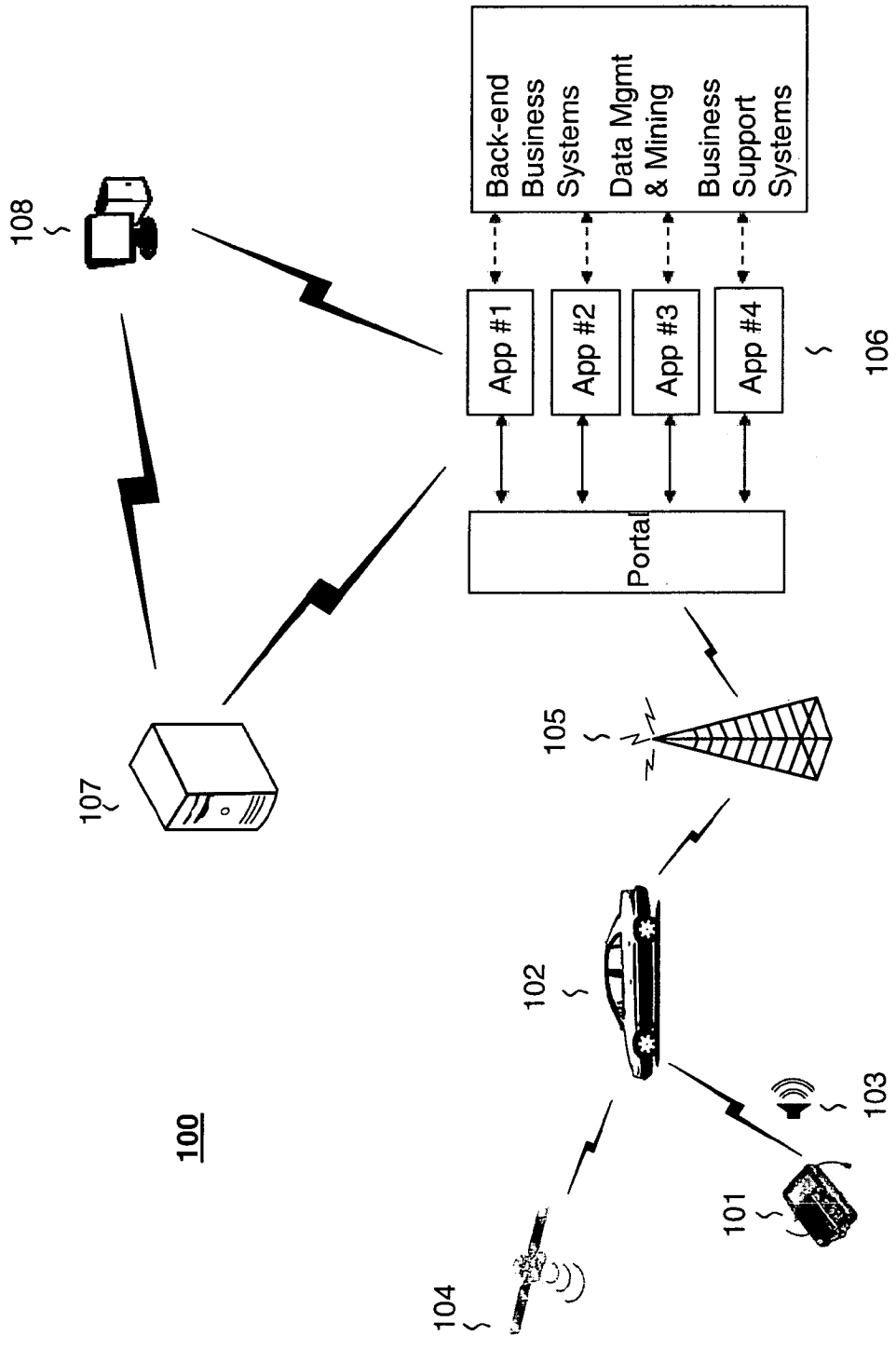

100
101
102
103
104
105
106
107
108
Back-end Business Systems
Data Mgmt & Mining
Business Support Systems
App #1
App #2
App #3
App #4
Portal

