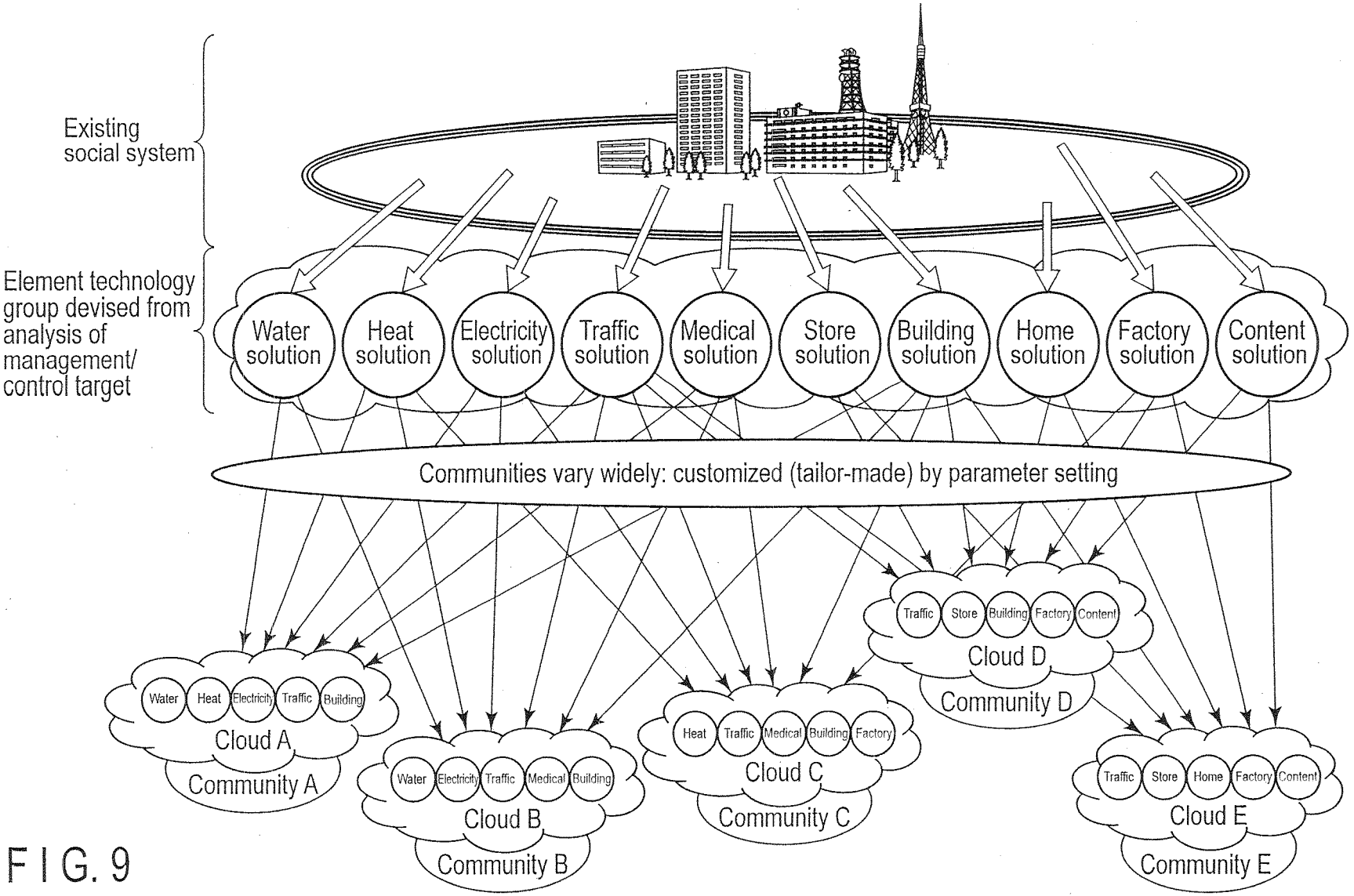

START
Collect event information
S1
Analyze event information
S2
Calculate characteristic of social infrastructure
S3
Select software modules
S4
Download
S5
Create software 31
S6
END

FIG. 8


Existing social system
Element technology group devised from analysis of management/ control target
Water solution
Heat solution
Electricity solution
Traffic solution
Medical solution
Store solution
Building solution
Home solution
Factory solution
Content solution
Communities vary widely: customized (tailor-made) by parameter setting
Water Heat Electricity Traffic Building
Cloud A
Community A
Water Electricity Traffic Medical Building
Cloud B
Community B
Heat Traffic Medical Building Factory
Cloud C
Community C
Traffic Store Building Factory Content
Cloud D
Community D
Traffic Store Home Factory Content
Cloud E
Community E

F I G. 9

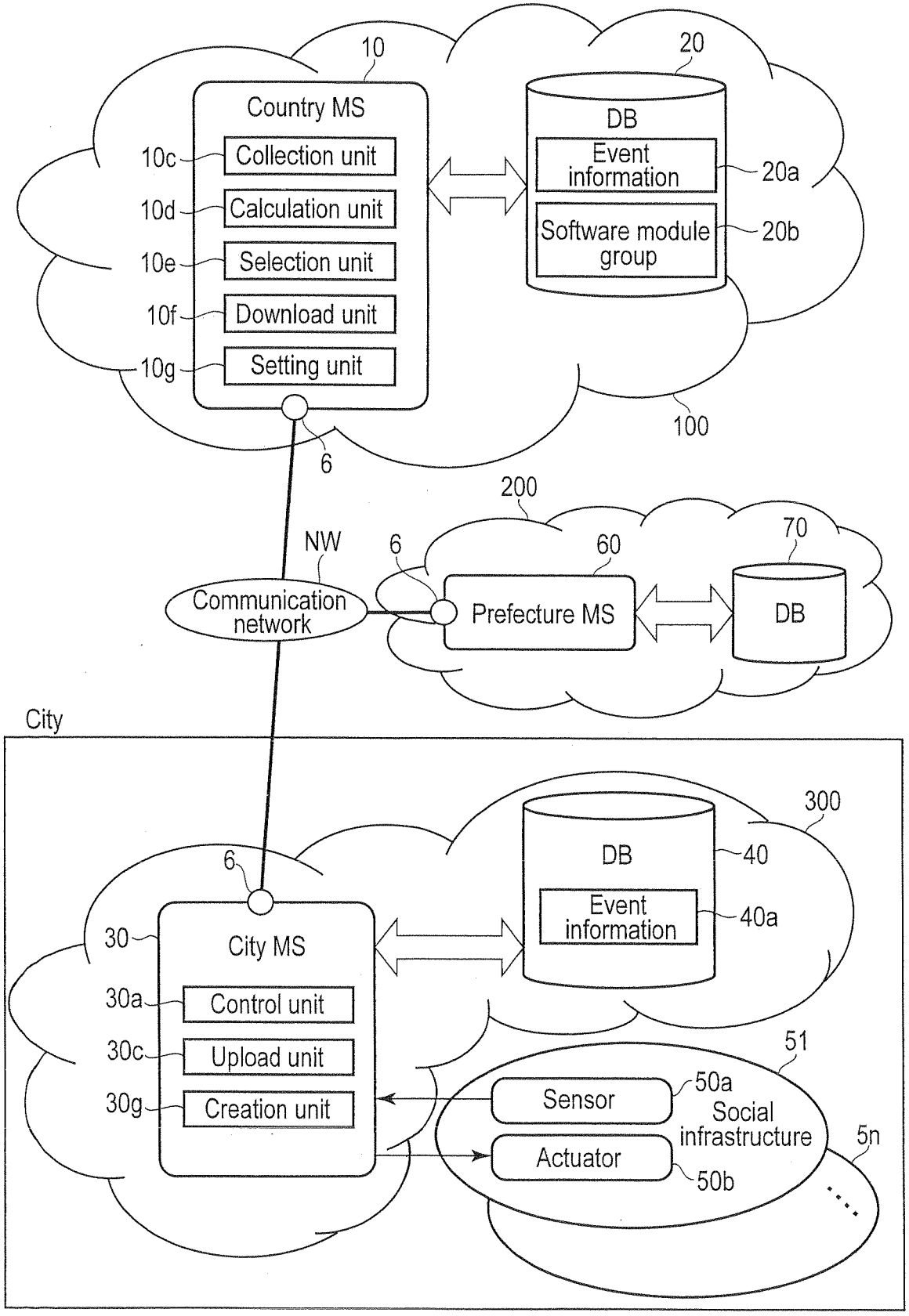

10
Country MS
10c
Collection unit
10d
Calculation unit
10e
Selection unit
10f
Download unit
10g
Setting unit
6
20
DB
Event information
20a
Software module group
20b
100
200
NW
6
60
70
Communication network
Prefecture MS
DB
City
300
6
DB
40
Event information
40a
30
City MS
30a
Control unit
30c
Upload unit
30g
Creation unit
51
Sensor
50a
Social infrastructure
Actuator
50b
5n

