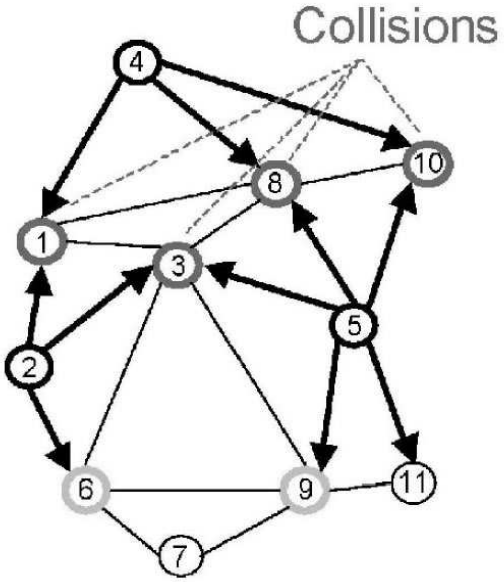


FIG.1

FIG.2 (start)

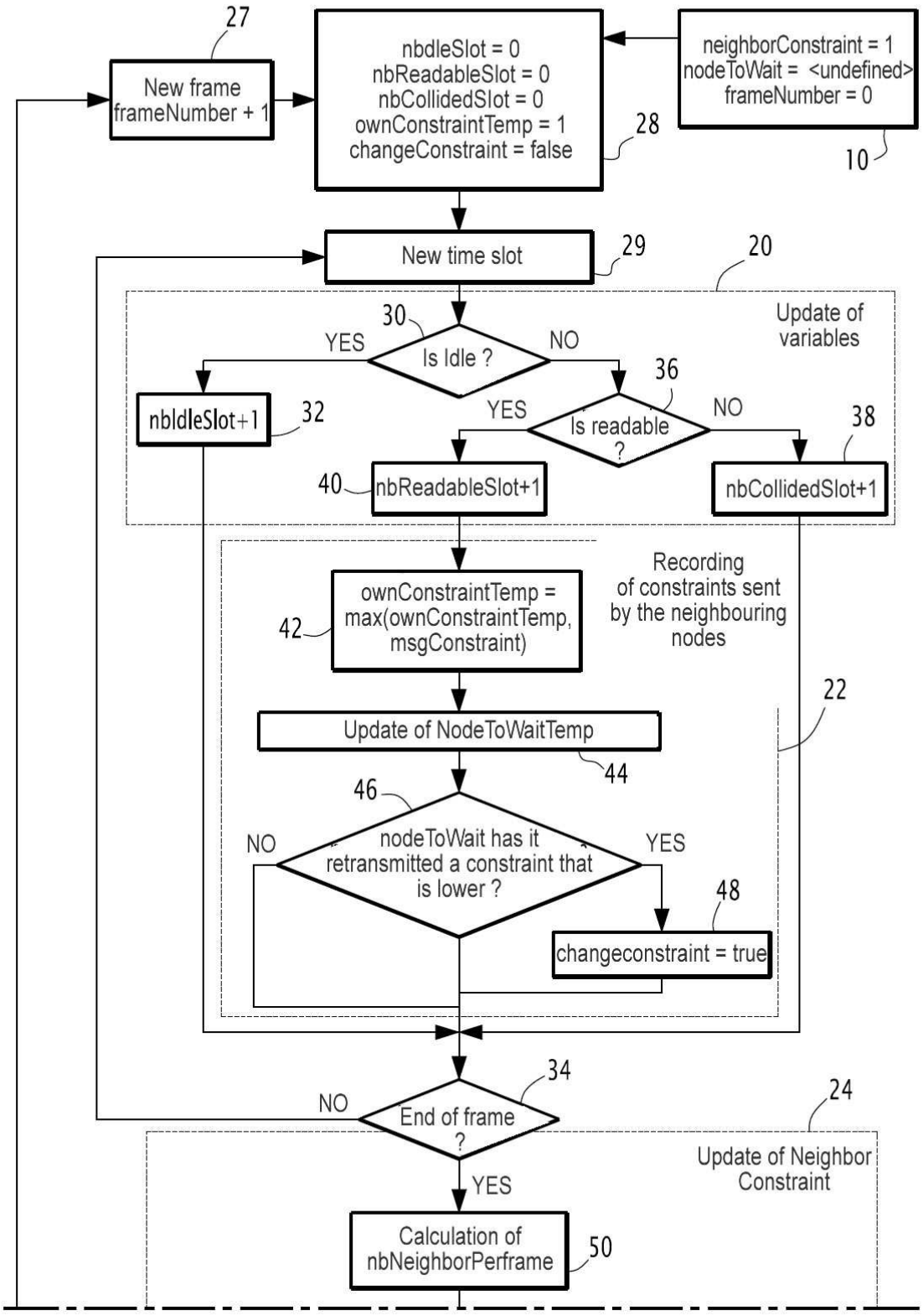
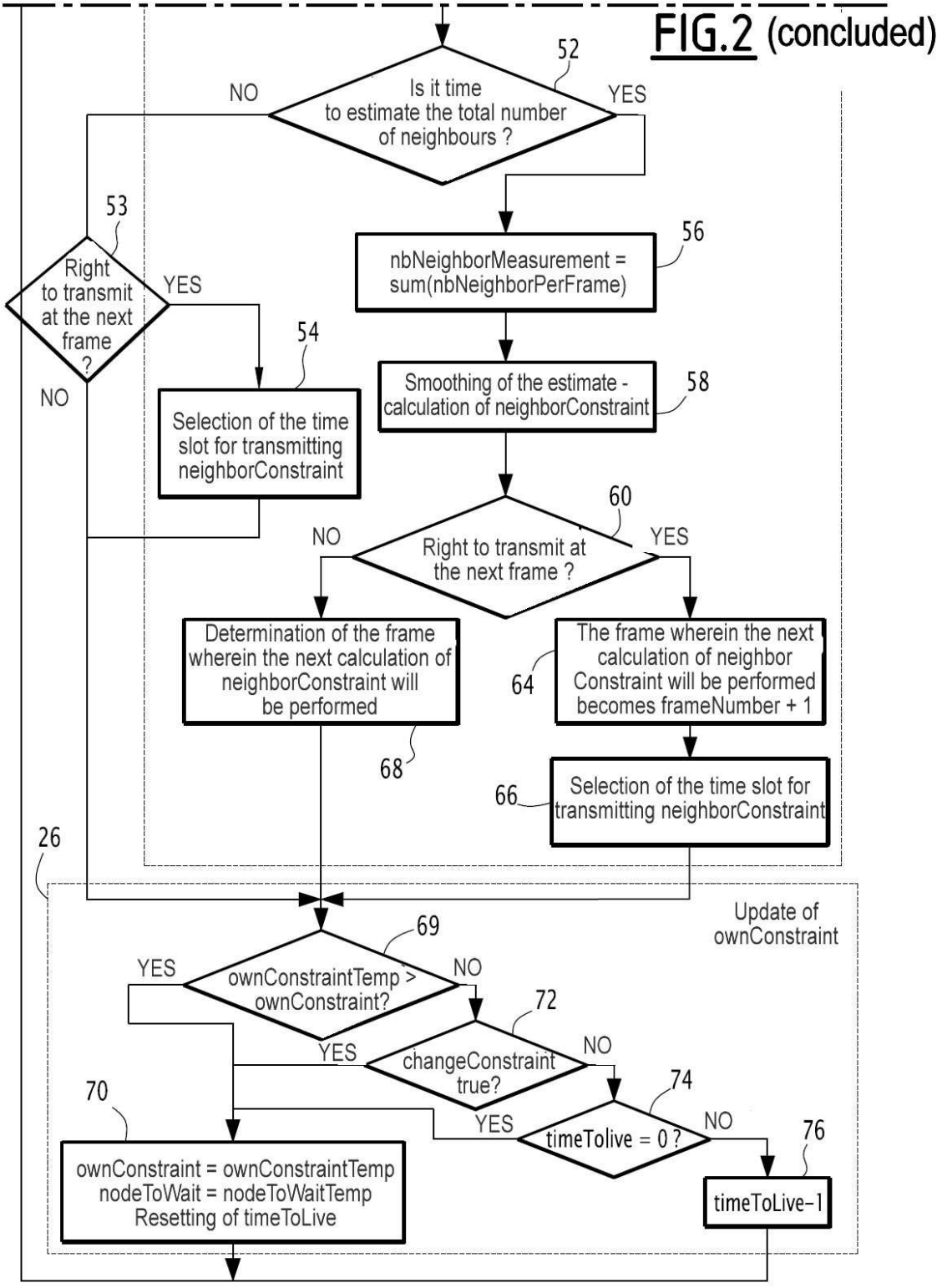