FIG 1

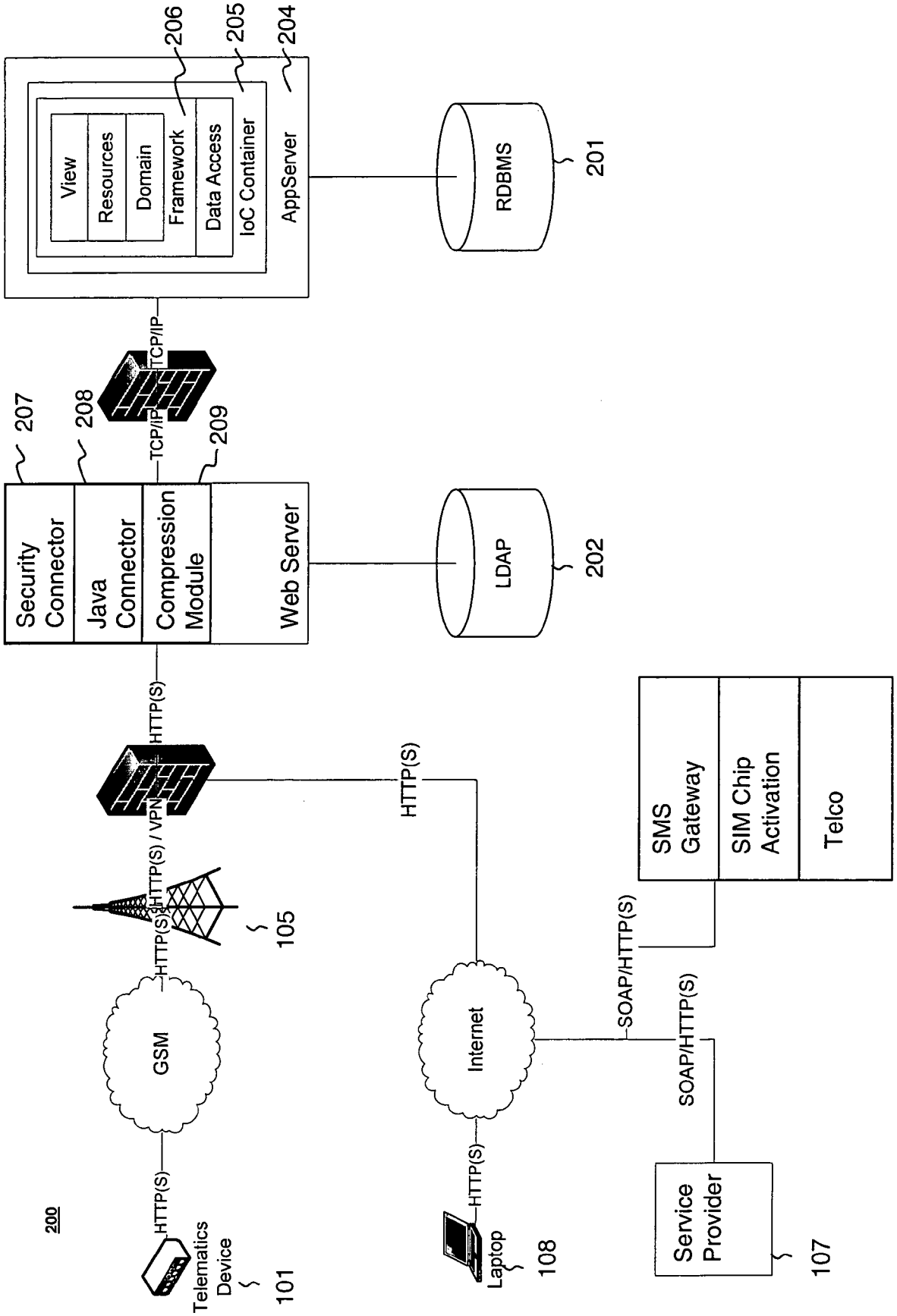

200
Telematics Device
101
HTTP(S)
GSM
HTTP(S)
HTTP(S) / VPN
105
HTTP(S)
Laptop
108
HTTP(S)
Internet
HTTP(S)
SOAP/HTTP(S)
SOAP/HTTP(S)
Service Provider
107
SMS Gateway
SIM Chip Activation
Telco
Security Connector
Java Connector
Compression Module
Web Server
207
208
209
TCP/IP
TCP/IP
LDAP
202
View
Resources
Domain
Framework
Data Access
IoC Container
AppServer
206
205
204
RDBMS
201

FIG 2

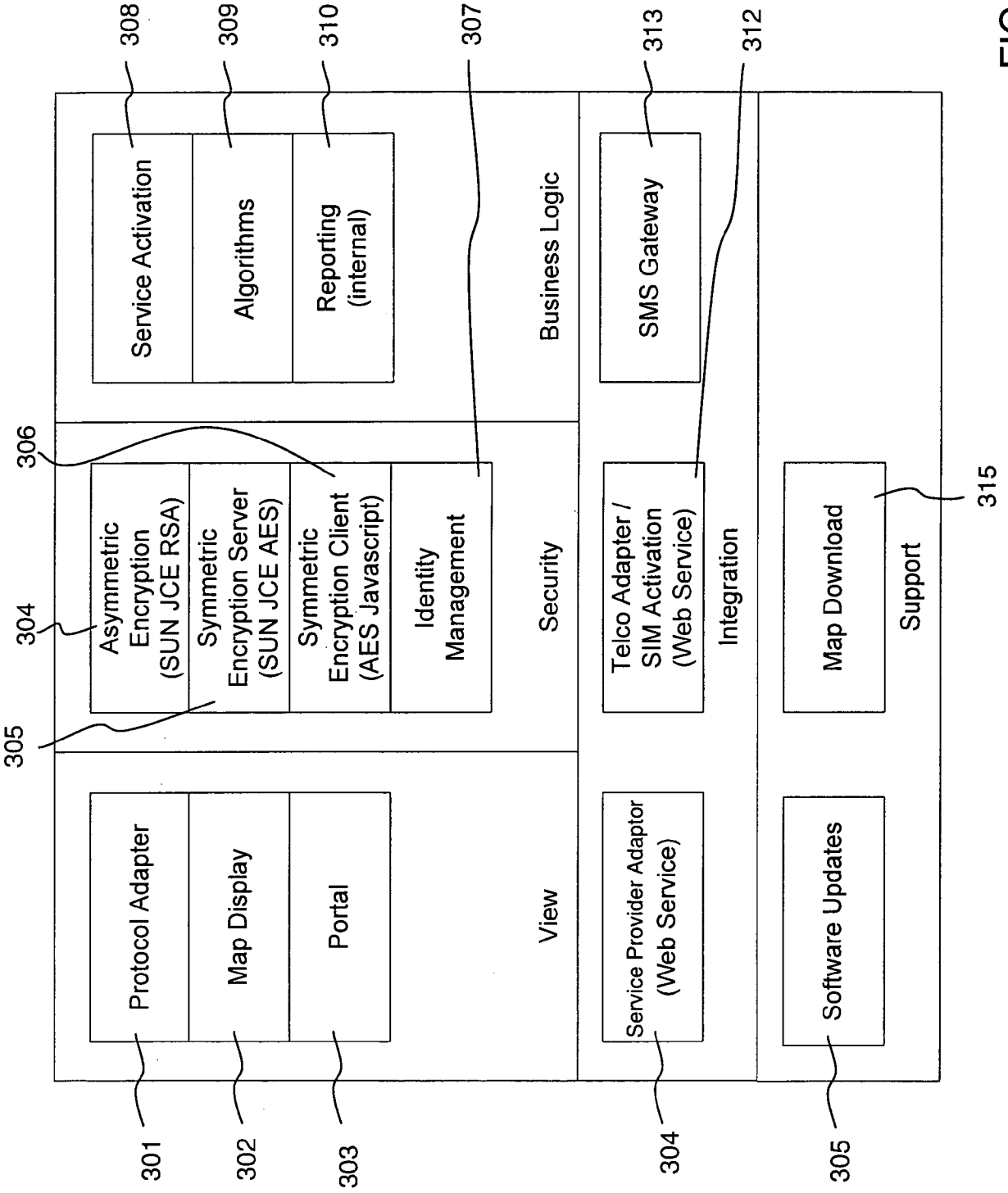

308
309
310
307
313
312
306
304
305
315
Service Activation
Algorithms
Reporting (internal)
Business Logic
SMS Gateway
Asymmetric Encryption (SUN JCE RSA)
Symmetric Encryption Server (SUN JCE AES)
Symmetric Encryption Client (AES Javascript)
Identity Management
Security
Telco Adapter / SIM Activation (Web Service)
Integration
Map Download
Support
Protocol Adapter
Map Display
Portal
View
Service Provider Adaptor (Web Service)
Software Updates
301
302
303
304
305