FIG. 10

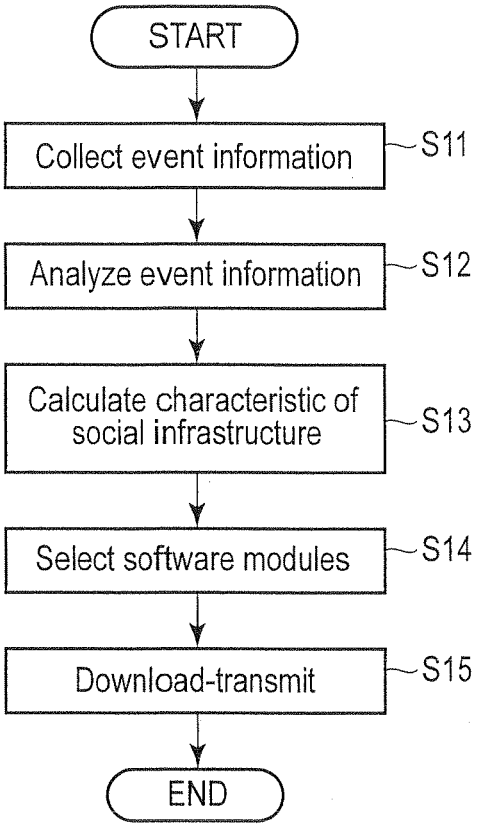

START
Collect event information
S11
Analyze event information
S12
Calculate characteristic of social infrastructure
S13
Select software modules
S14
Download-transmit
S15
END

FIG. 11

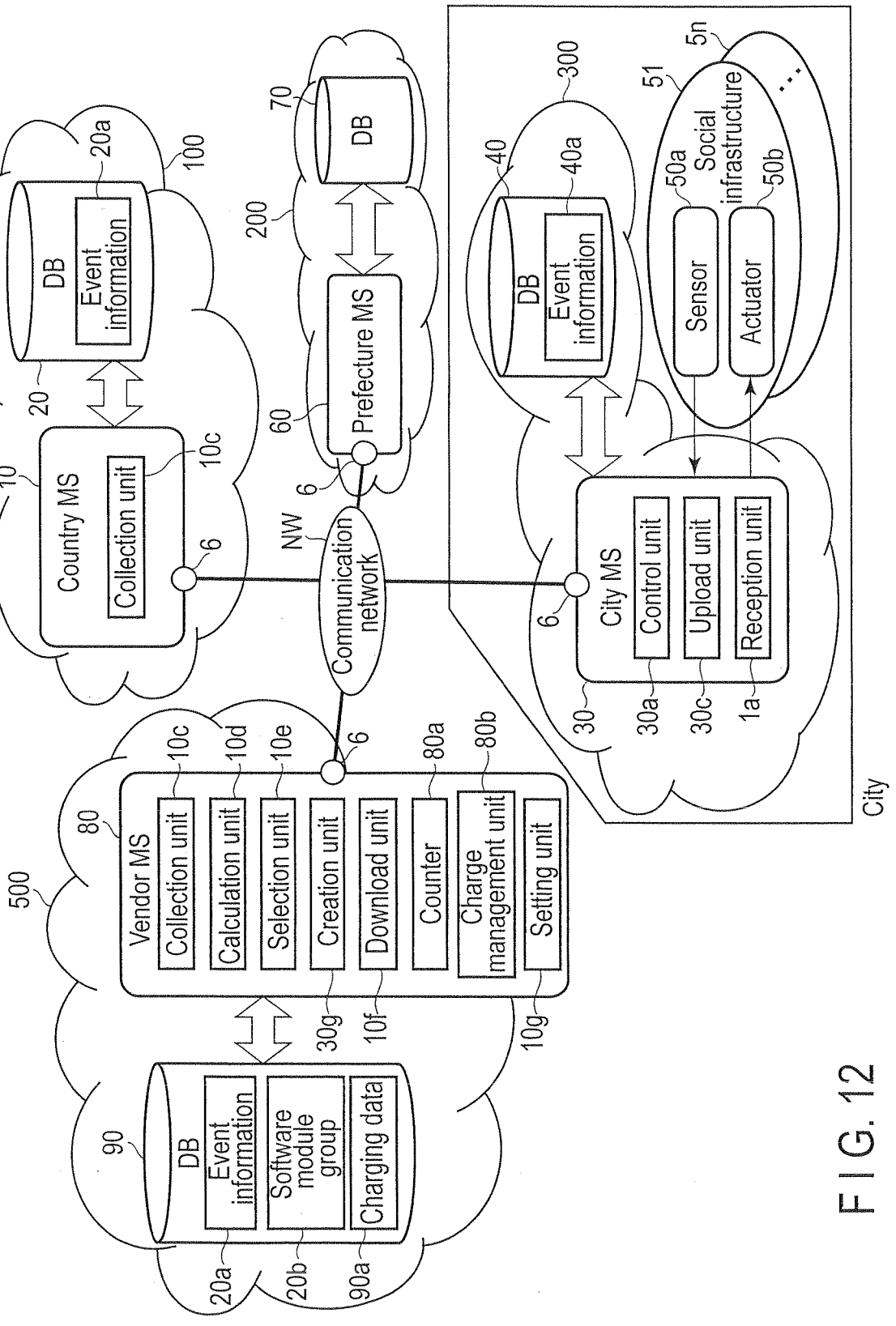

Country MS
Collection unit
DB
Event information
Prefecture MS
DB
Communication network
NW
City MS
Control unit
Upload unit
Reception unit
DB
Event information
Sensor
Actuator
Social infrastructure
Vendor MS
Collection unit
Calculation unit
Selection unit
Creation unit
Download unit
Counter
Charge management unit
Setting unit
DB
Event information
Software module group
Charging data
City

