System for implementing Inbound Traffic Redirection System (ITRS)

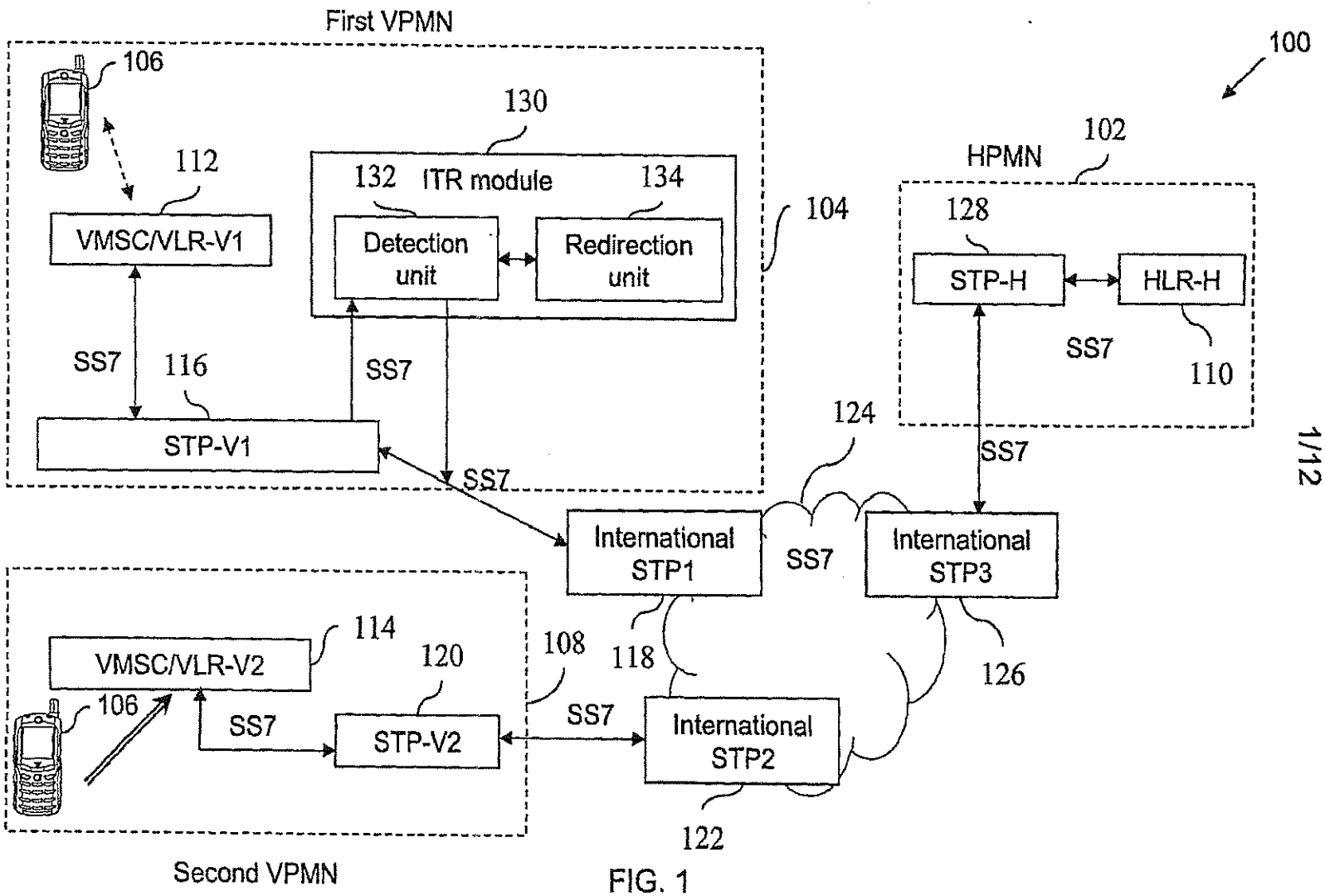


FIG. 1

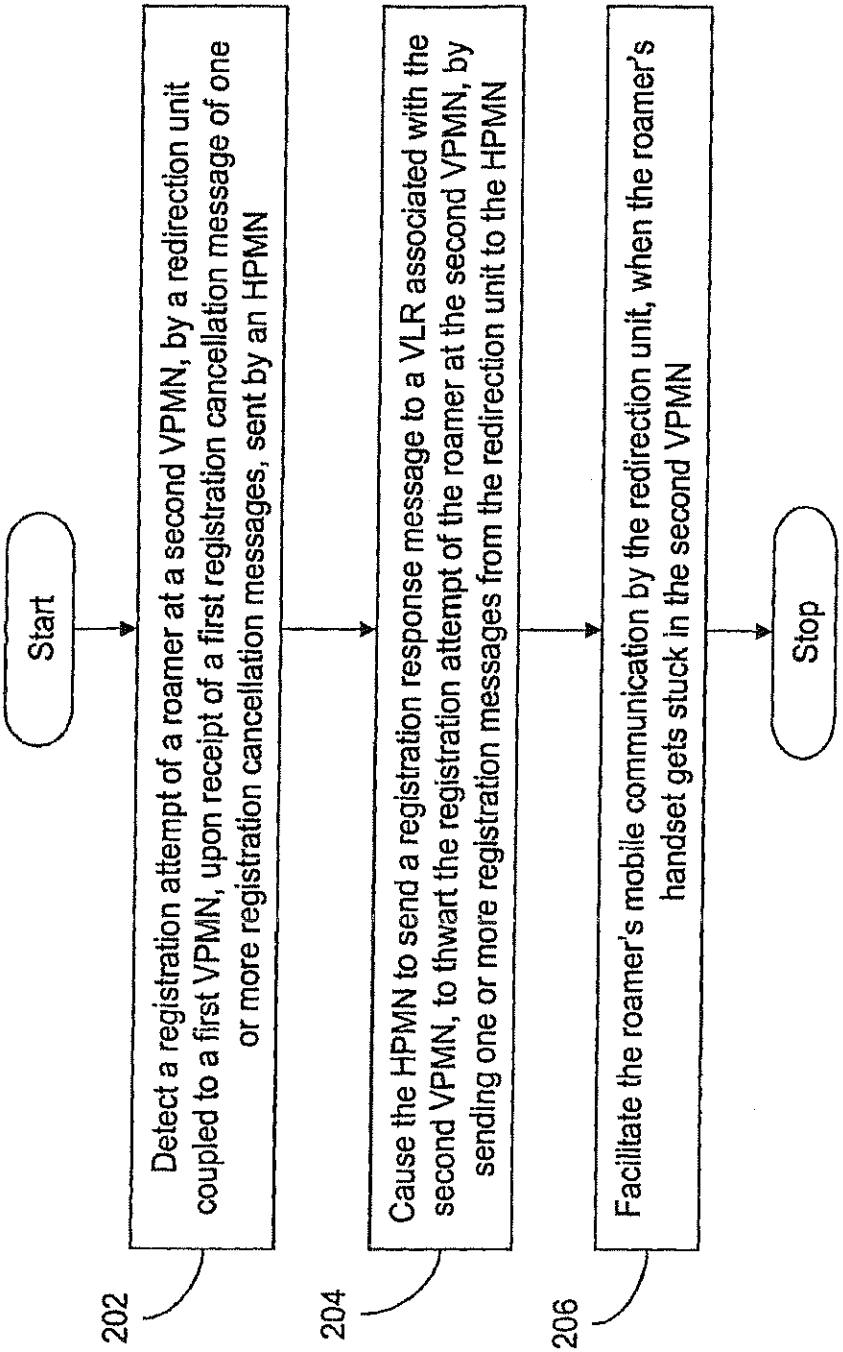

Start
Detect a registration attempt of a roamer at a second VPMN, by a redirection unit coupled to a first VPMN, upon receipt of a first registration cancellation message of one or more registration cancellation messages, sent by an HPMN
202
Cause the HPMN to send a registration response message to a VLR associated with the second VPMN, to