FIG 3

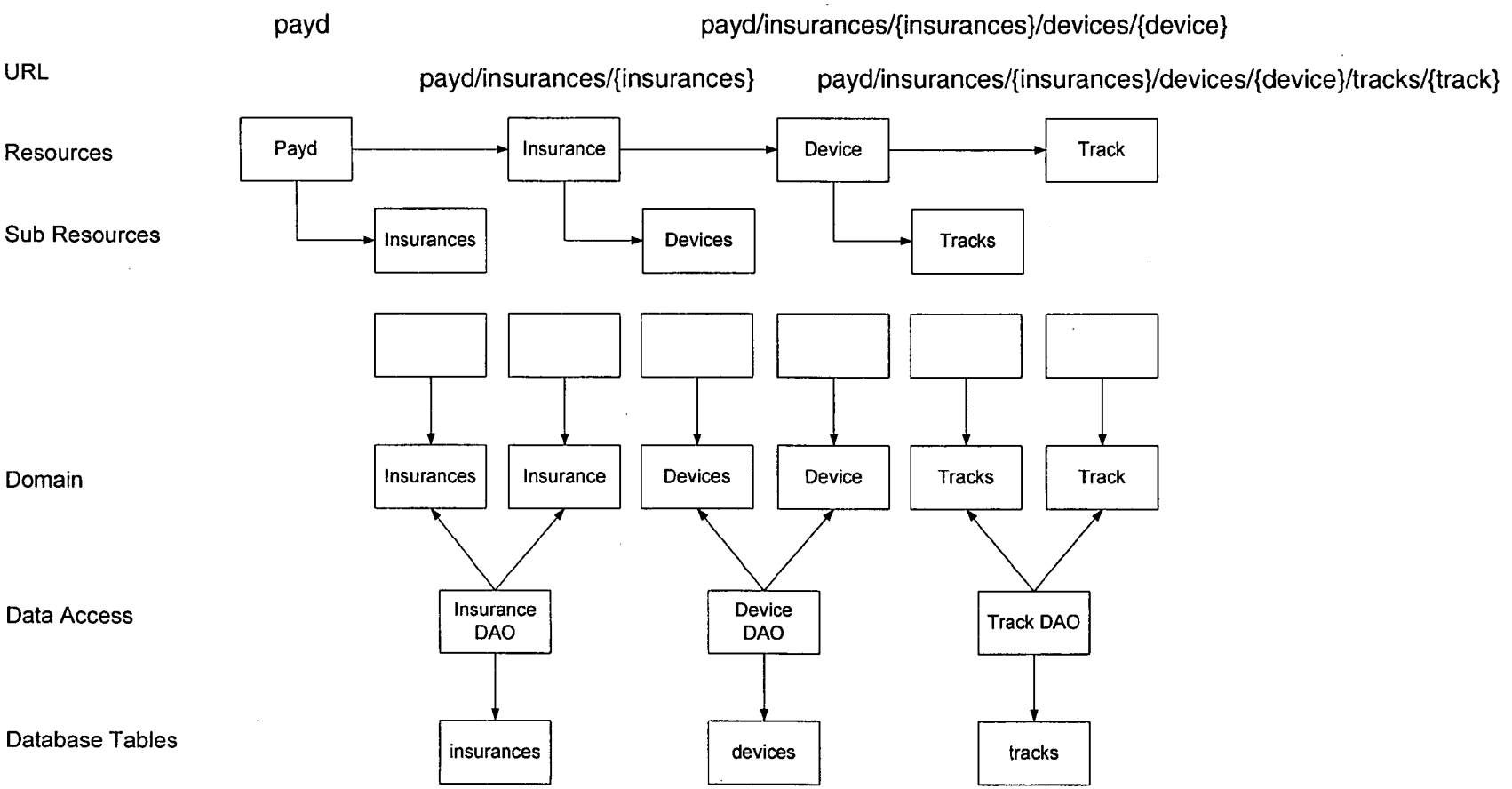

payd
payd/insurances/{insurances}/devices/{device}
URL
payd/insurances/{insurances}
payd/insurances/{insurances}/devices/{device}/tracks/{track}
Resources
Payd
Insurance
Device
Track
Sub Resources
Insurances
Devices
Tracks
Domain
Insurances
Insurance
Devices
Device
Tracks
Track
Data Access
Insurance DAO
Device DAO
Track DAO
Database Tables
insurances
devices
tracks