27
New frame
frameNumber + 1
nbdleSlot = 0
nbReadableSlot = 0
nbCollidedSlot = 0
ownConstraintTemp = 1
changeConstraint = false
28
neighborConstraint = 1
nodeToWait = <undefined>
frameNumber = 0
10
New time slot
29
20
Update of variables
30
YES
Is Idle ?
NO
nbIdleSlot+1
32
36
YES
Is readable ?
NO
38
40
nbReadableSlot+1
nbCollidedSlot+1
Recording of constraints sent by the neighbouring nodes
ownConstraintTemp = max(ownConstraintTemp, msgConstraint)
42
22
Update of NodeToWaitTemp
44
46
nodeToWait has it retransmitted a constraint that is lower ?
NO
YES
48
changeconstraint = true
34
NO
End of frame ?
24
Update of Neighbor Constraint
YES
Calculation of nbNeighborPerframe
50

FIG.2 (concluded)



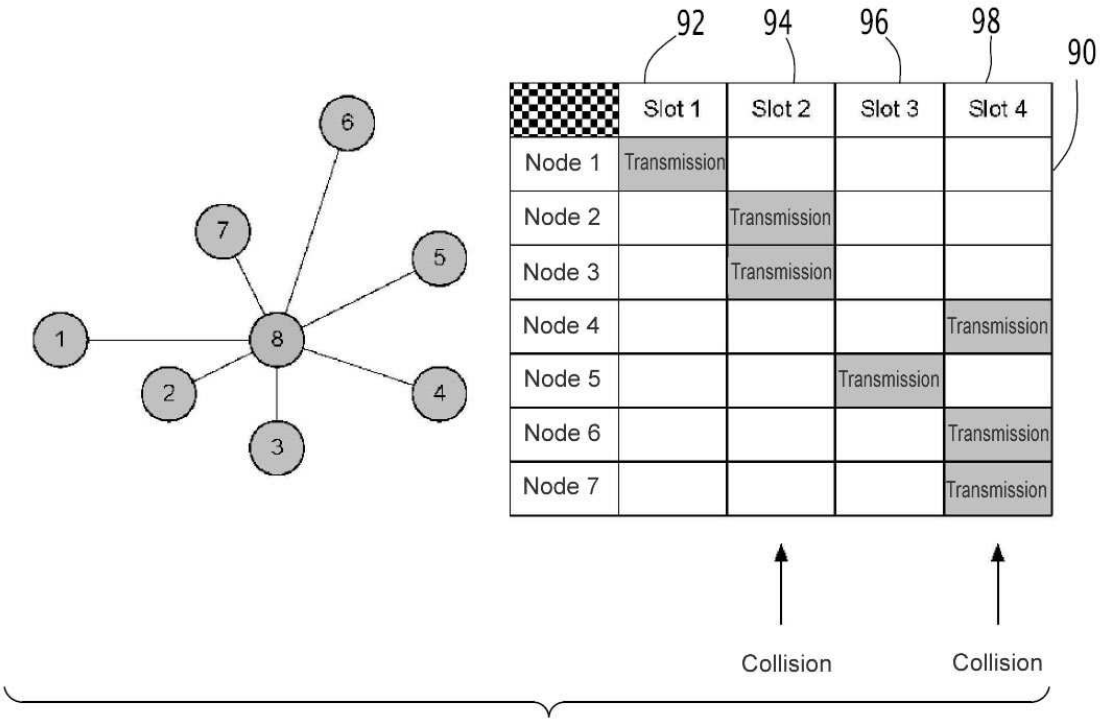

92
94
96
98
90
Slot 1
Slot 2
Slot 3
Slot 4
Node 1
Node 2
Node 3
Node 4
Node 5
Node 6
Node 7
Transmission
Collision
Collision
1
2
3
4
5
6
7
8

FIG.3

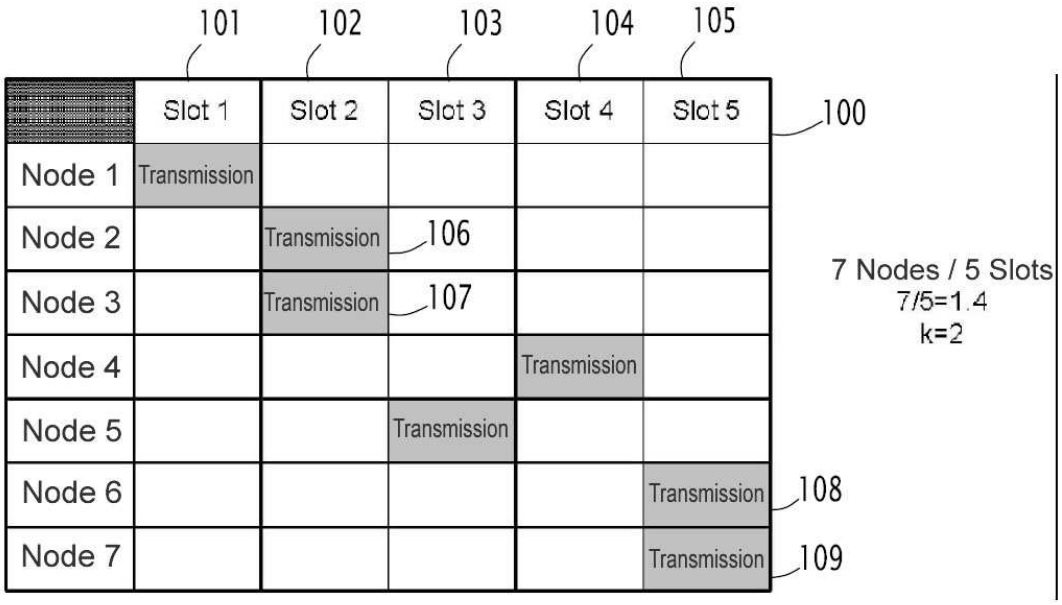

101
102
103
104
105
Slot 1
Slot 2
Slot 3
Slot 4
Slot 5
100
Node 1
Node 2
Node 3
Node 4
Node 5
Node 6
Node 7
Transmission
106
107
108
109
7 Nodes / 5 Slots
7/5=1.4
k=2