FIG. 12

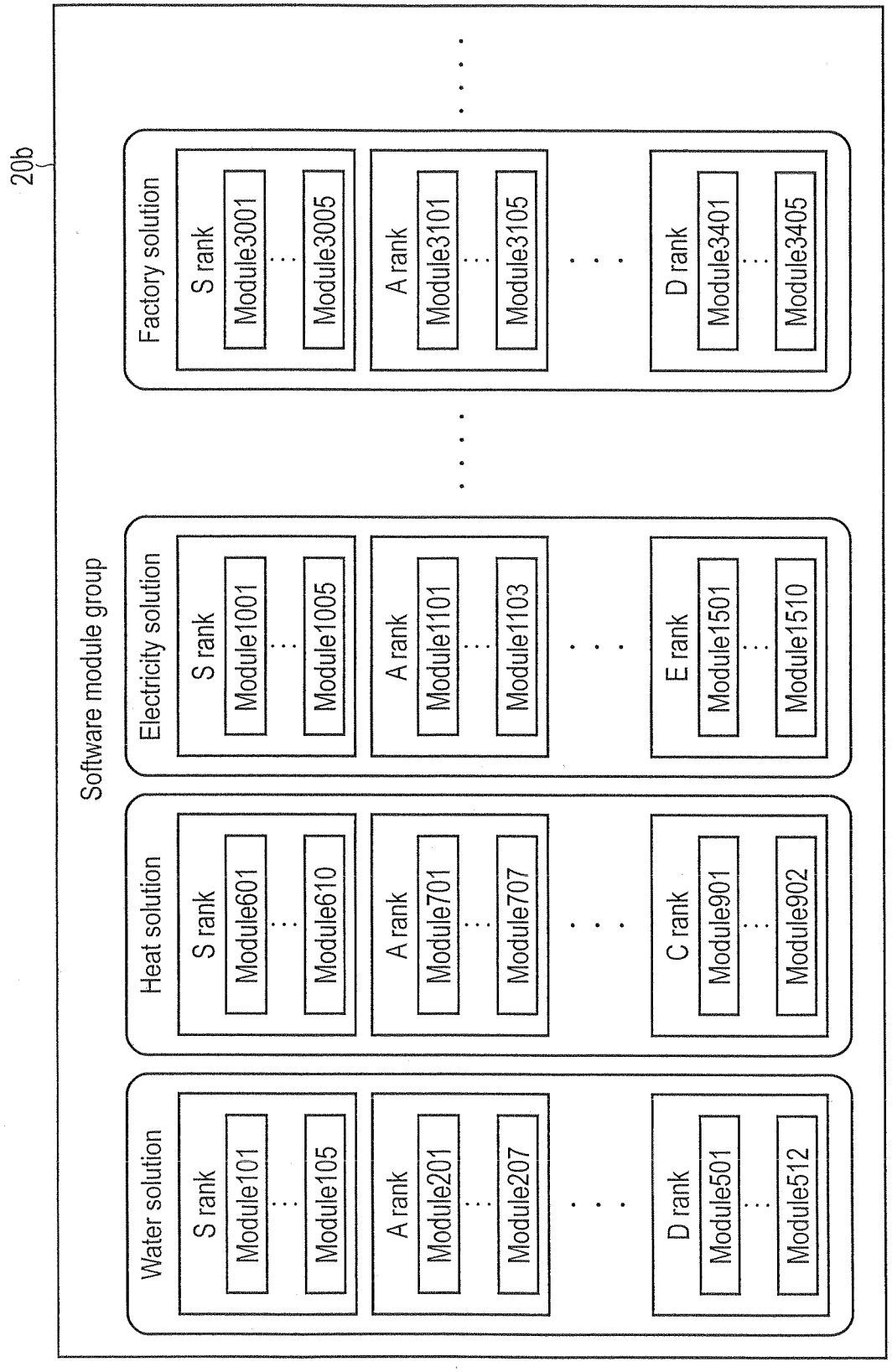

20b
Software module group
Water solution
S rank
Module101
Module105
A rank
Module201
Module207
D rank
Module501
Module512
Heat solution
S rank
Module601
Module610
A rank
Module701
Module707
C rank
Module901
Module902
Electricity solution
S rank
Module1001
Module1005
A rank
Module1101
Module1103
E rank
Module1501
Module1510
Factory solution
S rank
Module3001
Module3005
A rank
Module3101
Module3105
D rank
Module3401
Module3405

FIG. 13

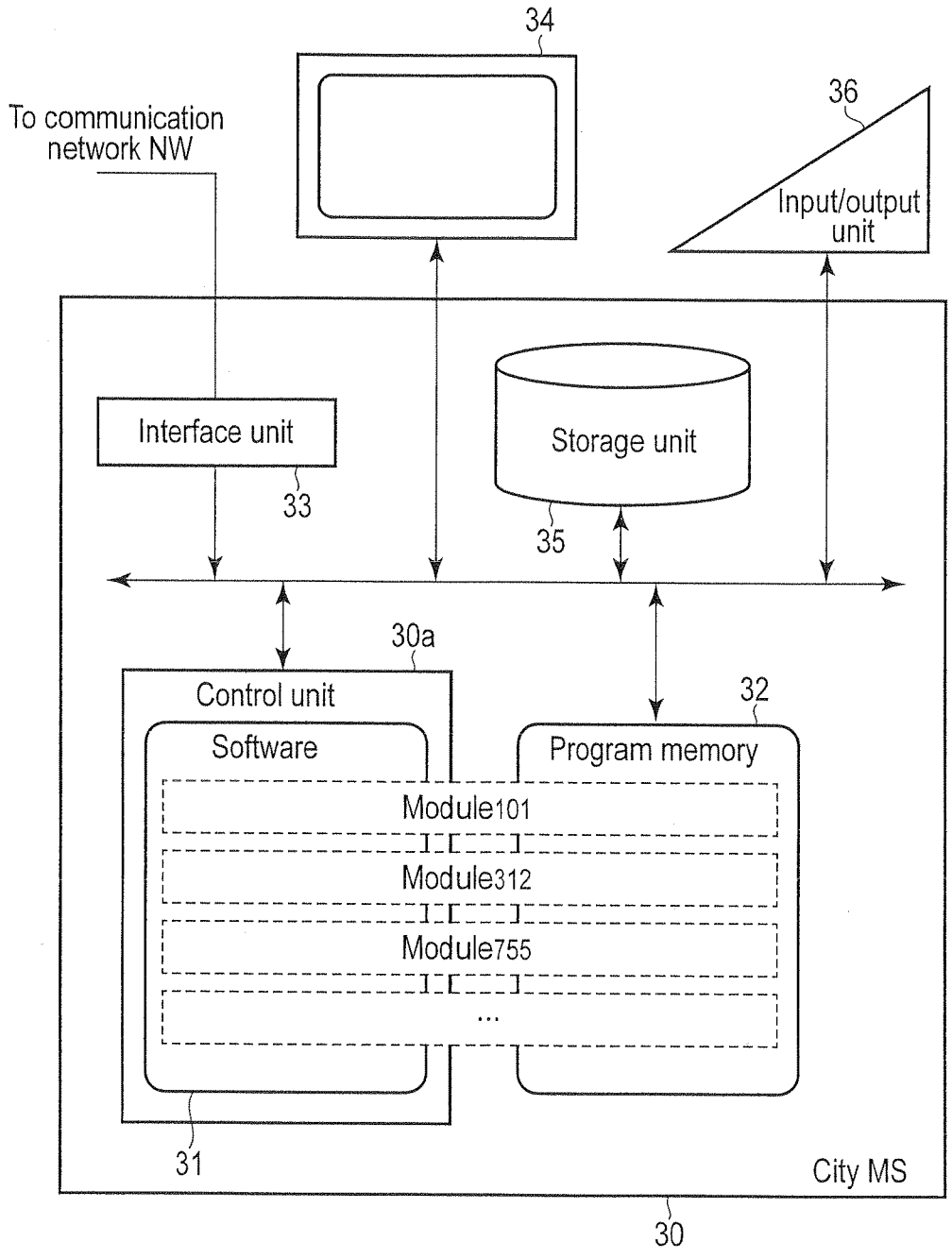

34
To communication network NW
36
Input/output unit
Interface unit
33
Storage unit
35
30a
Control unit
32
Software
Program memory
Module101
Module312
Module755
...
31
City MS
30

FIG. 14

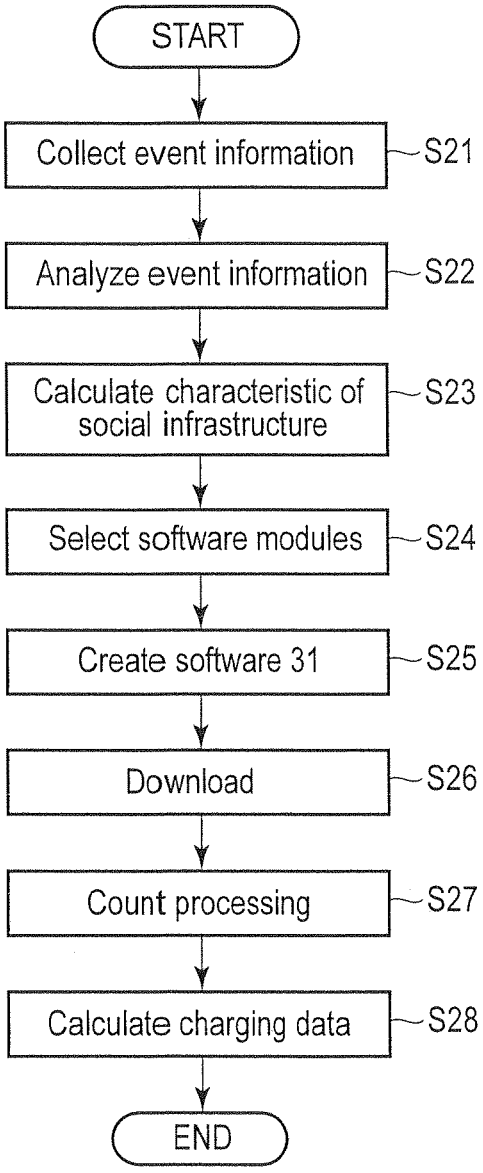

START
Collect event information
S21
Analyze event information
S22
Calculate characteristic of social infrastructure
S23
Select software modules
S24
Create software 31
S25
Download
S26
Count processing
S27
Calculate charging data
S28
END