thwart the registration attempt of the roamer at the second VPMN, by sending one or more registration messages from the redirection unit to the HPMN
204
Facilitate the roamer's mobile communication by the redirection unit, when the roamer's handset gets stuck in the second VPMN
206
Stop

FIG. 2

Enhanced location based ITR to force VLR abort in VLR error based approach

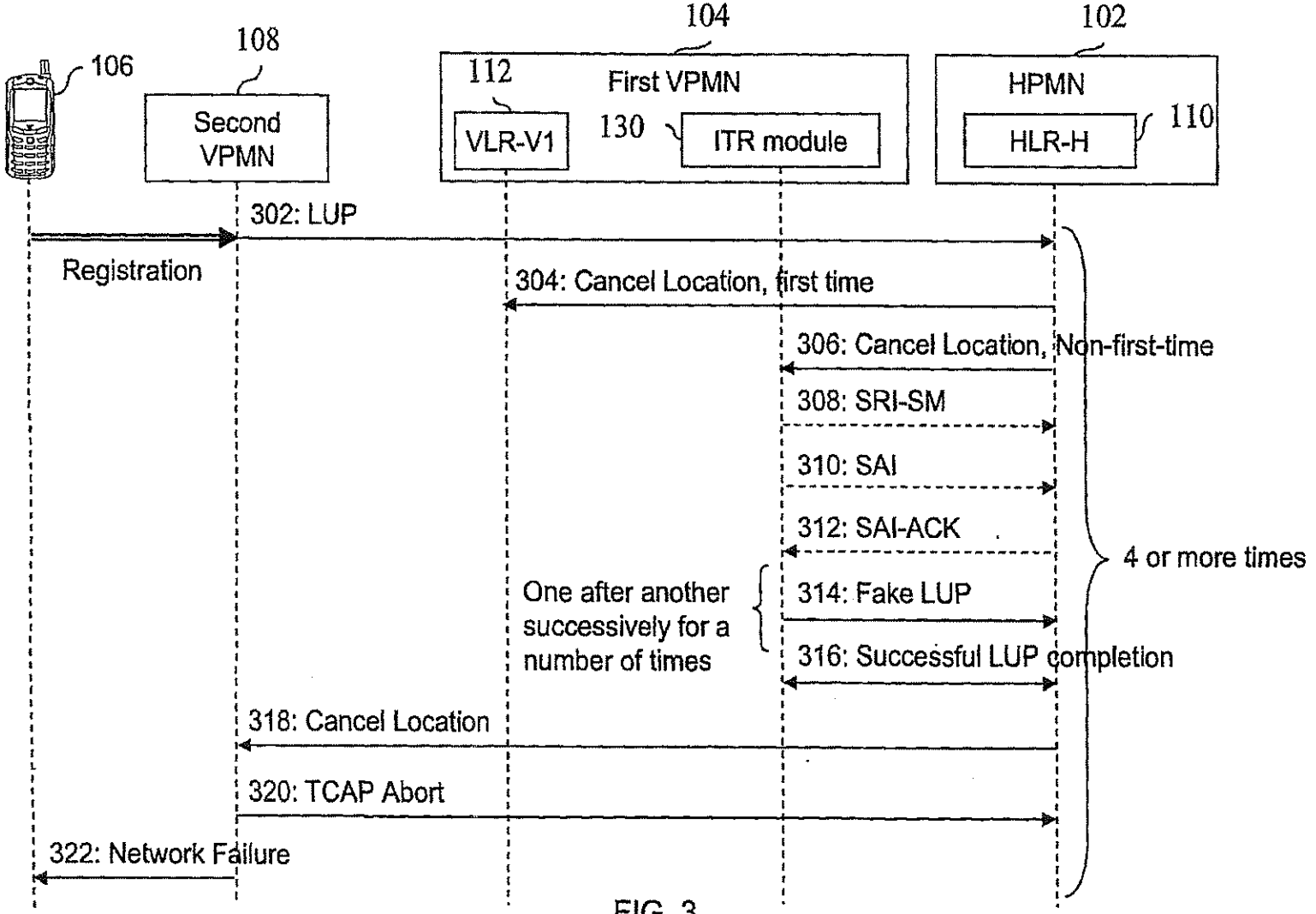


FIG. 3

In-signaling path ITR with possible location recovery in VLR error based approach