FIG 4

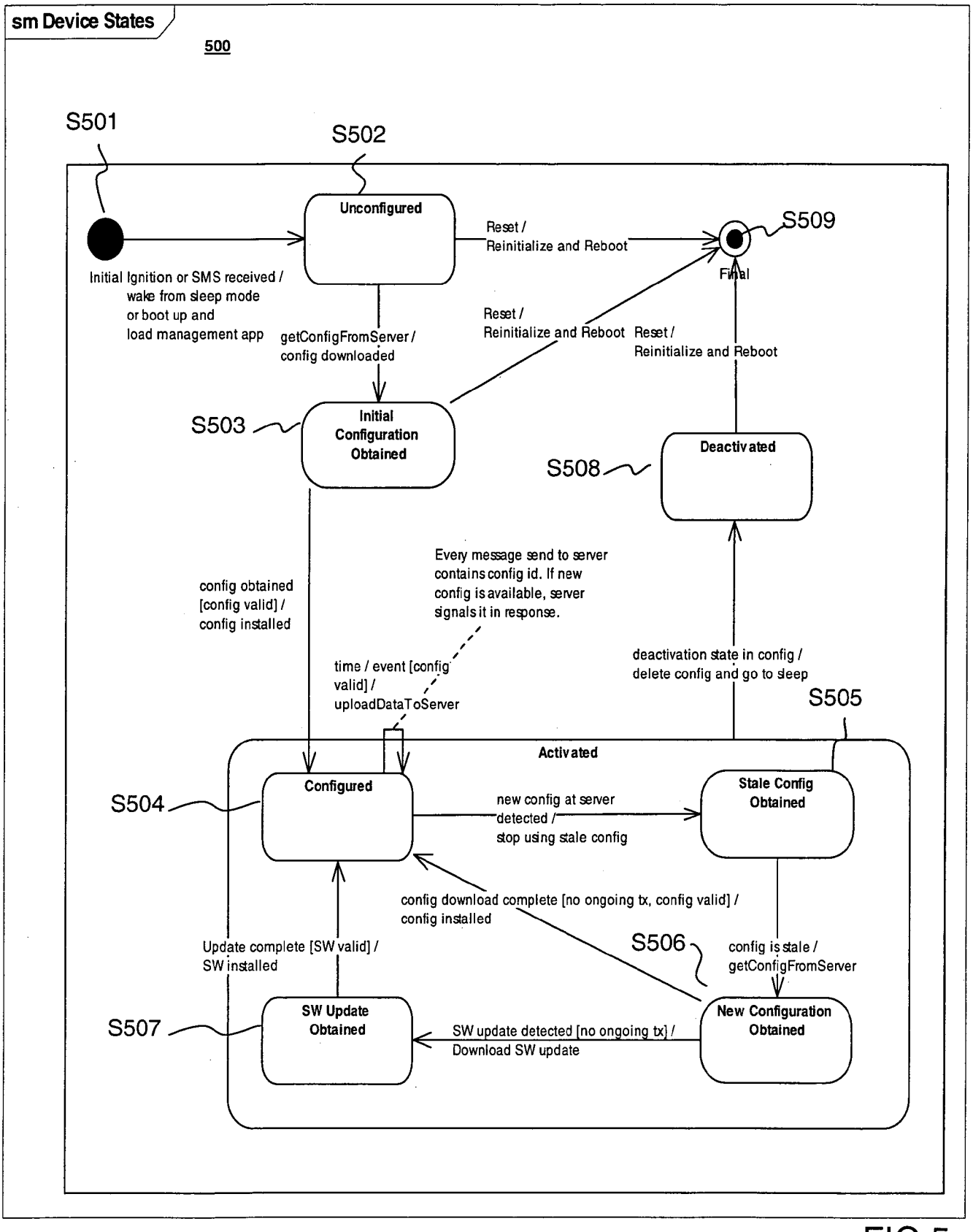

sm Device States
500
S501
S502
Unconfigured
Reset /
Reinitialize and Reboot
S509
Final
Initial Ignition or SMS received /
wake from sleep mode
or boot up and
load management app
getConfigFromServer /
config downloaded
Reset /
Reinitialize and Reboot
Reset /
Reinitialize and Reboot
S503
Initial
Configuration
Obtained
S508
Deactivated
Every message send to server
contains config id. If new
config is available, server
signals it in response.
config obtained
[config valid] /
config installed
time / event [config
valid] /
uploadDataToServer
deactivation state in config /
delete config and go to sleep
S505
Activated
S504
Configured
new config at server
detected /
stop using stale config
Stale Config
Obtained
config download complete [no ongoing tx, config valid] /
config installed
Update complete [SW valid] /
SW installed
S506
config is stale /
getConfigFromServer
S507
SW Update
Obtained
SW update detected [no ongoing tx] /
Download SW update
New Configuration
Obtained

FIG 5

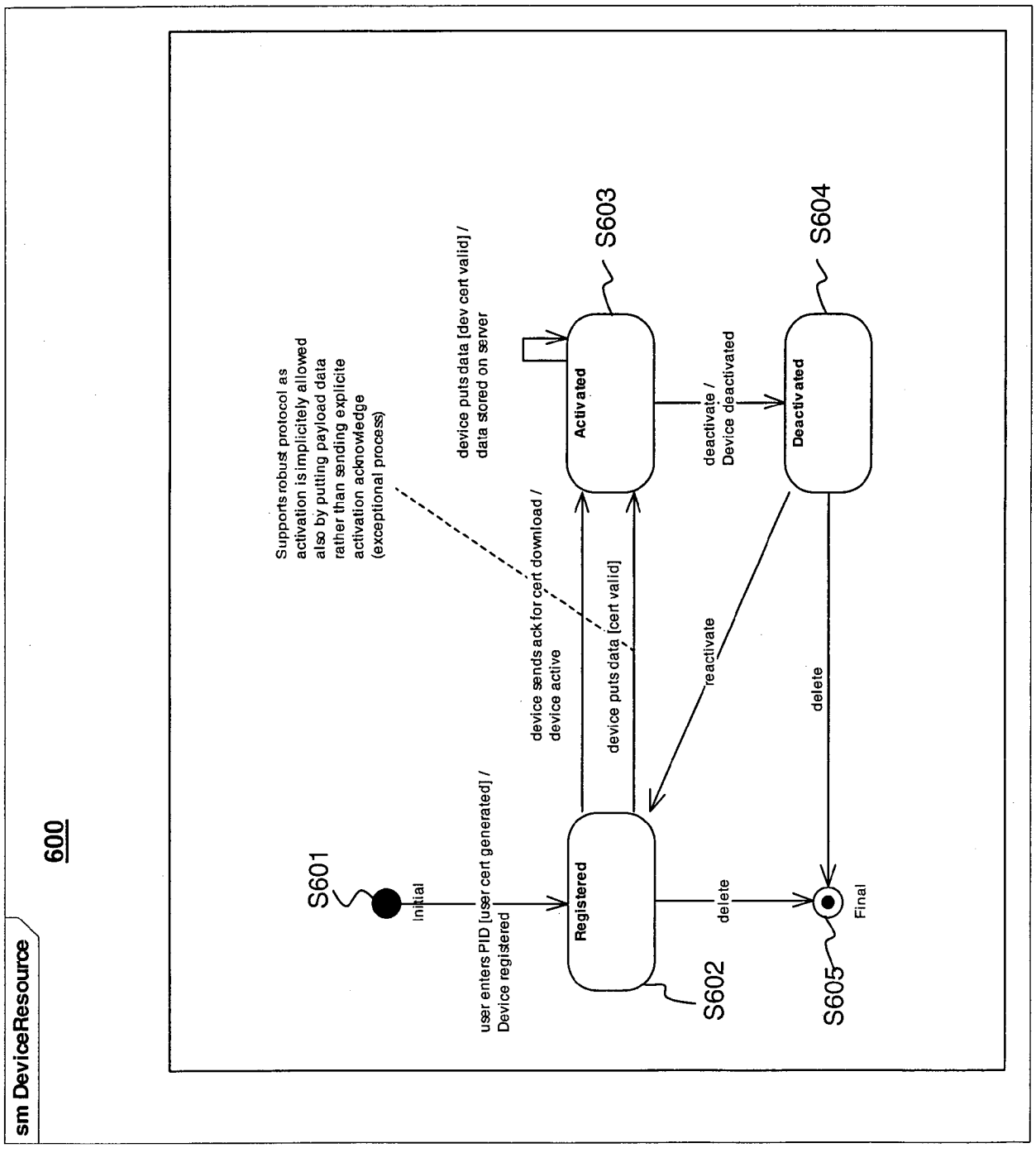

sm DeviceResource
600
S601
Initial
user enters PID [user cert generated] /
Device registered
Registered
S602
delete
Final
S605
device sends ack for cert download /
device active
device puts data [cert valid]
Activated
S603
device puts data [dev cert valid] /
data stored on server
Supports robust protocol as
activation is implicitely allowed
also by putting payload data
rather than sending explicite
activation acknowledge
(exceptional process)
deactivate /
Device deactivated
Deactivated
S604
reactivate
delete