FIG. 15

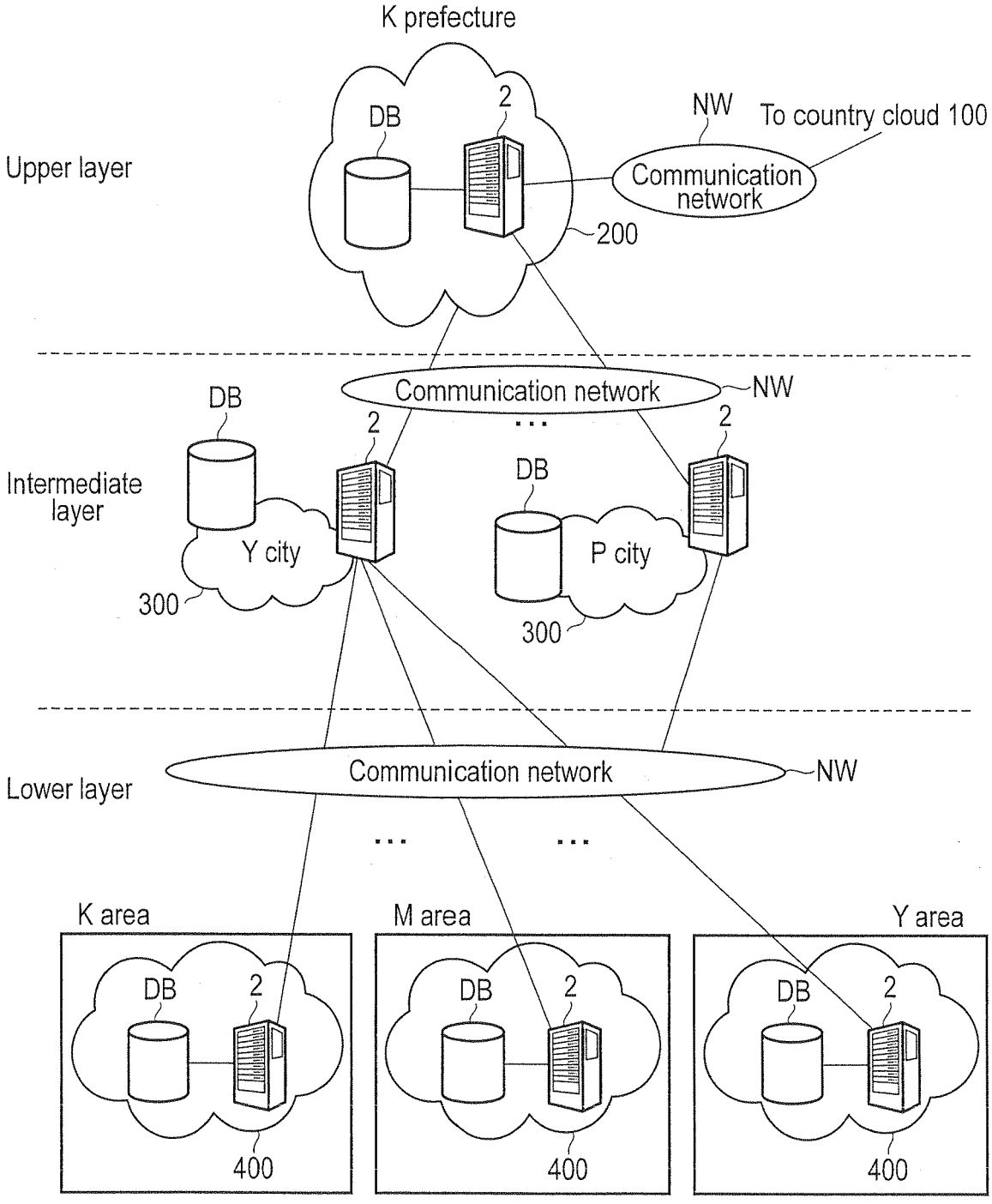

K prefecture
DB
2
NW
To country cloud 100
Upper layer
Communication network
200
Communication network
NW
DB
2
2
Intermediate layer
DB
Y city
P city
300
300
Communication network
NW
Lower layer
K area
M area
Y area
DB
2
DB
2
DB
2
400
400
400

FIG. 16

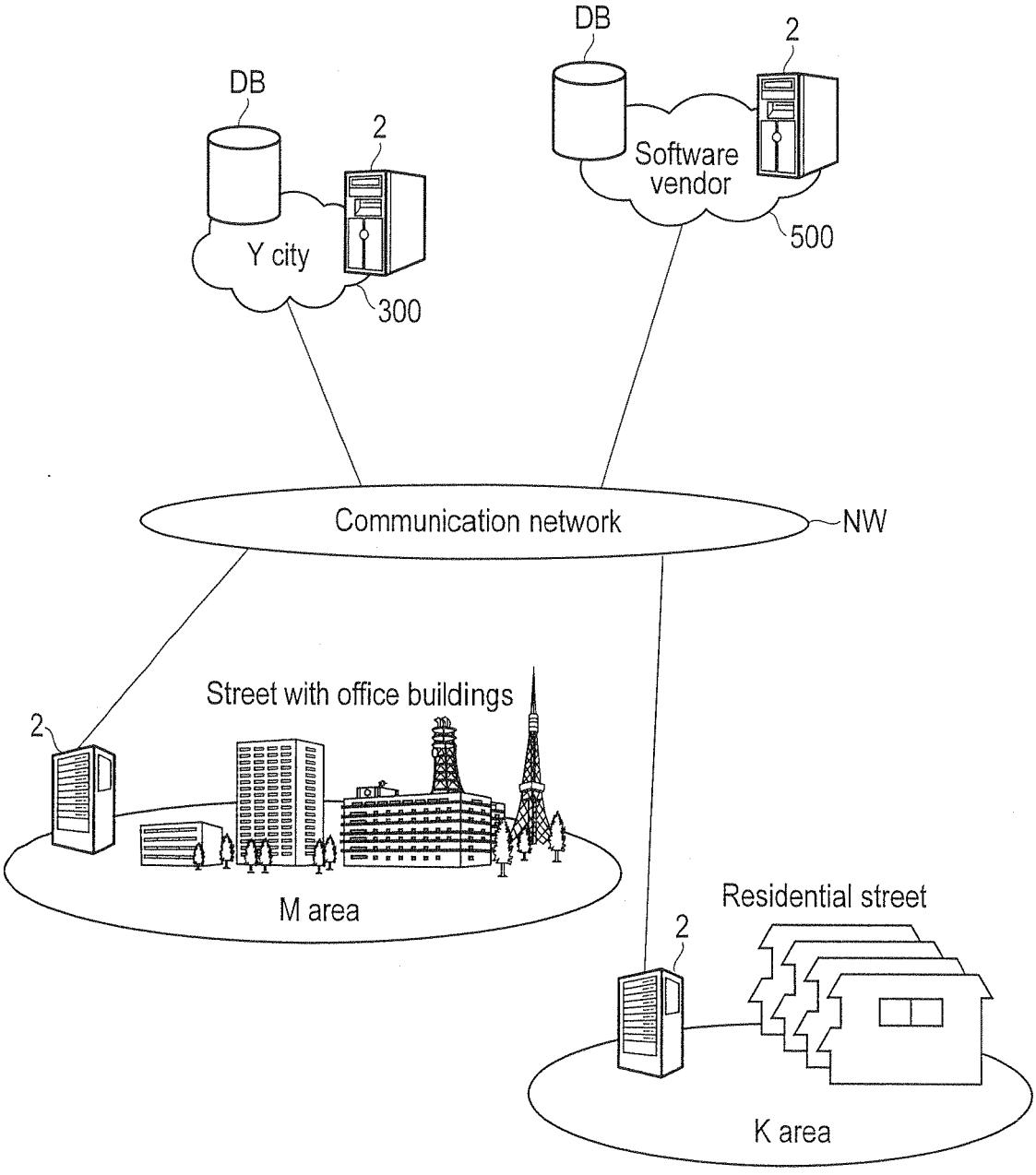

DB
2
Software vendor
500
DB
2
Y city
300
Communication network
NW
Street with office buildings
2
M area
Residential street
2
K area