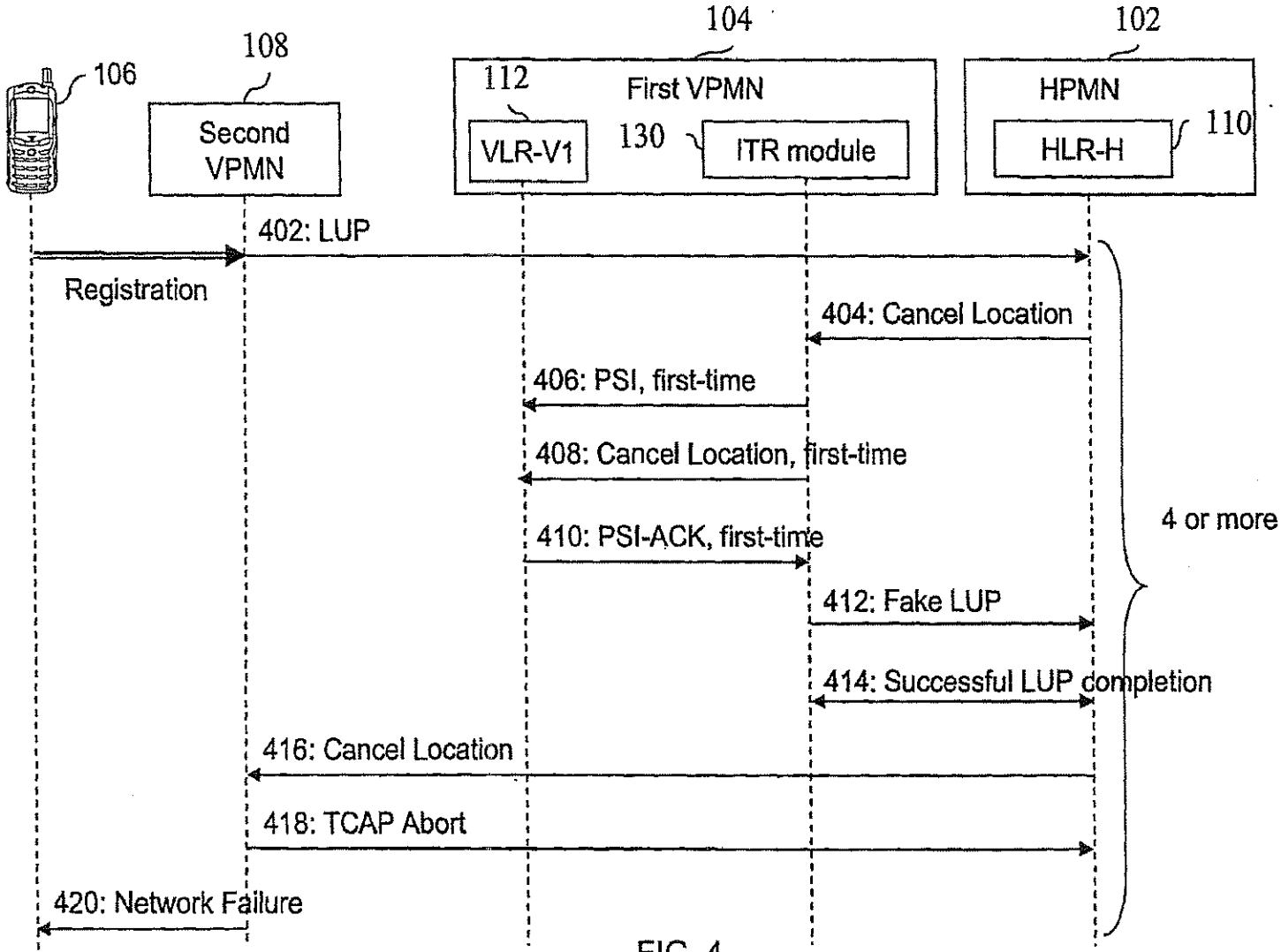


FIG. 4

Integrated ITR and anti-TR solution in VLR error based approach

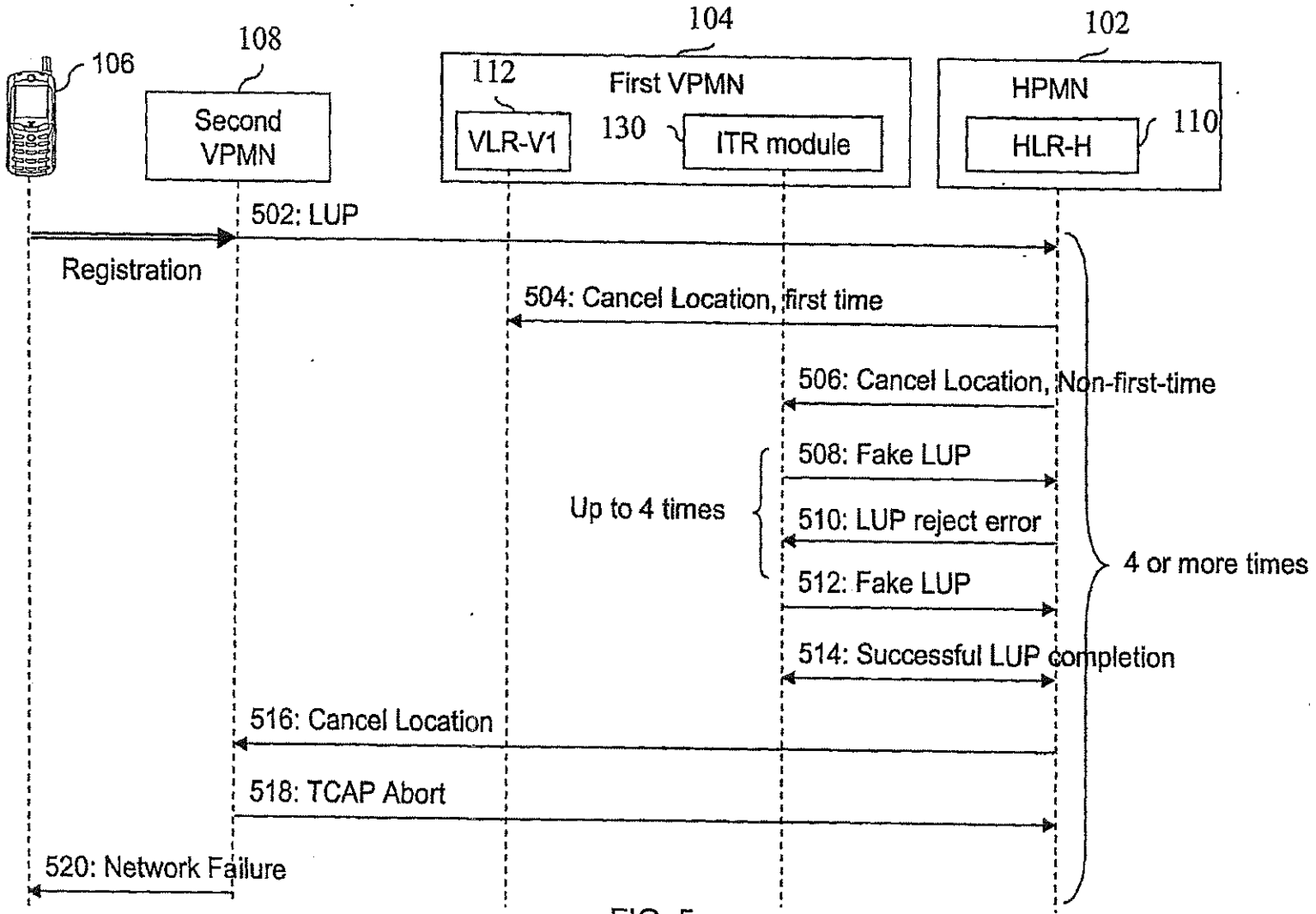


FIG. 5

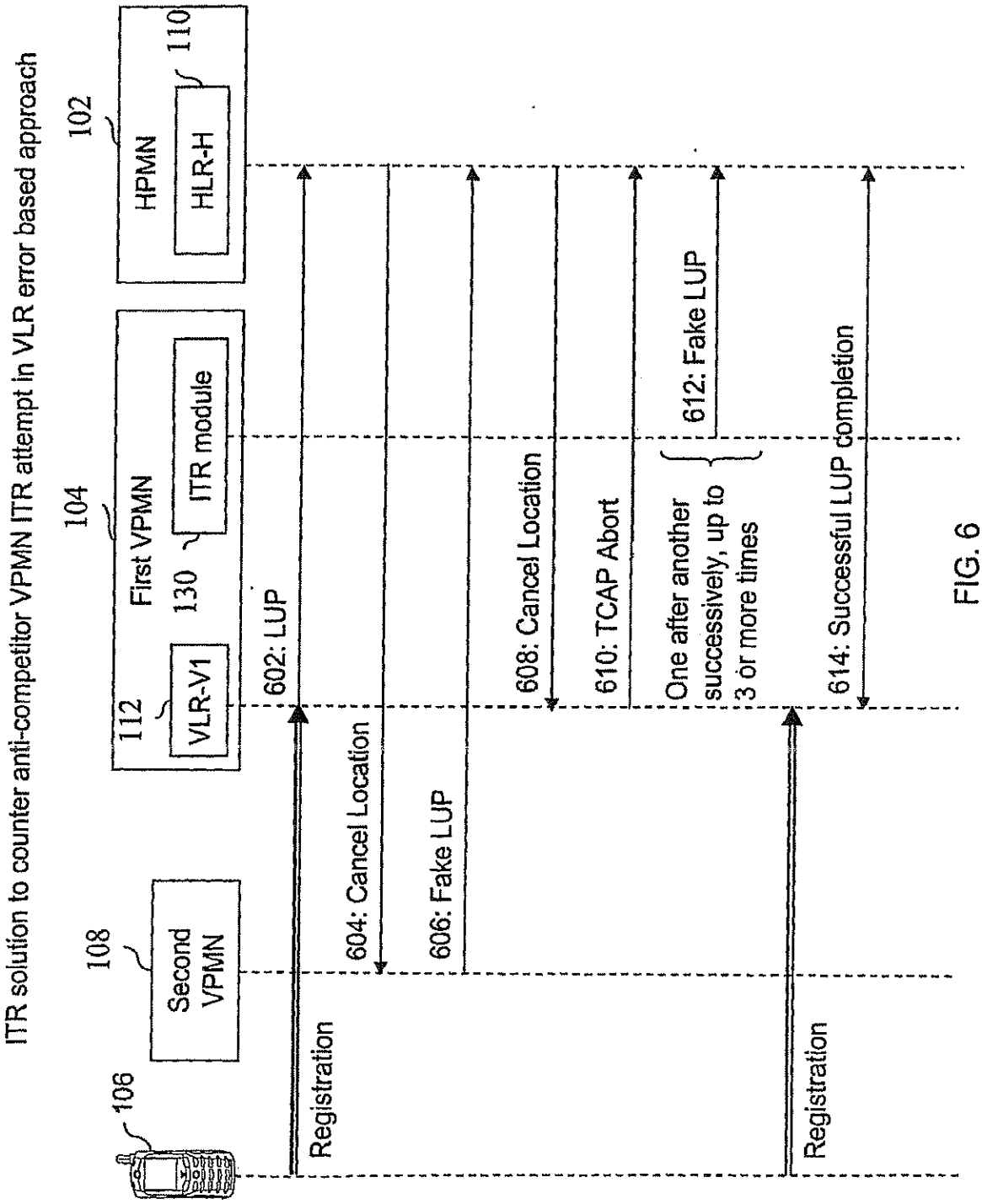

ITR solution to counter anti-competitor VPMN ITR attempt in VLR error based approach
106
108
Second VPMN
104
First VPMN
112
VLR-V1
130
ITR module
102
HPMN
110
HLR-H
602: LUP
Registration
604: Cancel Location
606: Fake LUP
608: Cancel Location
610: TCAP Abort
One after another successively, up to 3 or more times
612: Fake LUP
Registration
614: Successful LUP completion