FIG.4

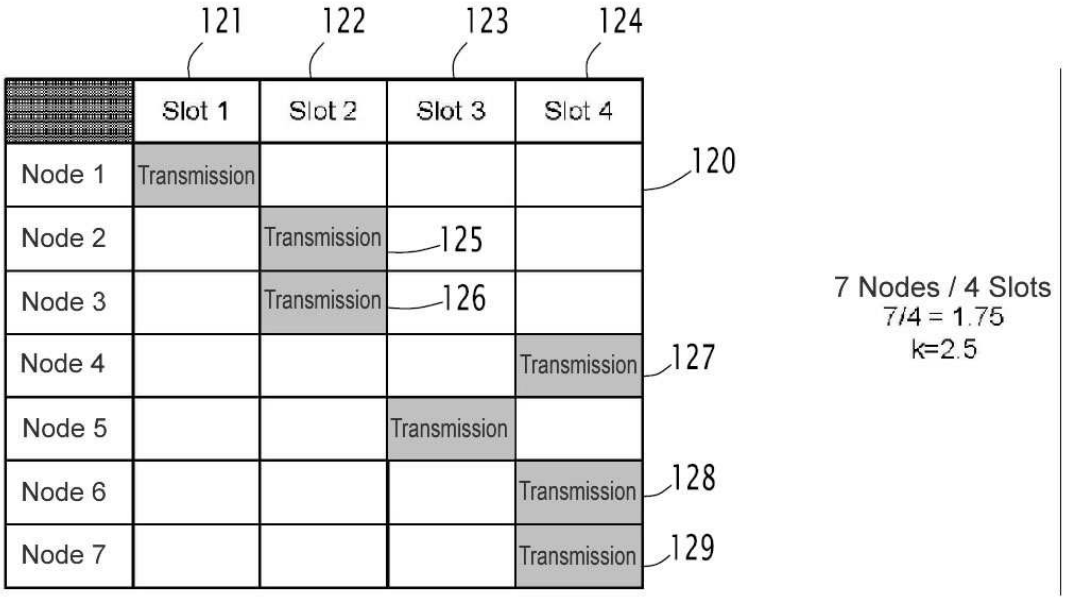

121
122
123
124
Slot 1
Slot 2
Slot 3
Slot 4
Node 1
Node 2
Node 3
Node 4
Node 5
Node 6
Node 7
Transmission
120
125
126
127
128
129
7 Nodes / 4 Slots
7/4 = 1.75
k=2.5

FIG.5

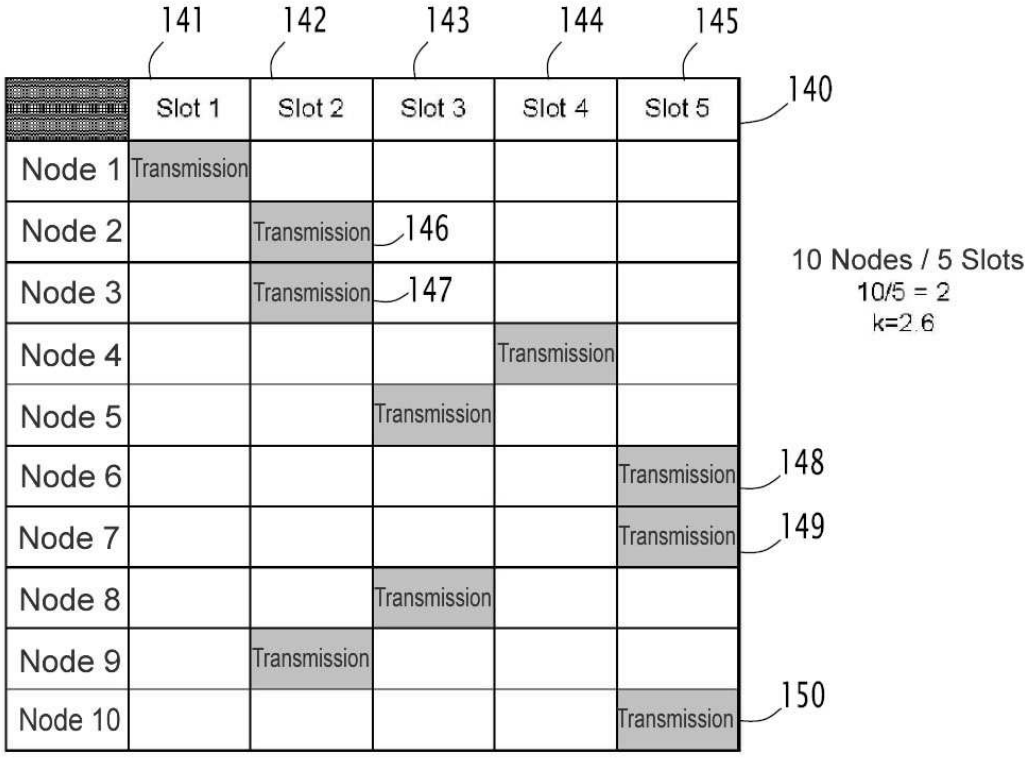

141
142
143
144
145
Slot 1
Slot 2
Slot 3
Slot 4
Slot 5
Node 1
Node 2
Node 3
Node 4
Node 5
Node 6
Node 7
Node 8
Node 9
Node 10
Transmission
140
146
147
148
149
150
10 Nodes / 5 Slots
10/5 = 2
k=2.6