FIG. 17

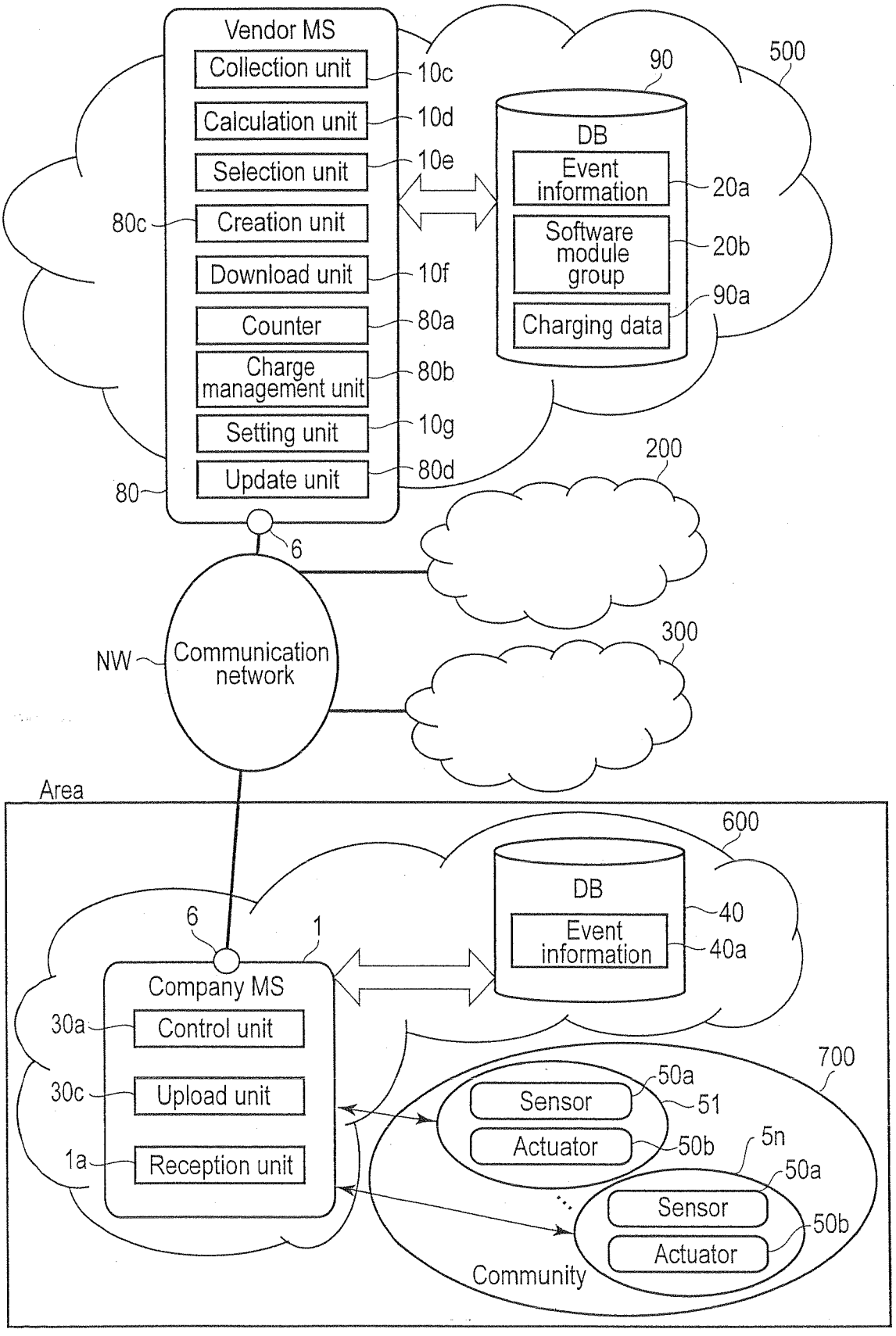

Vendor MS
Collection unit
10c
Calculation unit
10d
Selection unit
10e
80c
Creation unit
Download unit
10f
Counter
80a
Charge management unit
80b
Setting unit
10g
Update unit
80d
80
6
90
500
DB
Event information
20a
Software module group
20b
Charging data
90a
200
NW
Communication network
300
Area
600
DB
40
Event information
40a
6
1
Company MS
30a
Control unit
30c
Upload unit
1a
Reception unit
700
50a
Sensor
51
Actuator
50b
5n
50a
Sensor
50b
Actuator
Community

FIG. 18

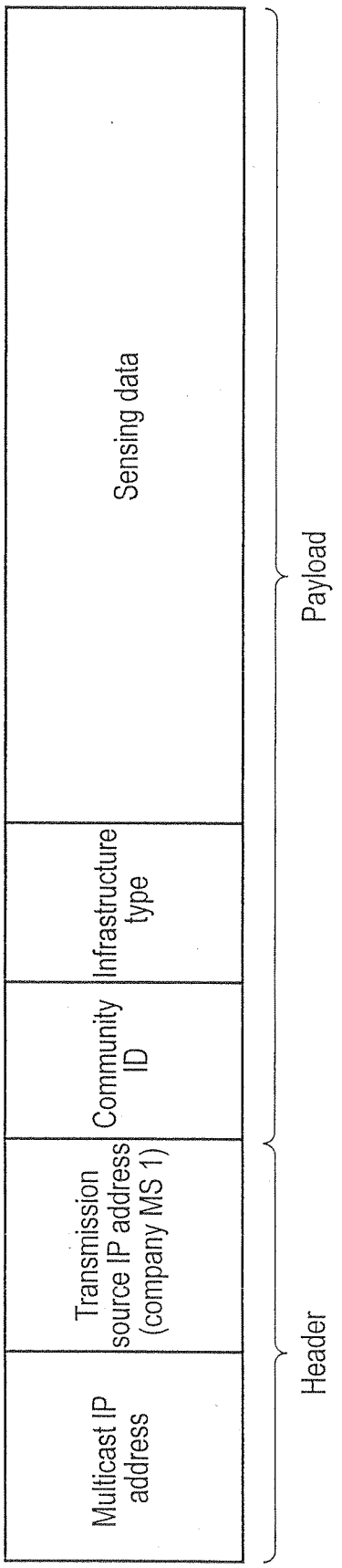

Multicast IP address
Transmission source IP address (company MS 1)
Community ID
Infrastructure type
Sensing data
Header
Payload

FIG. 19

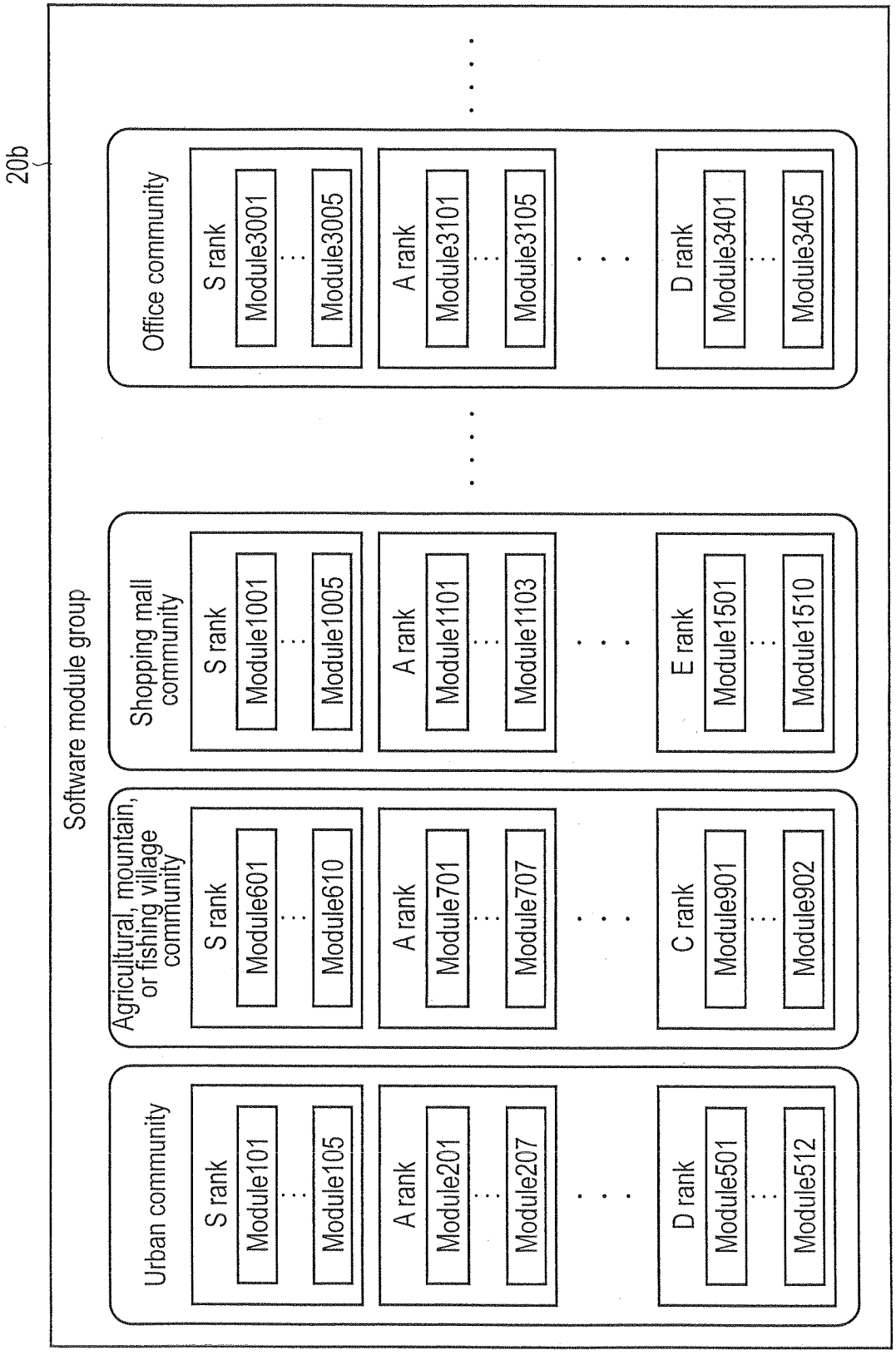

20b
Software module group
Urban community
S rank
Module101
Module105
A rank
Module201
Module207
D rank
Module501
Module512
Agricultural, mountain, or fishing village community
S rank
Module601
Module610
A rank
Module701
Module707
C rank
Module901
Module902
Shopping mall community
S rank
Module1001
Module1005
A rank
Module1101
Module1103
E rank
Module1501
Module1510
Office community
S rank
Module3001
Module3005
A rank
Module3101
Module3105
D rank
Module3401
Module3405