FIG. 6

Facilitating MT calls and MT SMS for a stuck handset during its registration process at a competitor VPMN

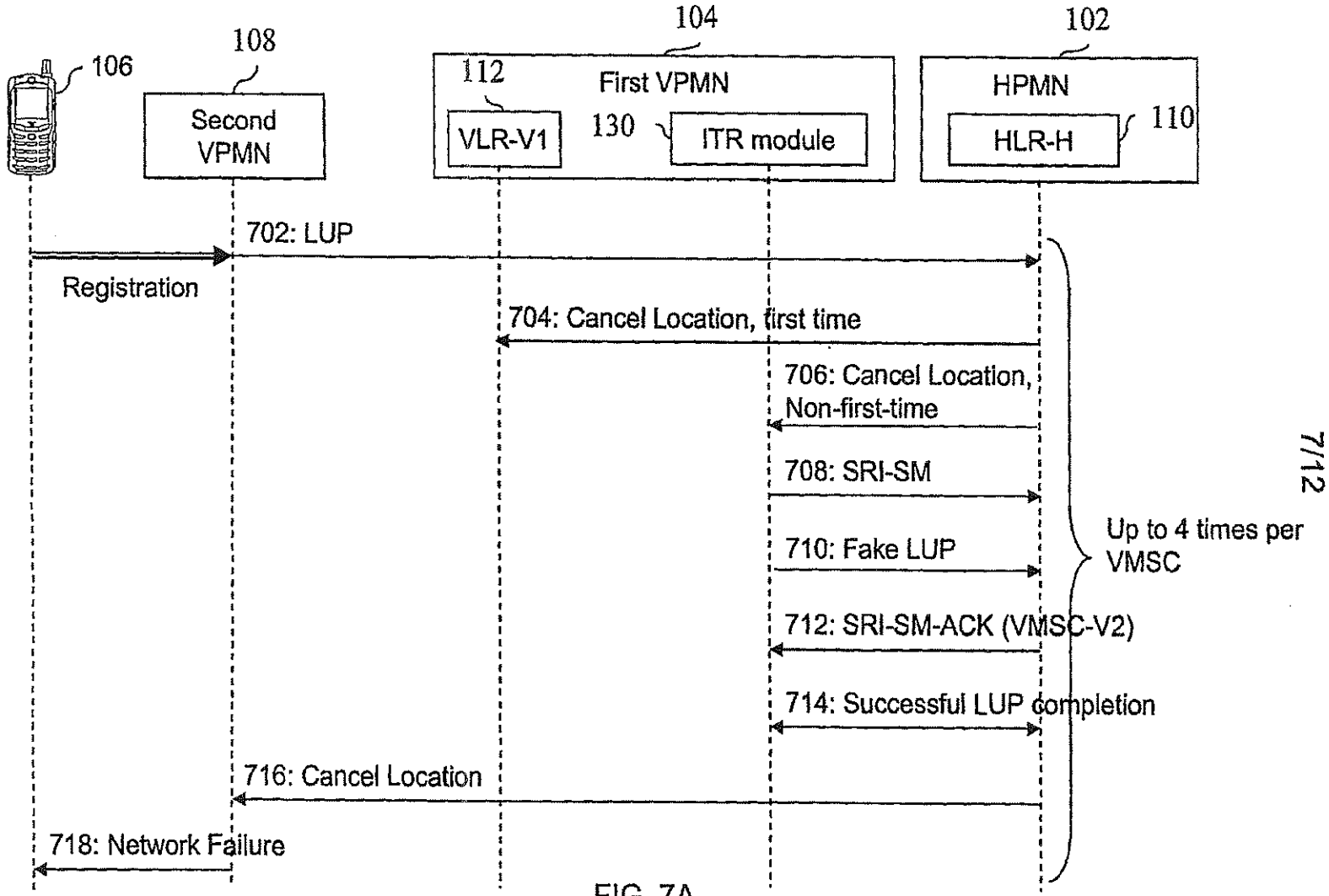


FIG. 7A

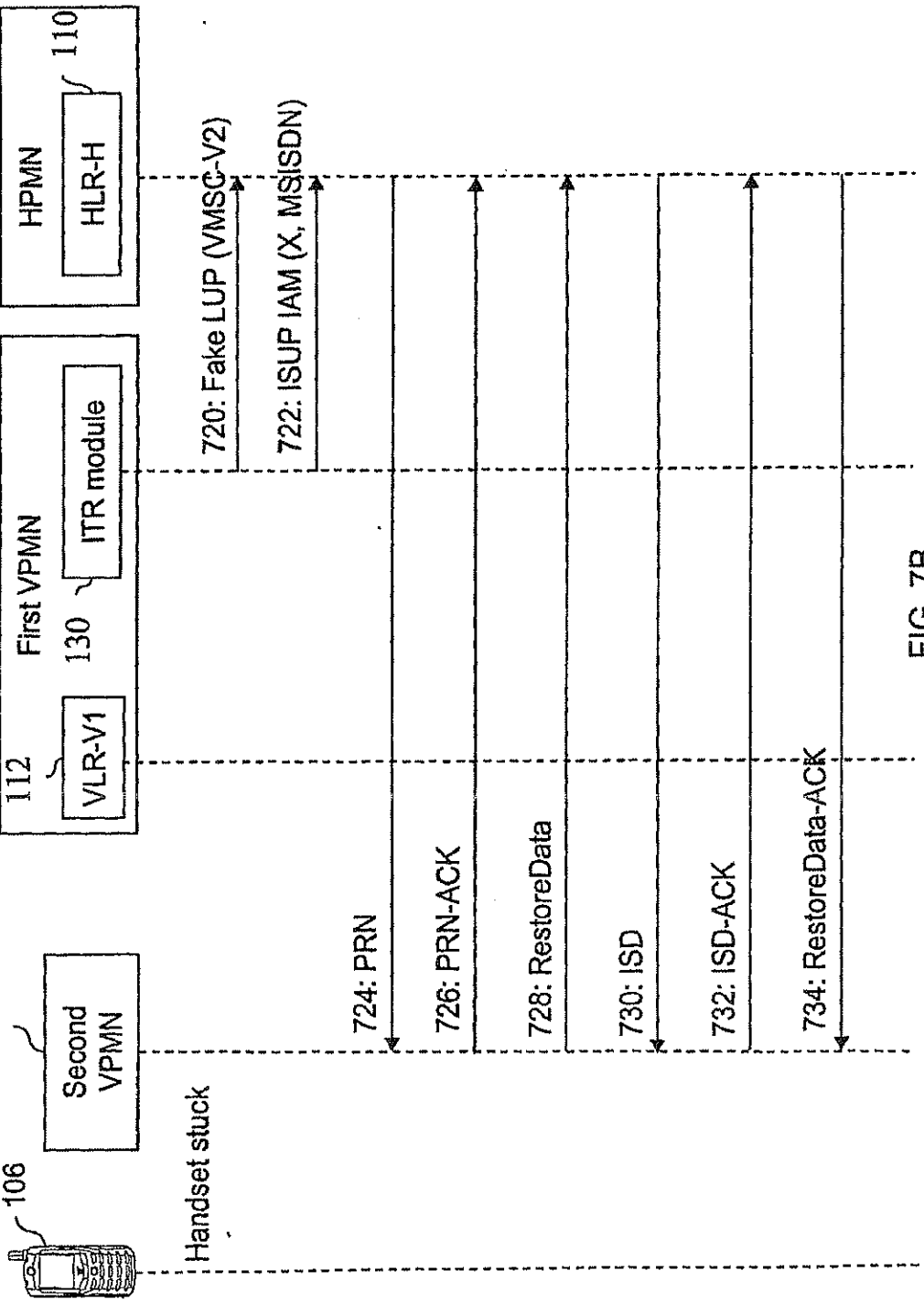

106
108
Second VPMN
Handset stuck
104
First VPMN
112
VLR-V1
130
ITR module
102
HPMN
110
HLR-H
720: Fake LUP (VMSC-V2)
722: ISUP IAM (X, MSISDN)
724: PRN