FIG 6

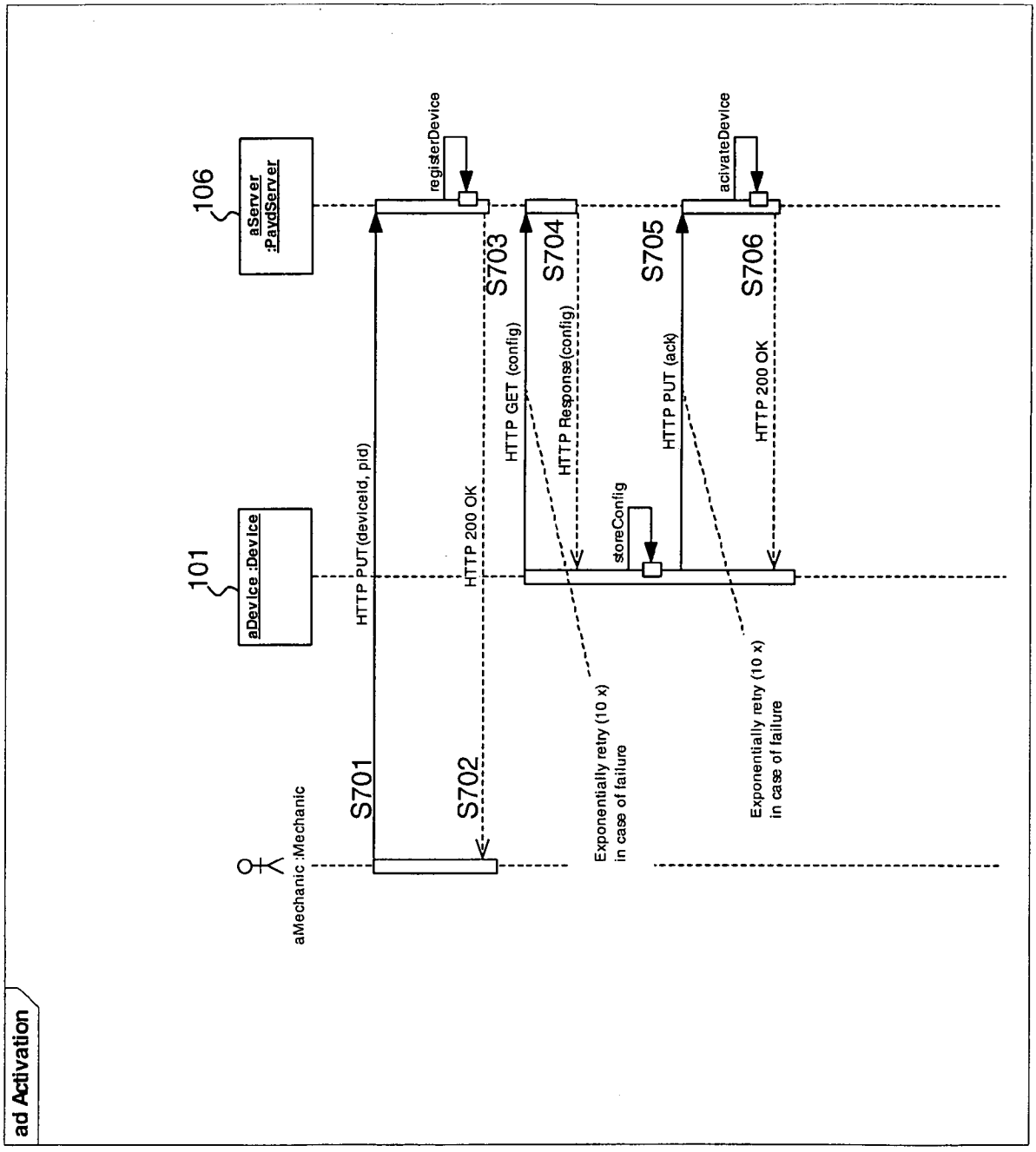

ad Activation
aMechanic :Mechanic
aDevice :Device
101
aServer :PaydServer
106
S701
HTTP PUT (deviceId, pid)
S702
HTTP 200 OK
registerDevice
S703
HTTP GET (config)
S704
HTTP Response(config)
storeConfig
Exponentially retry (10 x) in case of failure
activateDevice
S705
HTTP PUT (ack)
S706
HTTP 200 OK
Exponentially retry (10 x) in case of failure

FIG 7

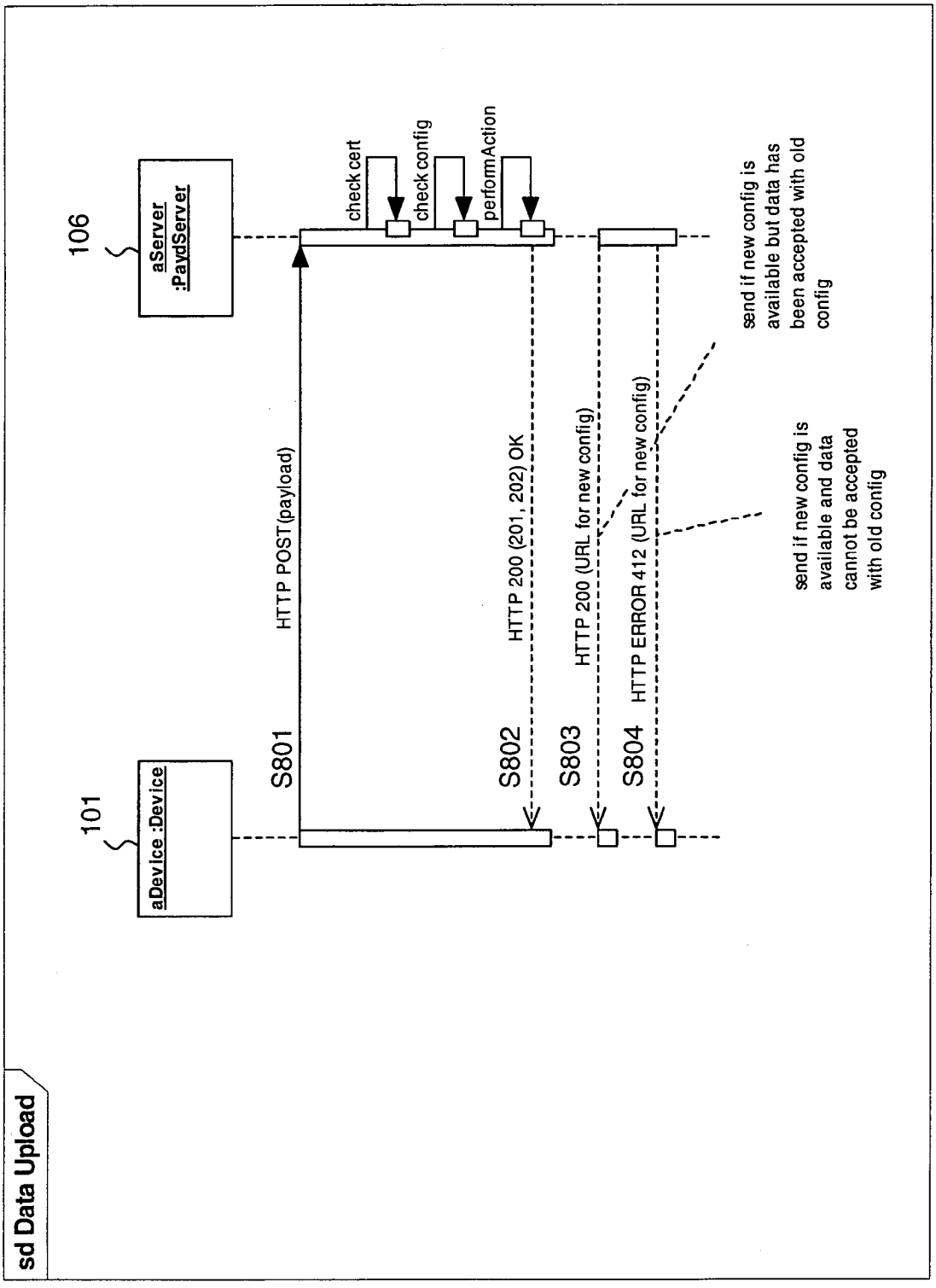

sd Data Upload
101
aDevice :Device
106
aServer
:PaydServer
check cert
check config
performAction
S801
HTTP POST(payload)
S802
HTTP 200 (201, 202) OK
S803
HTTP 200 (URL for new config)
S804
HTTP ERROR 412 (URL for new config)
send if new config is available but data has been accepted with old config
send if new config is available and data cannot be accepted with old config