FIG.6

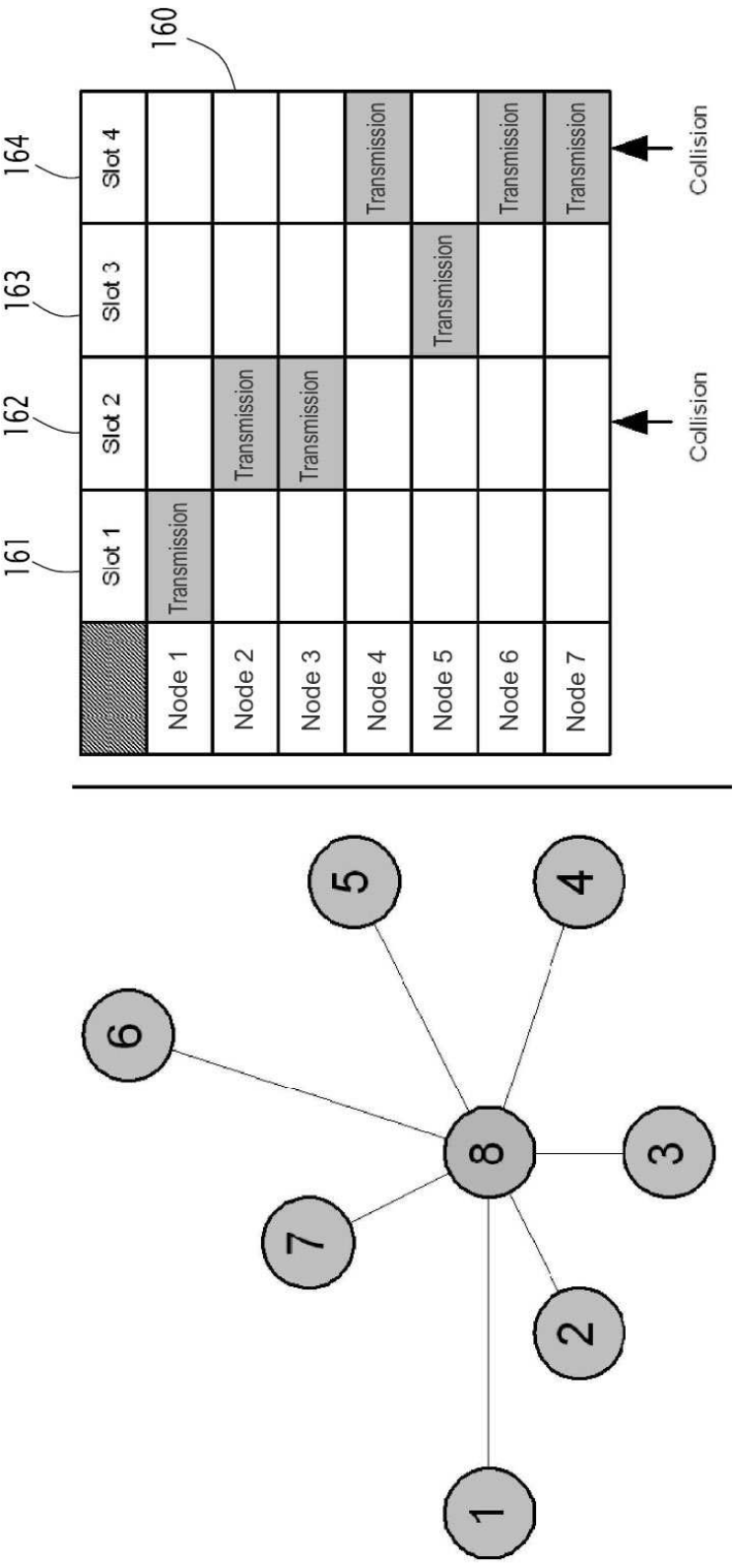

160
161
162
163
164
Slot 1
Slot 2
Slot 3
Slot 4
Node 1
Node 2
Node 3
Node 4
Node 5
Node 6
Node 7
Transmission
Transmission
Transmission
Transmission
Transmission
Transmission
Transmission
Collision
Collision
1
2
3
4
5
6
7
8

FIG.7

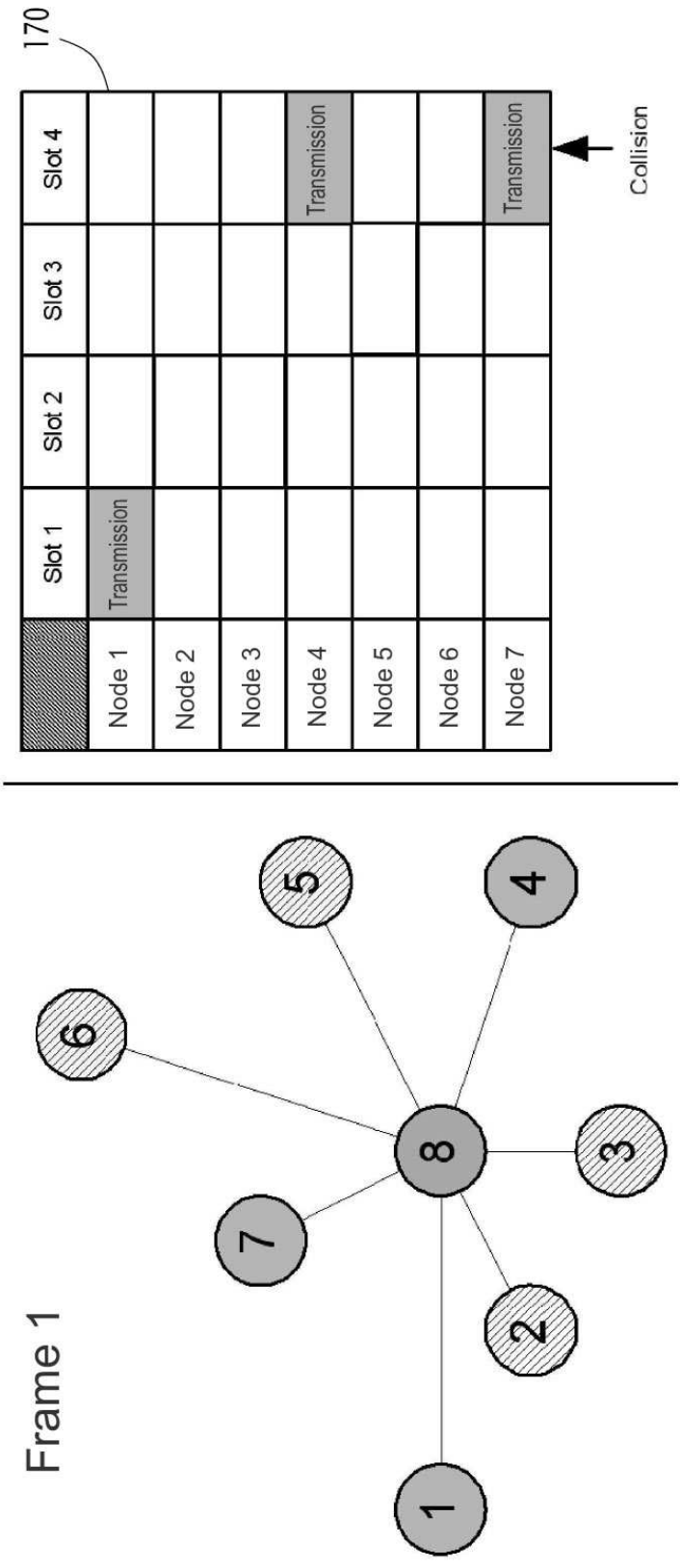

170
Slot 1
Slot 2
Slot 3
Slot 4
Node 1
Node 2
Node 3
Node 4
Node 5
Node 6
Node 7
Transmission
Transmission
Transmission
Collision
Frame 1
1
2
3
4
5
6
7
8