726: PRN-ACK
728: RestoreData
730: ISD
732: ISD-ACK
734: RestoreData-ACK

FIG. 7B

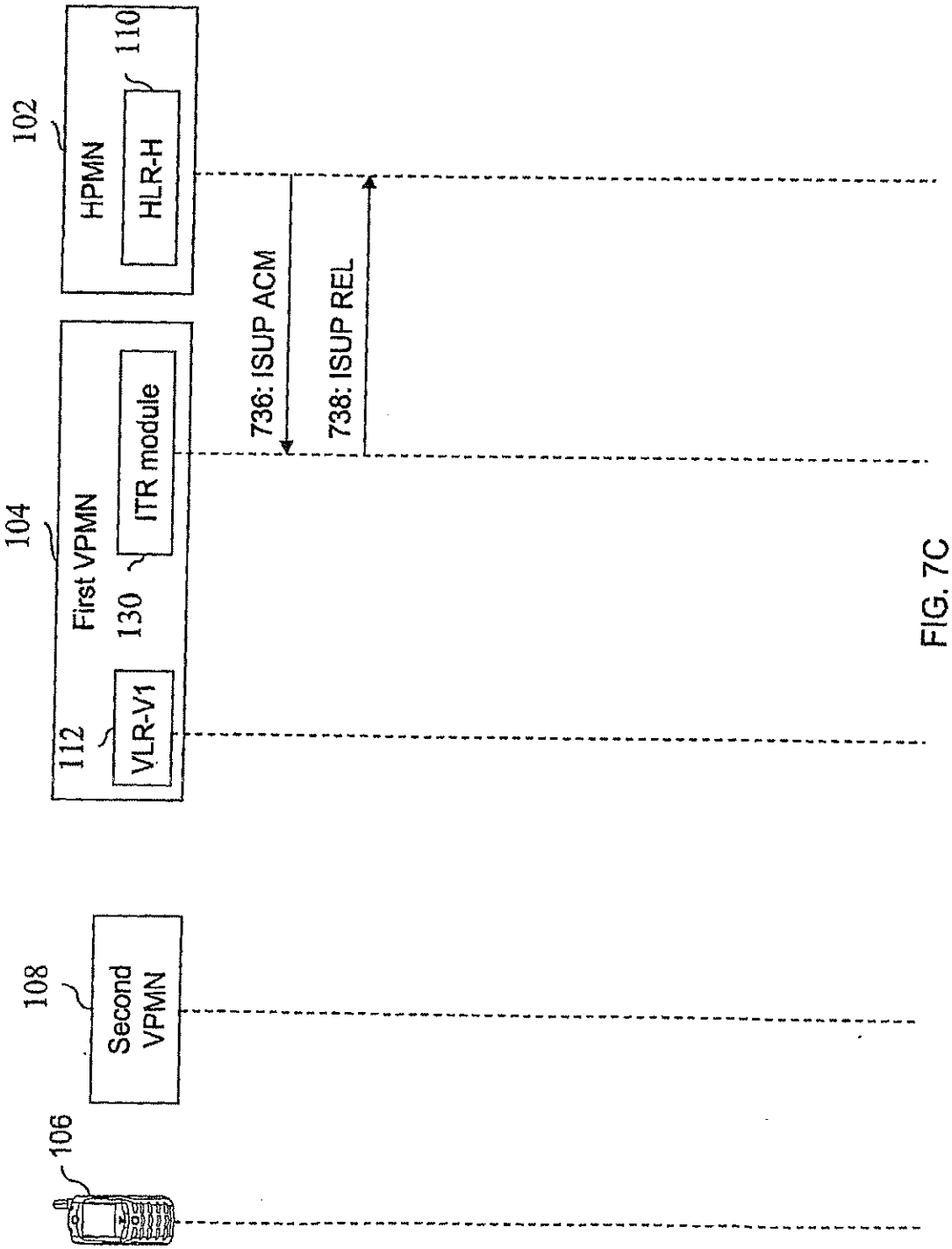

102
HPMN
110
HLR-H
736: ISUP ACM
738: ISUP REL
104
First VPMN
130
ITR module
112
VLR-V1
108
Second VPMN
106

FIG. 7C

Facilitating MT calls and MT SMS for a stuck handset that was successfully registered with a competitive VPMN