FIG. 20

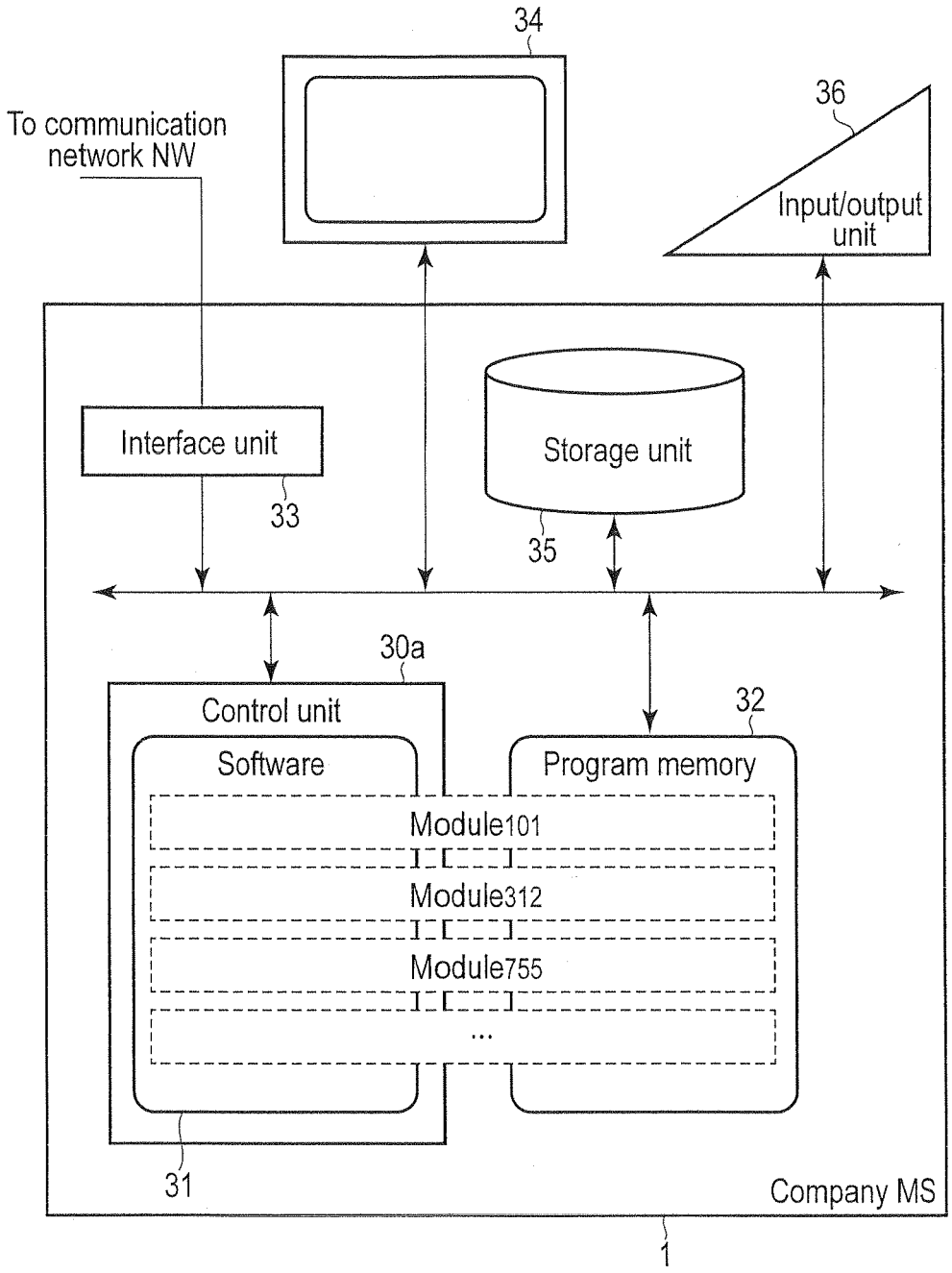

34
To communication network NW
36
Input/output unit
Interface unit
33
Storage unit
35
30a
Control unit
Software
32
Program memory
Module101
Module312
Module755
...
31
Company MS
1

FIG. 21

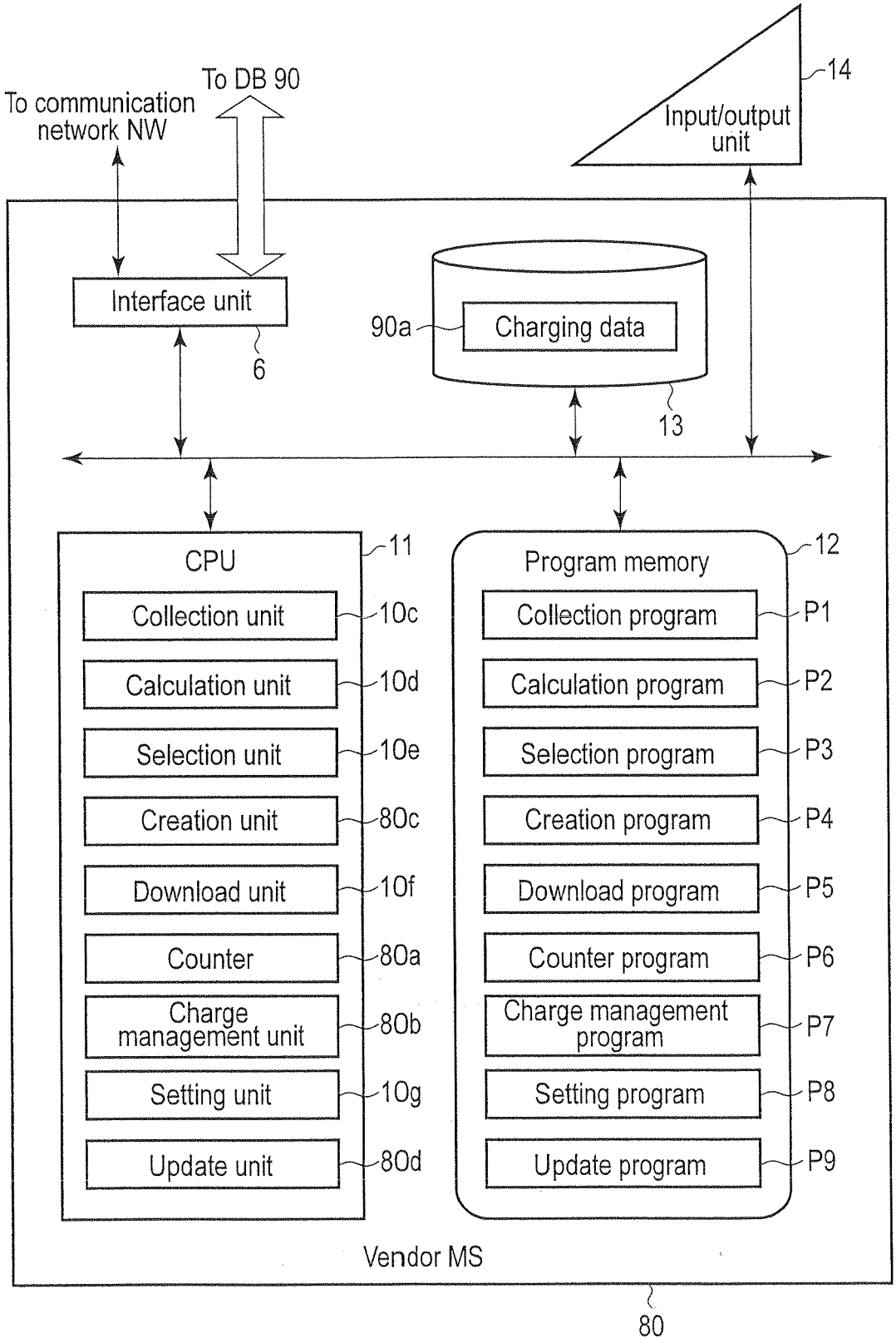

To communication network NW
To DB 90
14
Input/output unit
Interface unit
6
90a
Charging data
13
CPU
11
Collection unit
10c
Calculation unit
10d
Selection unit
10e
Creation unit
80c
Download unit
10f
Counter
80a
Charge management unit
80b
Setting unit
10g
Update unit
80d
Program memory
12
Collection program
P1
Calculation program
P2
Selection program
P3
Creation program
P4
Download program
P5
Counter program
P6
Charge management program
P7
Setting program
P8
Update program
P9
Vendor MS
80