FIG.8

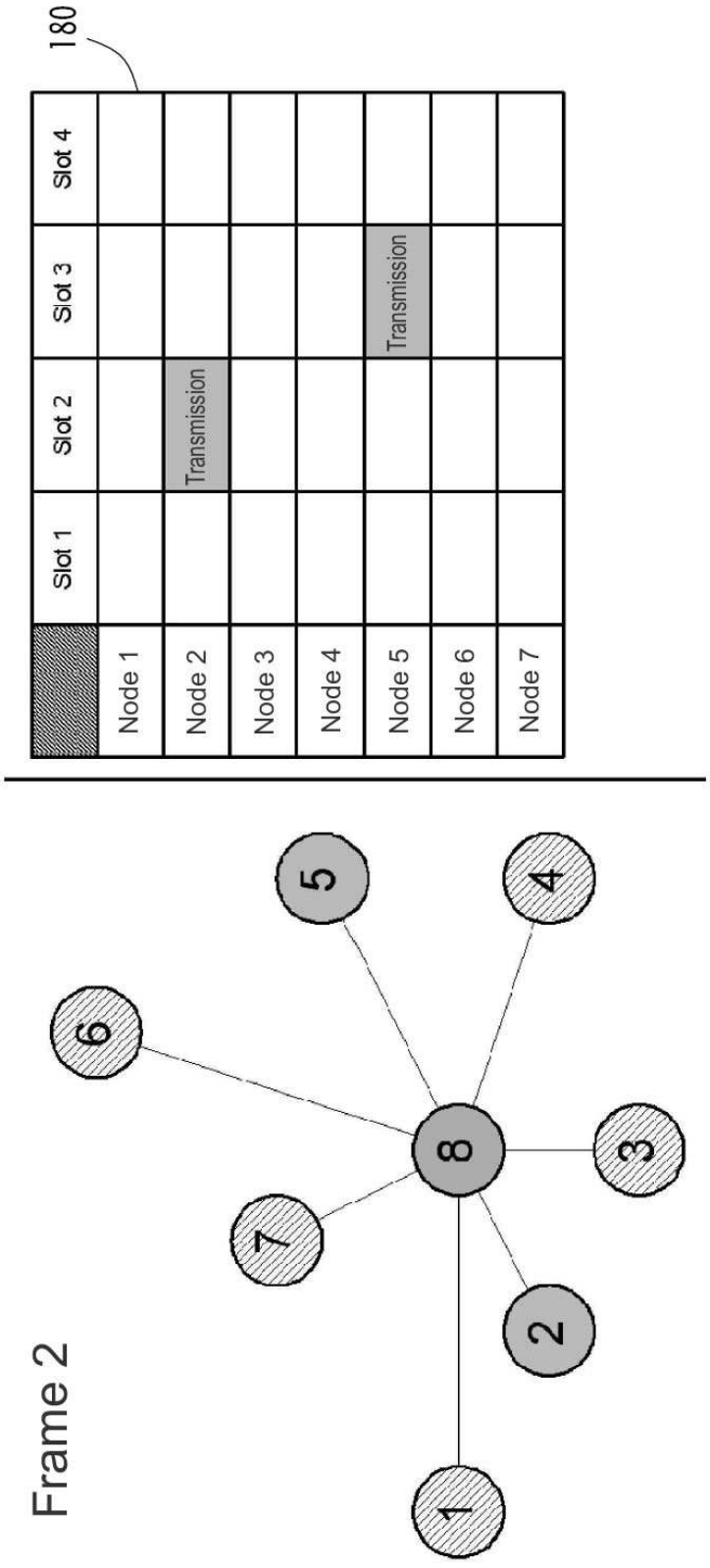

180
Slot 1
Slot 2
Slot 3
Slot 4
Node 1
Node 2
Node 3
Node 4
Node 5
Node 6
Node 7
Transmission
Transmission
Frame 2
1
2
3
4
5
6
7
8