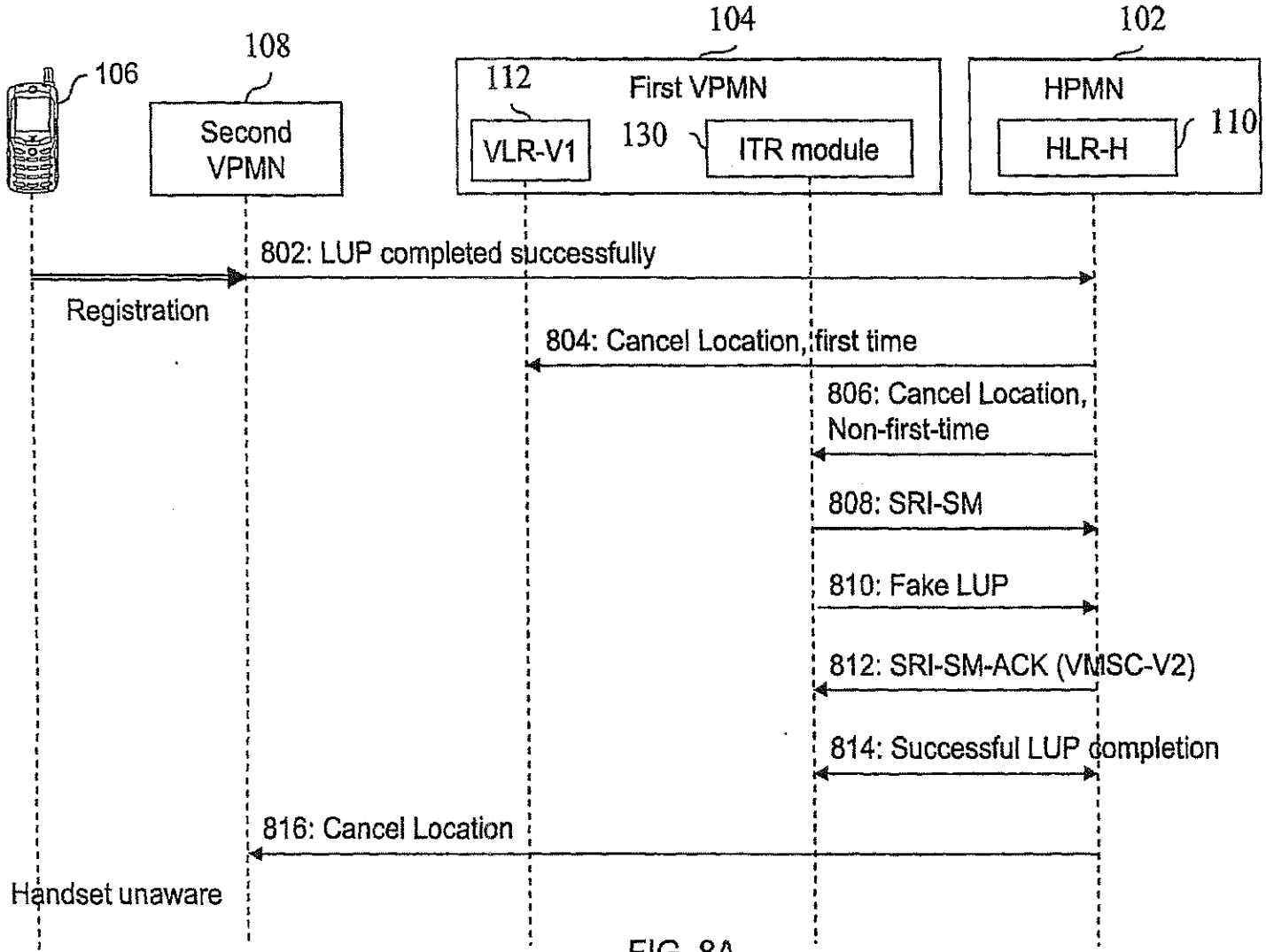


FIG. 8A

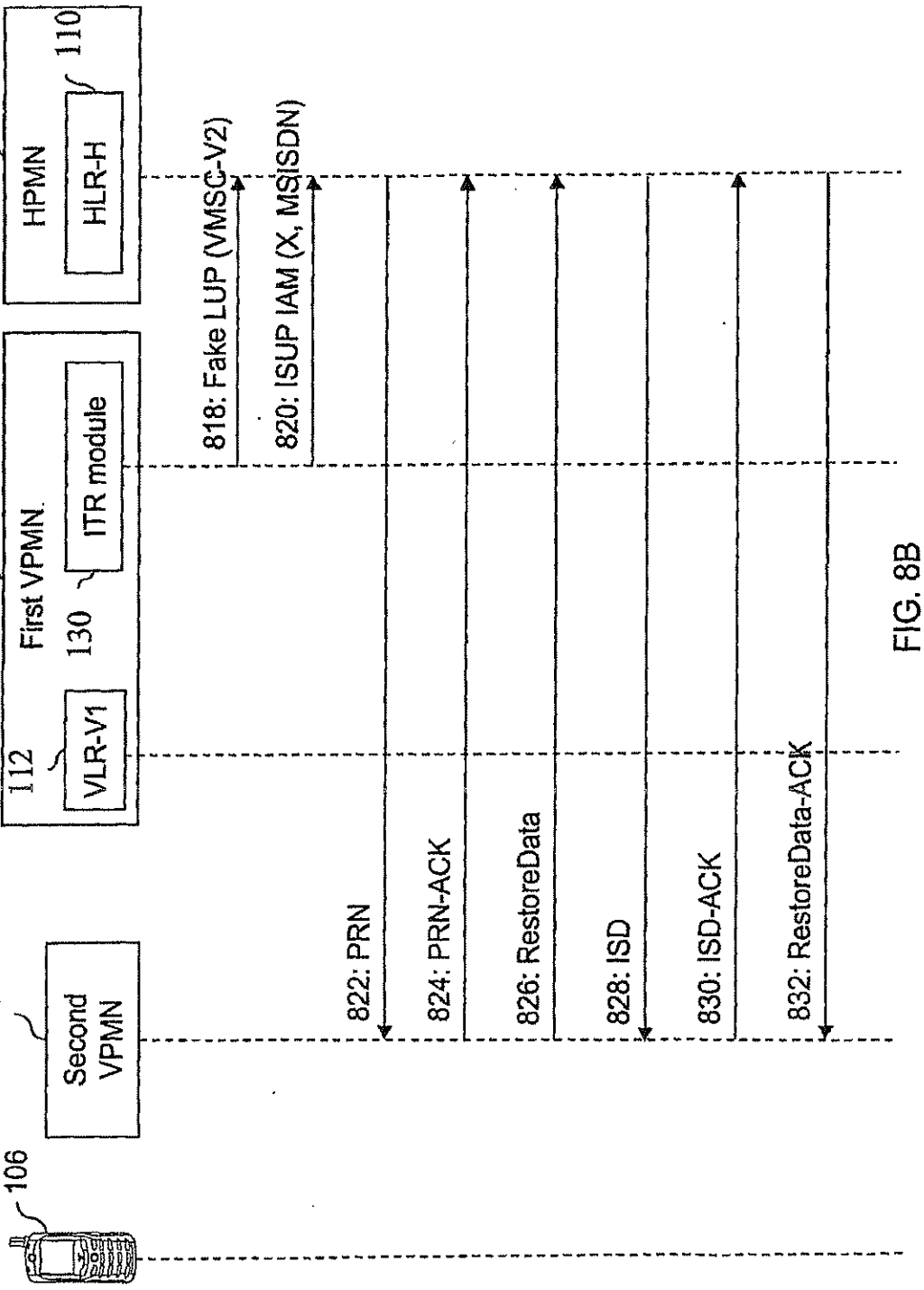

106
108
Second VPMN
104
First VPMN
112
VLR-V1
130
ITR module
102
HPMN
110
HLR-H
818: Fake LUP (VMSC-V2)
820: ISUP IAM (X, MSISDN)
822: PRN