FIG. 22

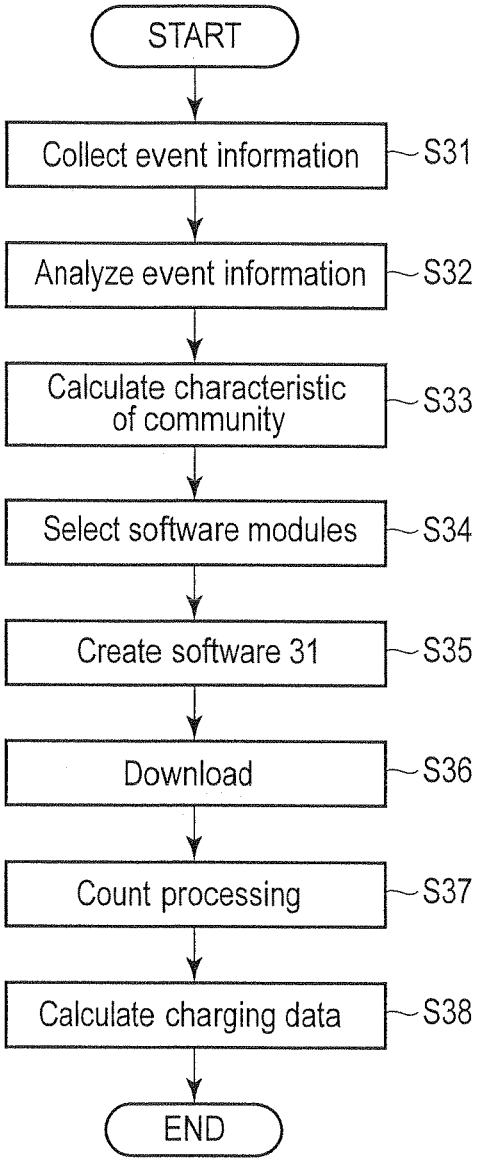

START
Collect event information
S31
Analyze event information
S32
Calculate characteristic of community
S33
Select software modules
S34
Create software 31
S35
Download
S36
Count processing
S37
Calculate charging data
S38
END