FIG.9

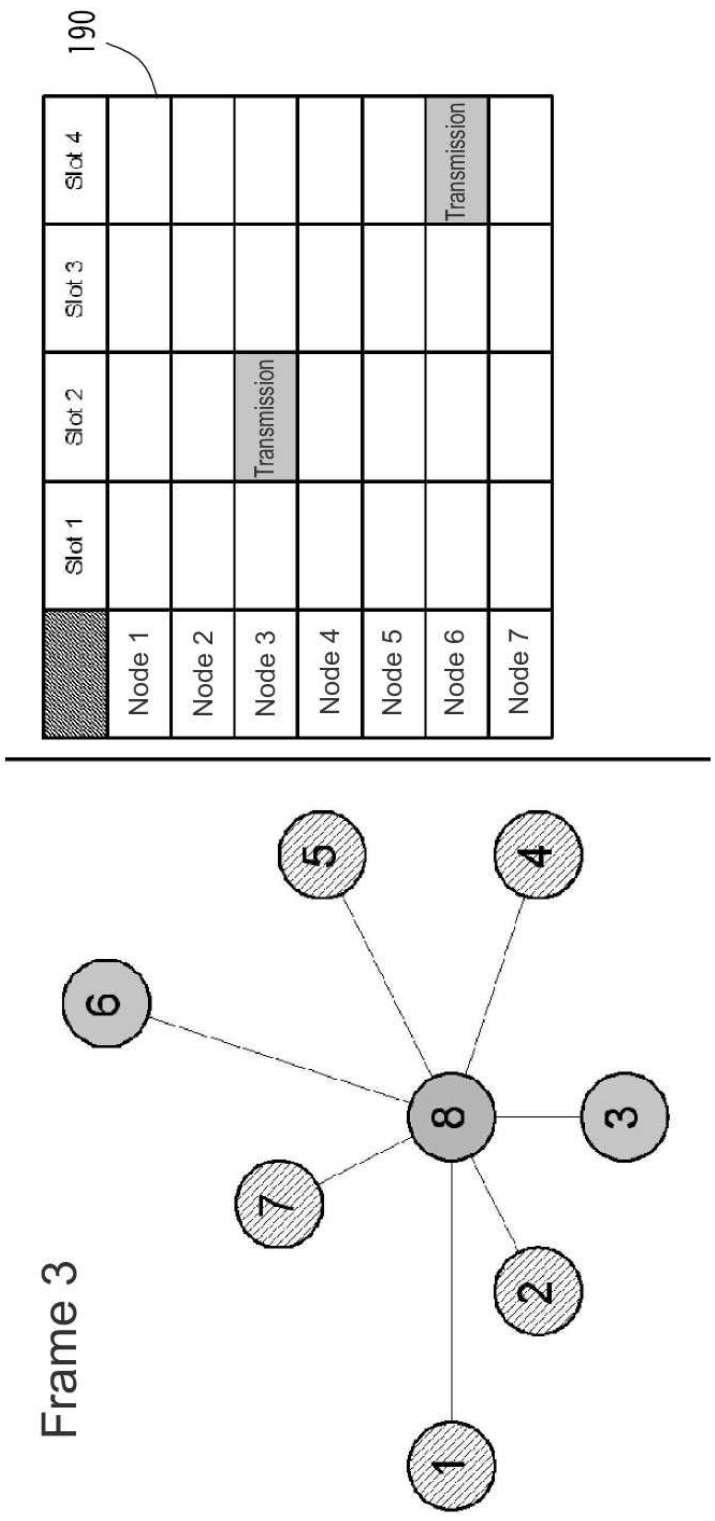

190
Slot 1
Slot 2
Slot 3
Slot 4
Node 1
Node 2
Node 3
Node 4
Node 5
Node 6
Node 7
Transmission
Transmission
Frame 3
1
2
3
4
5
6
7
8

FIG.10

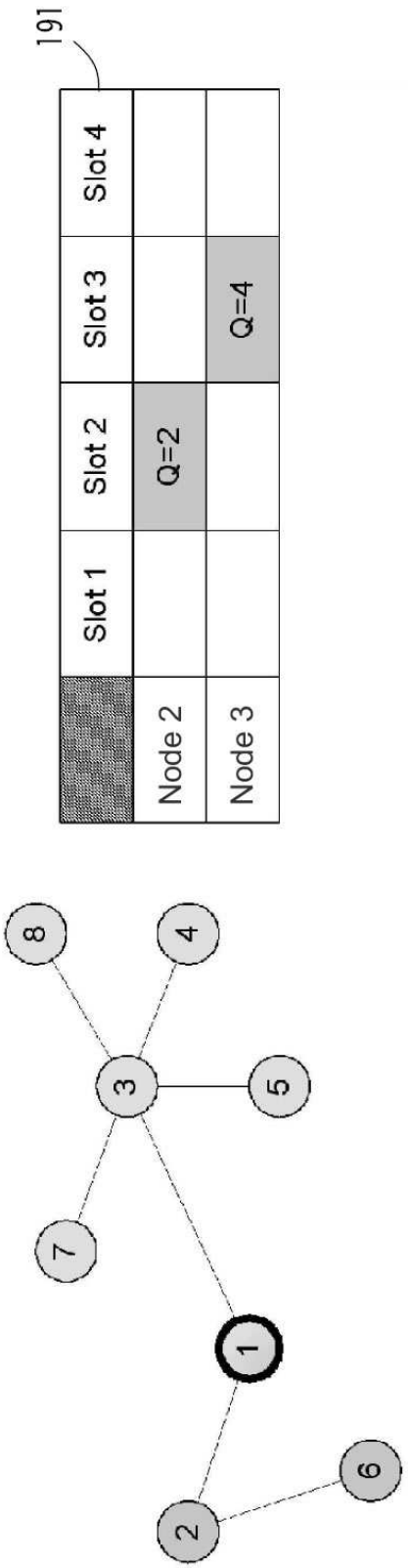


FIG.11

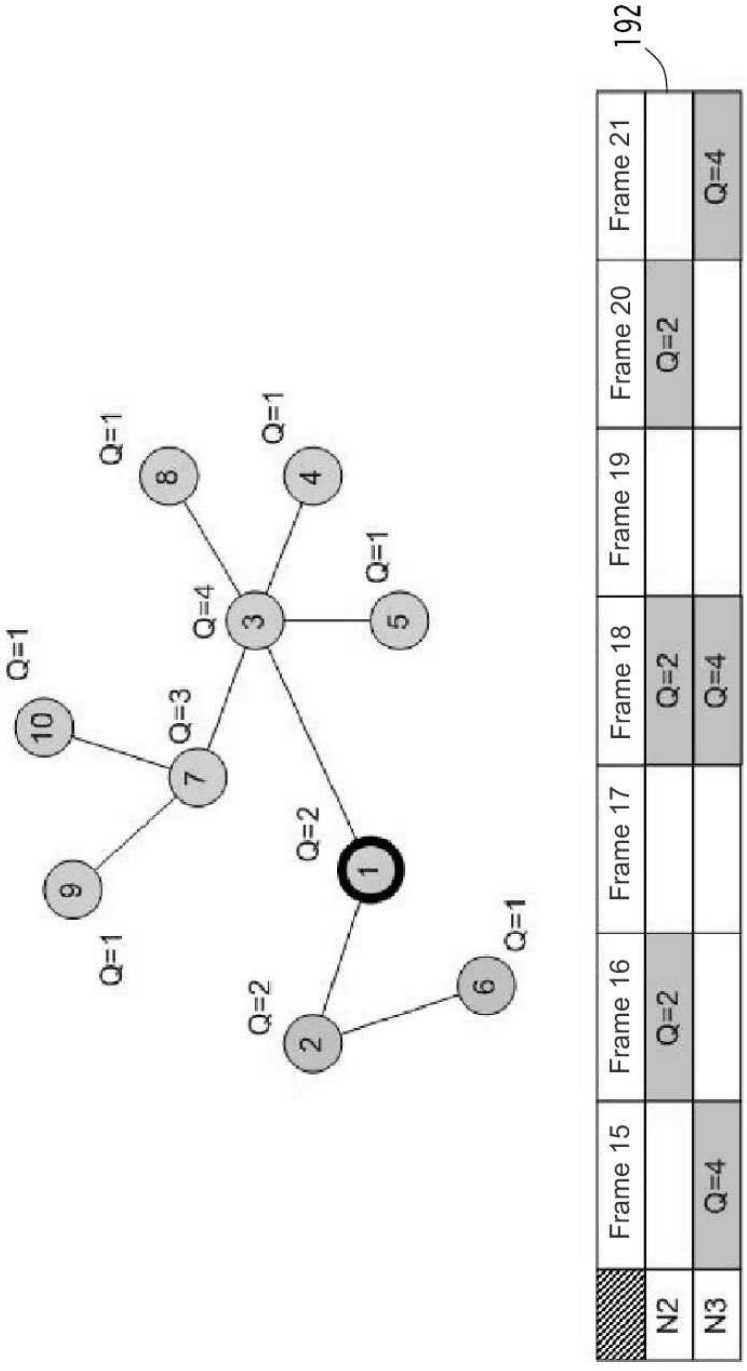

Q=1
Q=1
Q=1
Q=1
Q=1
Q=3
Q=4
Q=2
Q=2
Q=1
1
2
3
4
5
6
7
8
9
10
192
Frame 15
Frame 16
Frame 17
Frame 18
Frame 19
Frame 20
Frame 21
N2
N3
Q=2
Q=4
Q=2
Q=4
Q=2
Q=4