824: PRN-ACK
826: RestoreData
828: ISD
830: ISD-ACK
832: RestoreData-ACK

FIG. 8B

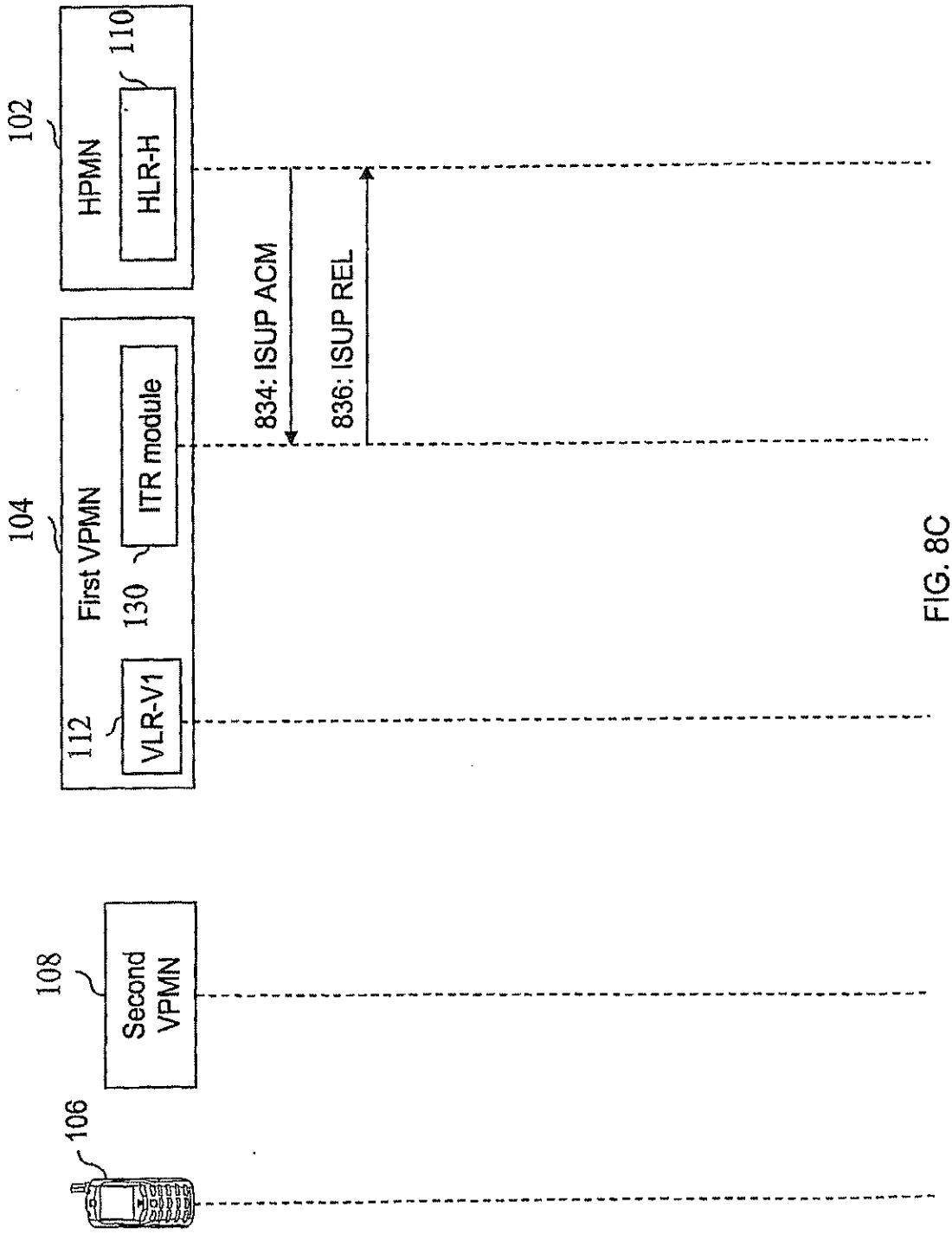

102
HPMN
110
HLR-H
834: ISUP ACM
836: ISUP REL
104
First VPMN
130
ITR module
112
VLR-V1
108
Second VPMN
106

FIG. 8C