FIG 8

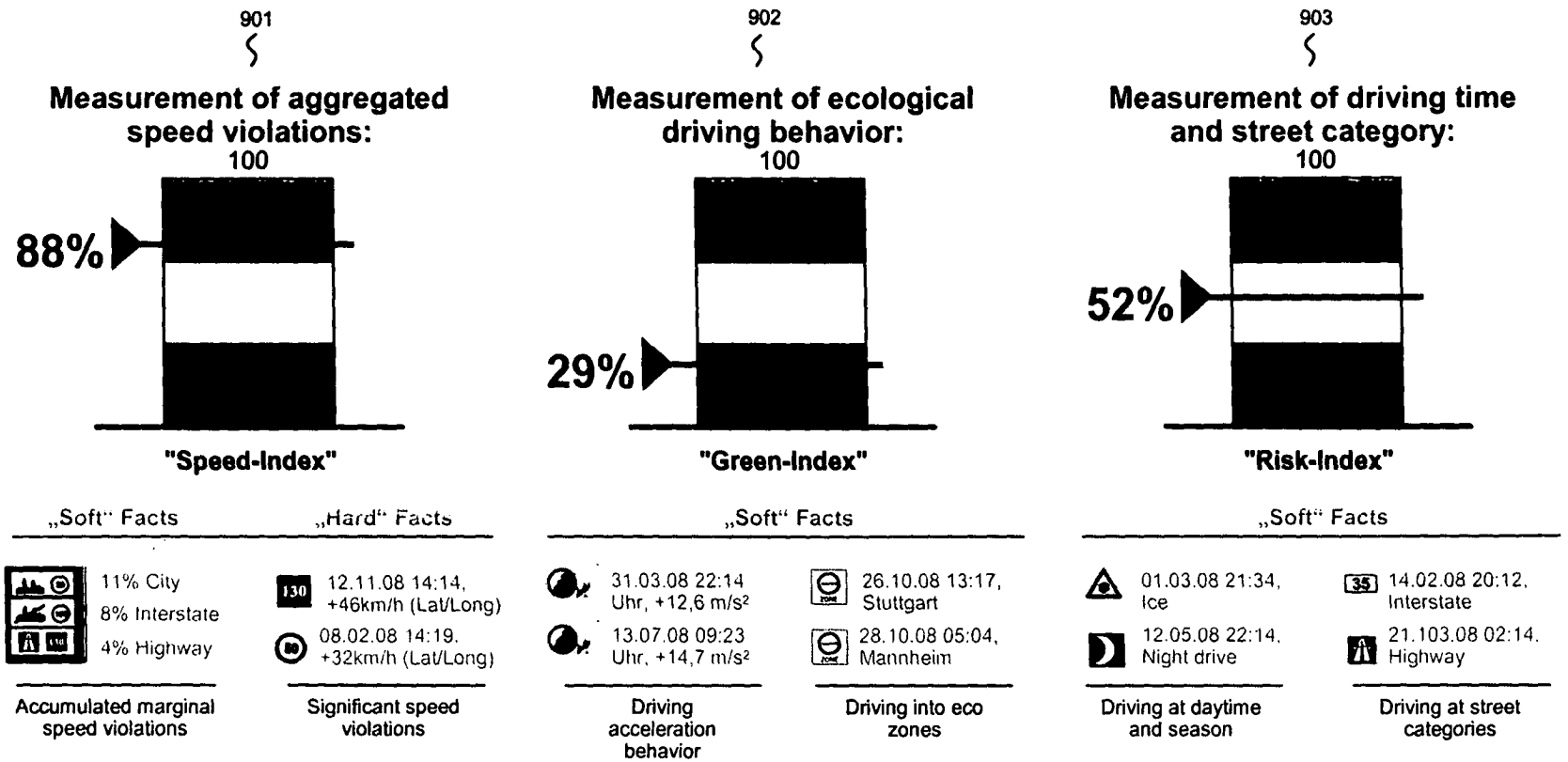
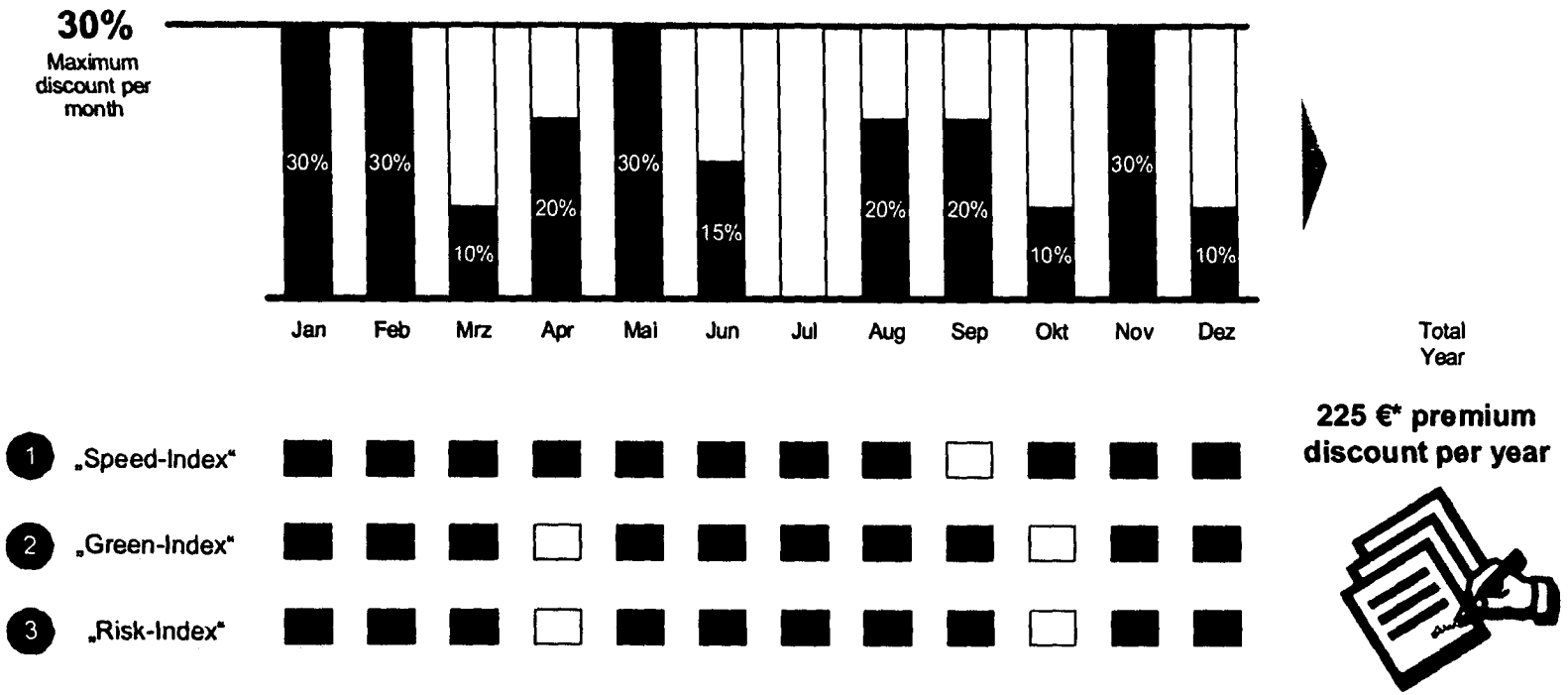