FIG.12

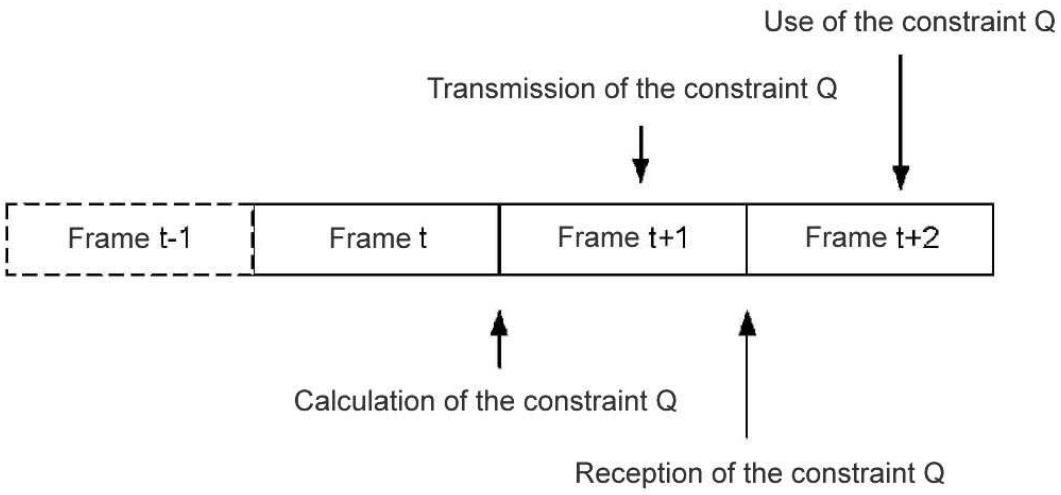

Use of the constraint Q
Transmission of the constraint Q
Frame t-1
Frame t
Frame t+1
Frame t+2
Calculation of the constraint Q
Reception of the constraint Q

FIG.13

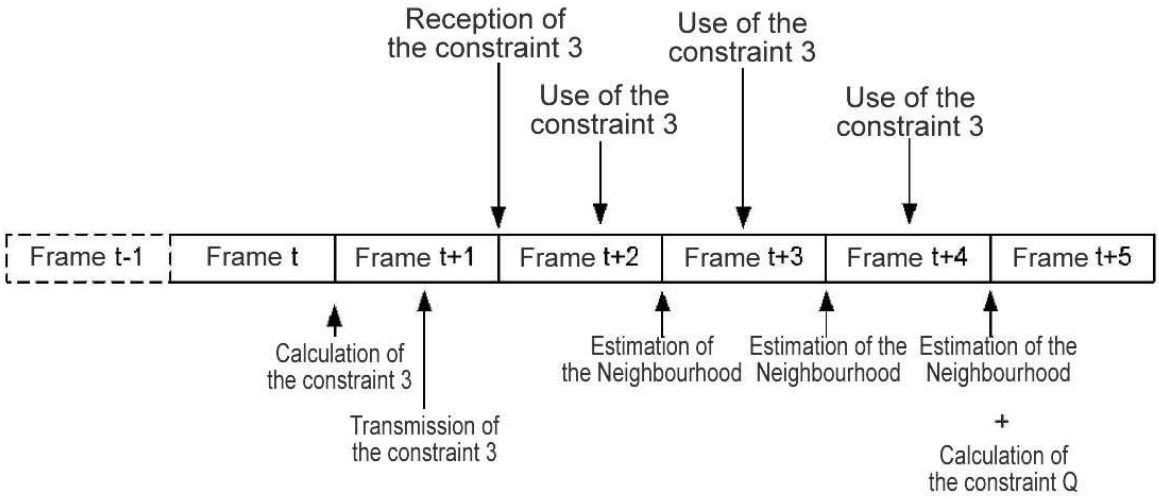

Reception of the constraint 3
Use of the constraint 3
Use of the constraint 3
Use of the constraint 3
Frame t-1
Frame t
Frame t+1
Frame t+2
Frame t+3
Frame t+4
Frame t+5
Calculation of the constraint 3
Transmission of the constraint 3
Estimation of the Neighbourhood
Estimation of the Neighbourhood
Estimation of the Neighbourhood
+
Calculation of the constraint Q

FIG.14

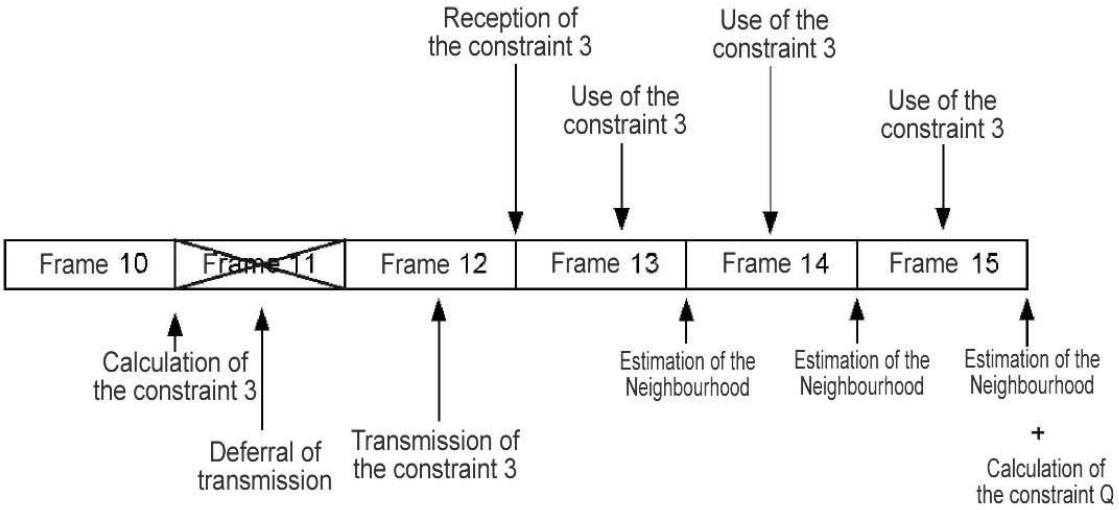


FIG.15

200

	Frame 14	Frame 15	Frame 16	Frame 17	Frame 18	Frame 19	Frame 20	Frame 21	Frame 22
N1 Q=2 q=4	E	E V(1)	E V'(1)	Tx	E	E V(1)	E V'(1)	Tx	E
N3 Q=4 q=3	V'(3)	Tx	E	E	E	E V(3)	E V'(3)	Tx	E
N7 Q=3 q=4	E V(7)	Tx	E	E	E V(7)	Tx	E	E	E V(7)

E	Estimate
E V(x)	Estimation + Calculation of the neighborhood of the node x
Tx	Transmission of a new constraint (after updating)