FIG. 23

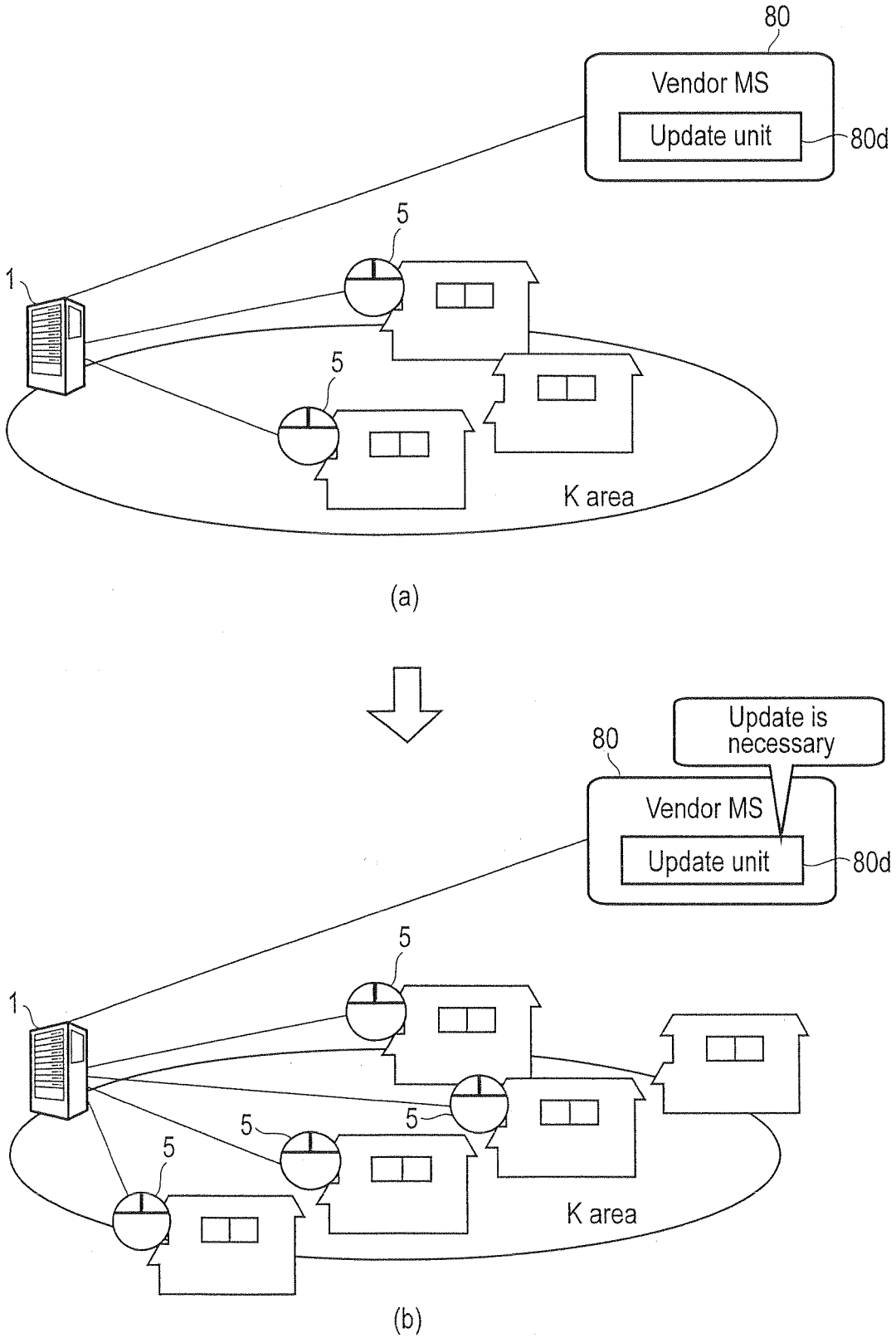

80
Vendor MS
Update unit
80d
5
1
5
K area
(a)
Update is necessary
80
Vendor MS
Update unit
80d
5
1
5
5
5
K area
(b)

FIG. 24

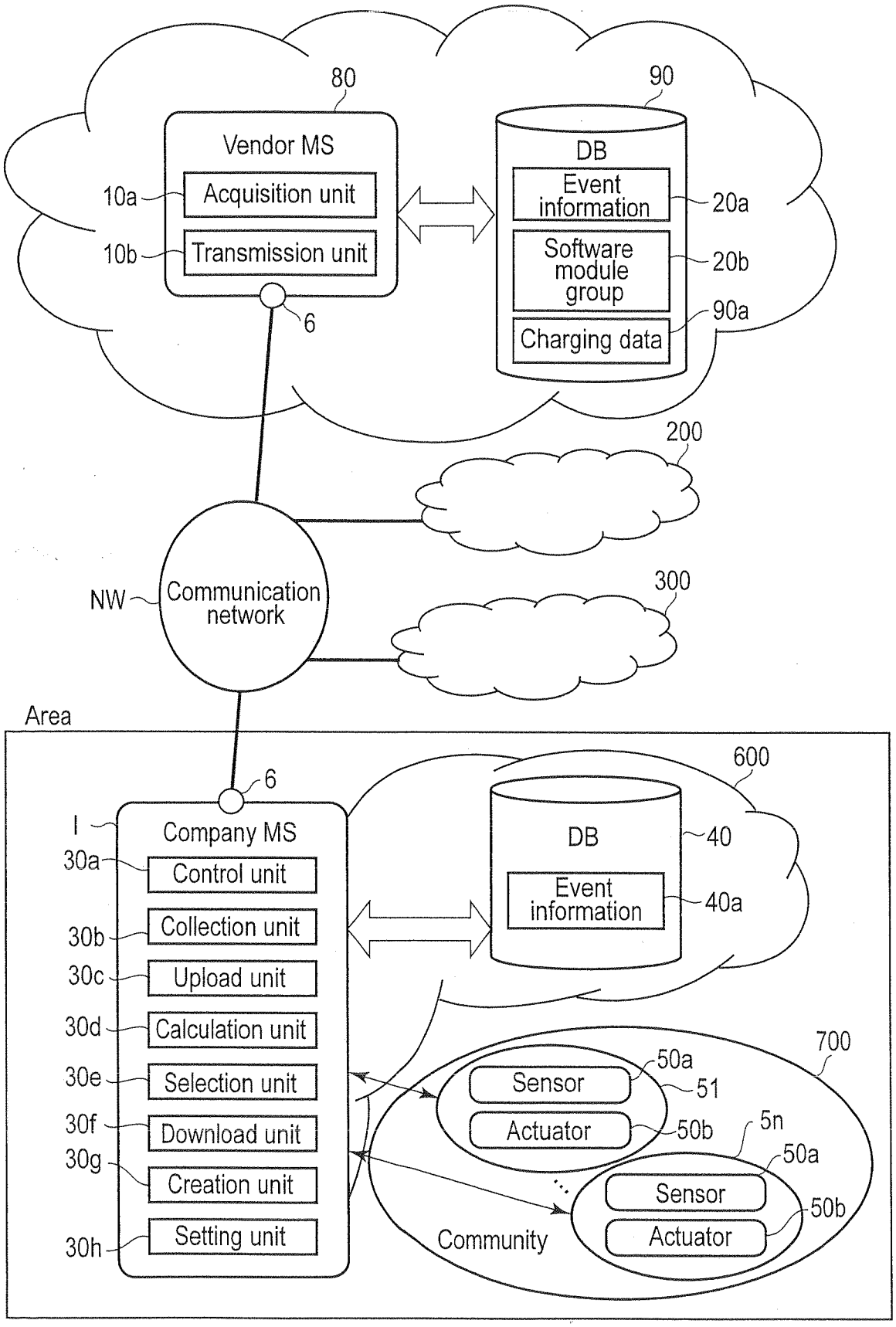

80
Vendor MS
10a
Acquisition unit
10b
Transmission unit
6
90
DB
Event information
20a
Software module group
20b
Charging data
90a
200
NW
Communication network
300
Area
6
1
Company MS
30a
Control unit
30b
Collection unit
30c
Upload unit
30d
Calculation unit
30e
Selection unit
30f
Download unit
30g
Creation unit
30h
Setting unit
600
DB
40
Event information
40a
700
Sensor
50a
51
Actuator
50b
5n
Sensor
50a
Actuator
50b
Community

FIG. 25

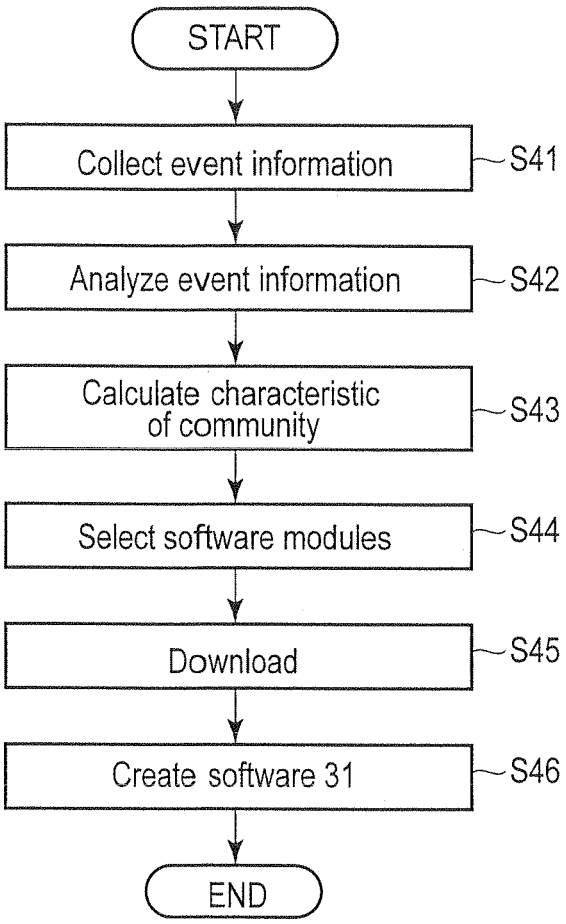

START
Collect event information
S41
Analyze event information
S42
Calculate characteristic of community
S43
Select software modules
S44
Download
S45
Create software 31
S46
END

FIG. 26

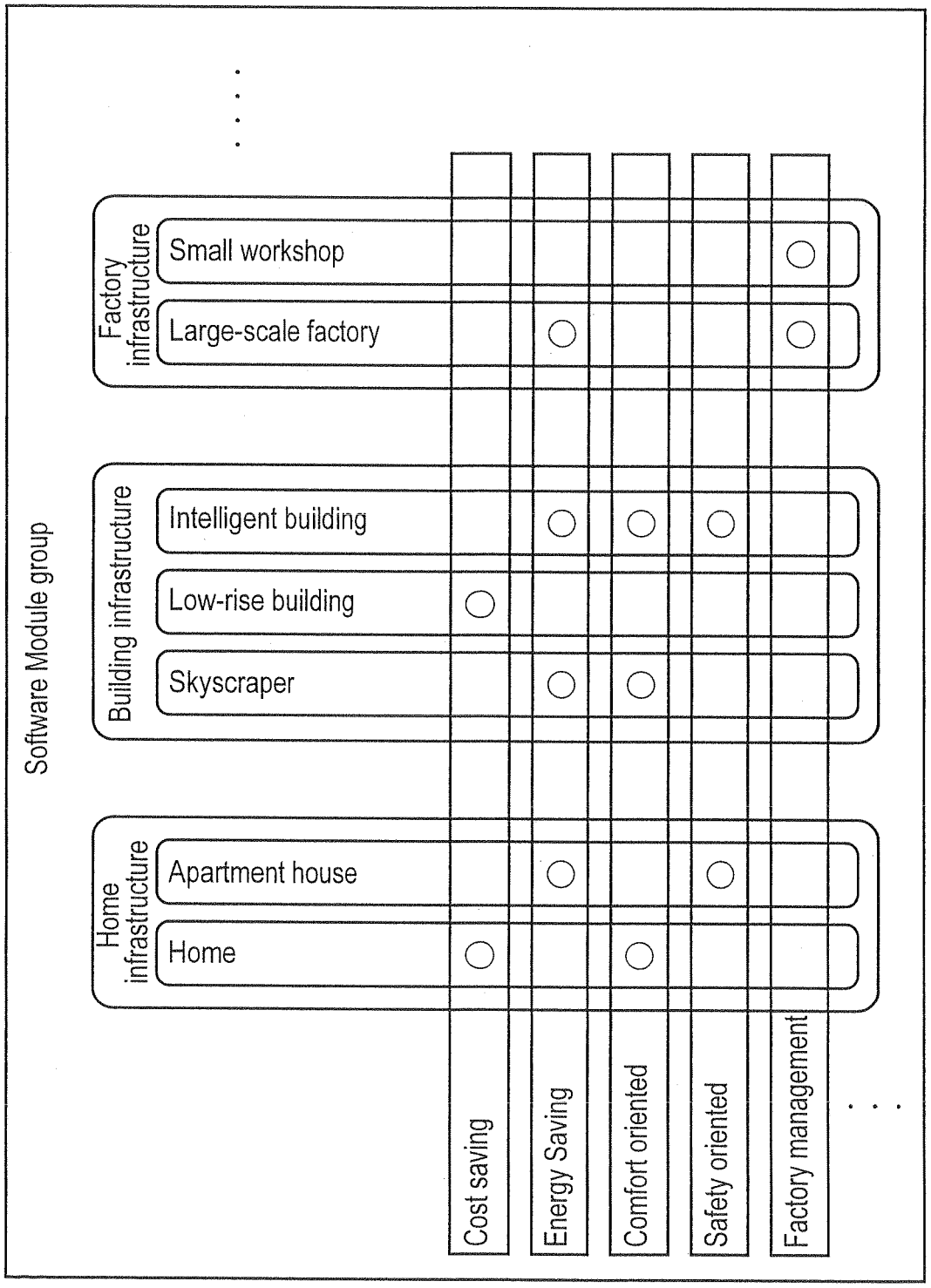

Software Module group
Home infrastructure
Home
Apartment house
Building infrastructure
Skyscraper
Low-rise building
Intelligent building
Factory infrastructure
Large-scale factory
Small workshop
Cost saving
Energy Saving
Comfort oriented
Safety oriented
Factory management

FIG. 27