901
Measurement of aggregated speed violations:
100
88%
"Speed-Index"
„Soft" Facts
„Hard" Facts
11% City
8% Interstate
4% Highway
12.11.08 14:14, +46km/h (Lat/Long)
08.02.08 14:19, +32km/h (Lat/Long)
Accumulated marginal speed violations
Significant speed violations
902
Measurement of ecological driving behavior:
100
29%
"Green-Index"
„Soft" Facts
31.03.08 22:14 Uhr, +12,6 m/s²
13.07.08 09:23 Uhr, +14,7 m/s²
26.10.08 13:17, Stuttgart
28.10.08 05:04, Mannheim
Driving acceleration behavior
Driving into eco zones
903
Measurement of driving time and street category:
100
52%
"Risk-Index"
„Soft" Facts
01.03.08 21:34, Ice
12.05.08 22:14, Night drive
14.02.08 20:12, Interstate
21.103.08 02:14, Highway
Driving at daytime and season
Driving at street categories

FIG 9

Award for safe and ecological driving

ILLUSTRATIVE



Assumptions: High risk young driver with premium of 1200 € p.a.

FIG 10

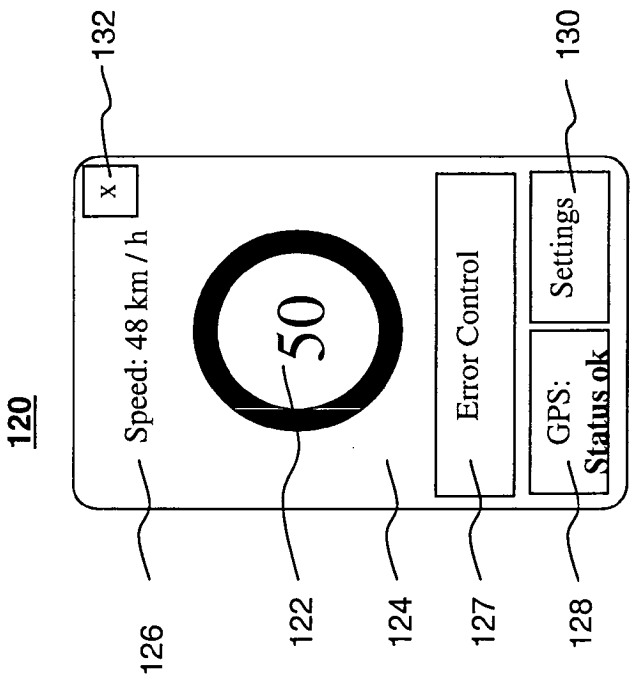

120
Speed: 48 km / h
x
50
Error Control
Settings
GPS:
Status ok
126
122
124
127
128
132
130

FIG 11

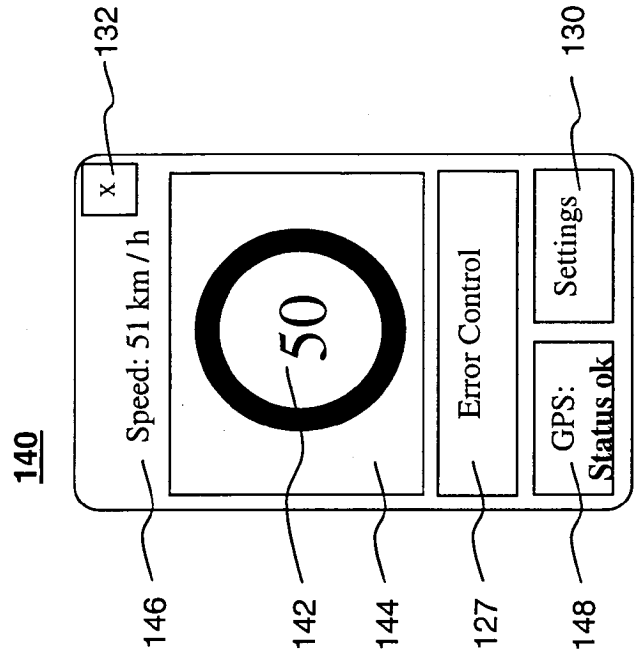

140
Speed: 51 km / h
x
50
Error Control
Settings
GPS:
Status ok
146
142
144
127
148
132
130

FIG 12

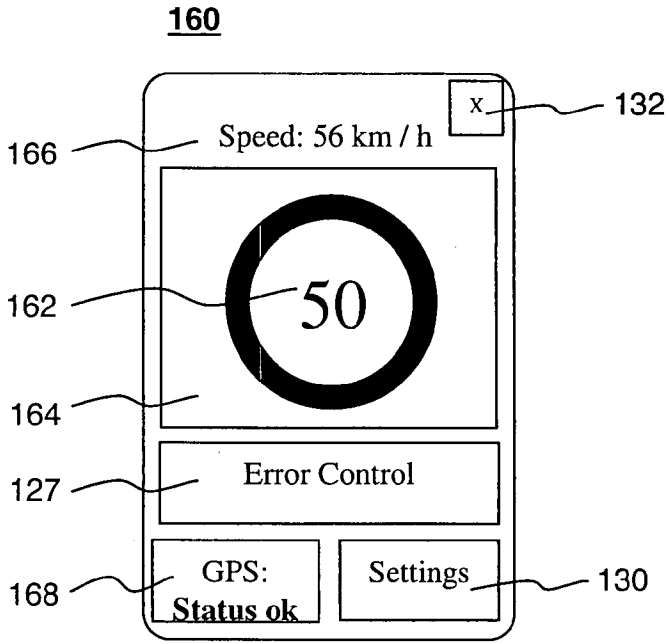

160
x
132
166
Speed: 56 km / h
162
50
164
127
Error Control
168
GPS:
Status ok
Settings
130

FIG 13

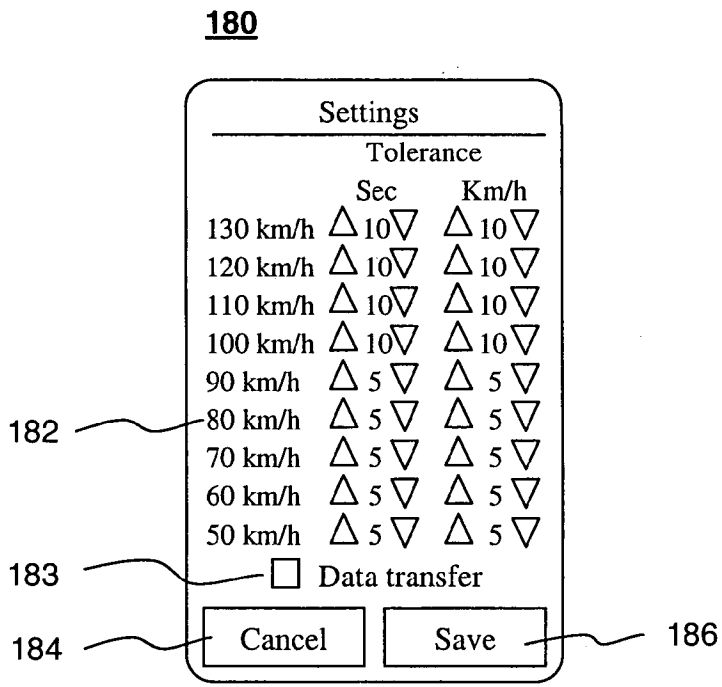

180
Settings
Tolerance
Sec
Km/h
130 km/h 10 10
120 km/h 10 10
110 km/h 10 10
100 km/h 10 10
90 km/h 5 5
182
80 km/h 5 5
70 km/h 5 5
60 km/h 5 5
50 km/h 5 5
183
Data transfer
184
Cancel
Save
186

FIG 14

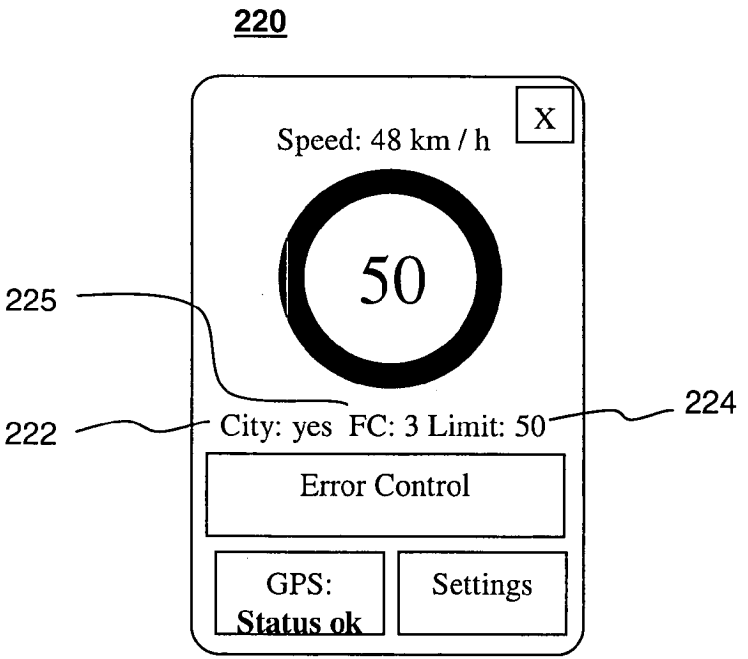

220
Speed: 48 km / h
X
50
225
222
City: yes FC: 3 Limit: 50
224
Error Control
GPS:
Status ok
Settings

FIG 15

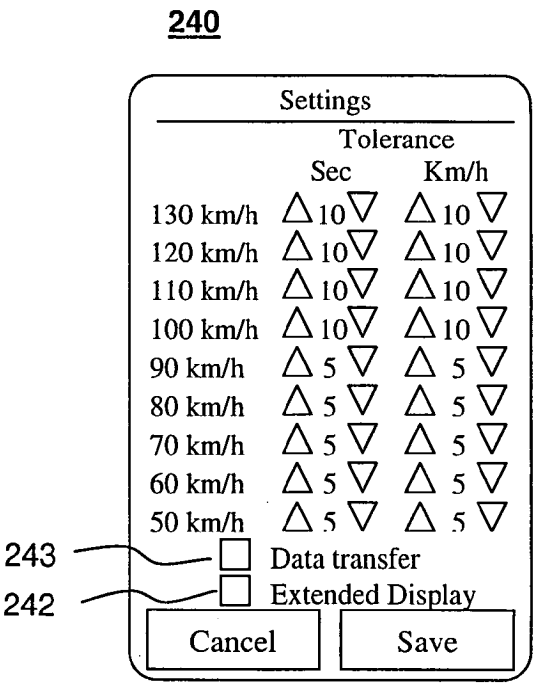

240
Settings
Tolerance
Sec
Km/h
130 km/h
120 km/h
110 km/h
100 km/h
90 km/h
80 km/h
70 km/h
60 km/h
50 km/h
243
Data transfer
242
Extended Display
Cancel
Save

FIG 16

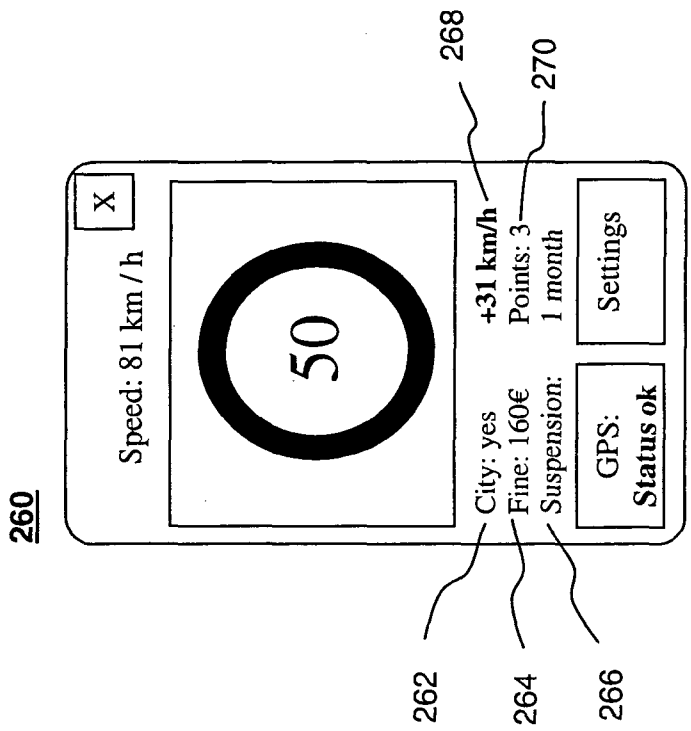

260
Speed: 81 km / h
X
50
City: yes
Fine: 160€
Suspension:
GPS:
Status ok
+31 km/h
Points: 3
1 month
Settings
262
264
266
268
270

FIG 17