FIG.16

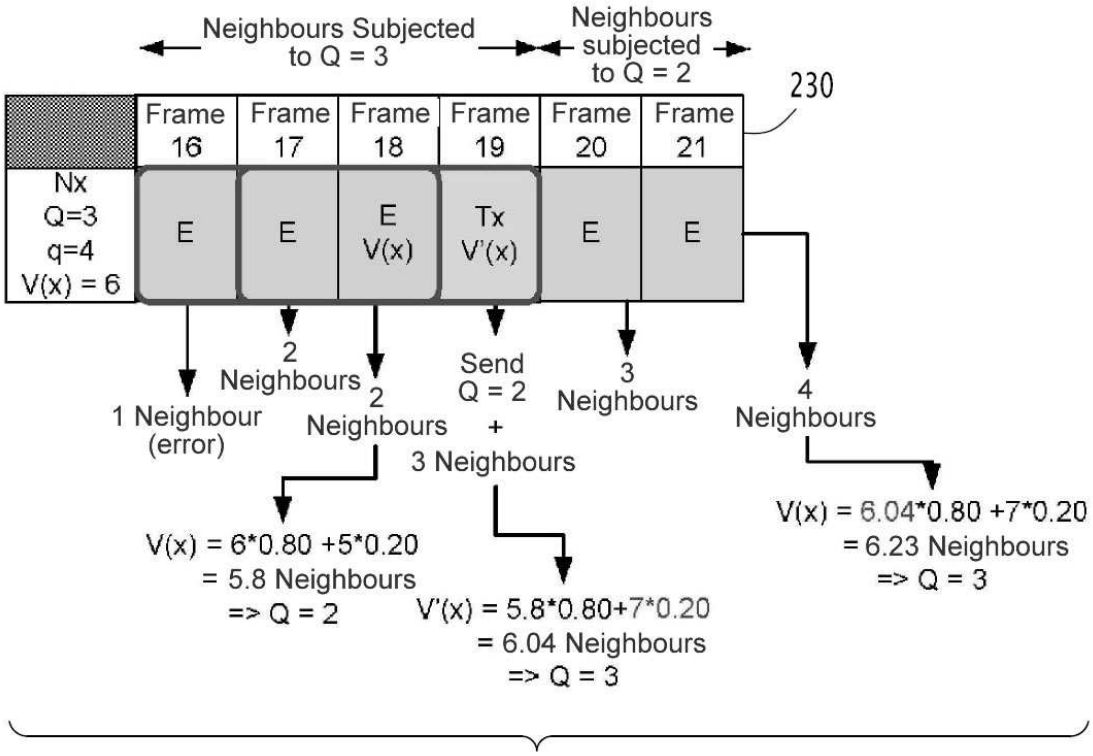
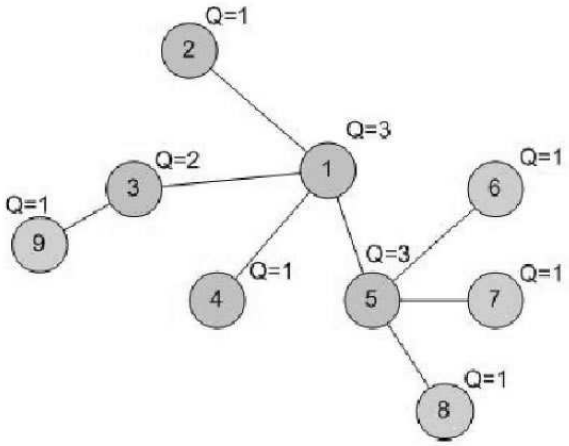

Neighbours Subjected to Q = 3
Neighbours subjected to Q = 2
230
Frame 16
Frame 17
Frame 18
Frame 19
Frame 20
Frame 21
Nx
Q=3
q=4
V(x) = 6
E
E
E
V(x)
Tx
V'(x)
E
E
1 Neighbour (error)
2 Neighbours
2 Neighbours
Send Q = 2 + 3 Neighbours
3 Neighbours
4 Neighbours
V(x) = 6*0.80 +5*0.20
= 5.8 Neighbours
=> Q = 2
V'(x) = 5.8*0.80+7*0.20
= 6.04 Neighbours
=> Q = 3
V(x) = 6.04*0.80 +7*0.20
= 6.23 Neighbours
=> Q = 3

FIG.17



194 Node 1 : q = 2

Frame 12

	Slot 1	Slot 2	Slot 3	Slot 4
Node 2	Tx Q=1 q=1			
Node 3				Tx Q=2 q=1
Node 4		Tx Q=1 q=1		
Node 5		Tx Q=3 q=1		

193

Node 5 : Detection of error :
Q (3) > q (2) ➔ "Node 1 has not received my constraint "

Frame 13

	Slot 1	Slot 2	Slot 3	Slot 4
Node 1	Tx Q=3 q=2			
Node 6				
Node 7			Tx Q=1 q=3	
Node 8				

FIG.18

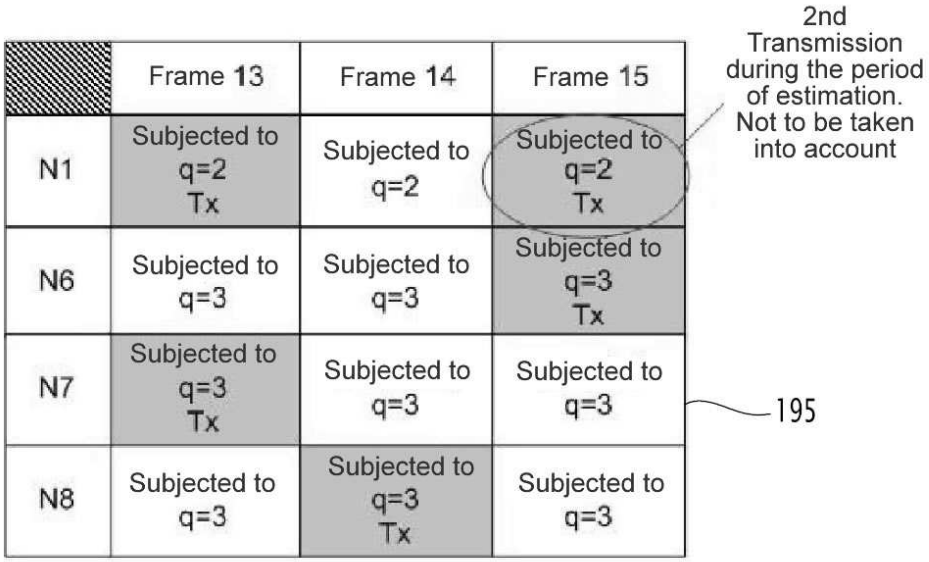

Frame 13
Frame 14
Frame 15
N1
Subjected to q=2 Tx
Subjected to q=2
Subjected to q=2 Tx
N6
Subjected to q=3
Subjected to q=3
Subjected to q=3 Tx
N7
Subjected to q=3 Tx
Subjected to q=3
Subjected to q=3
N8
Subjected to q=3
Subjected to q=3 Tx
Subjected to q=3
2nd Transmission during the period of estimation. Not to be taken into account
195

FIG.19

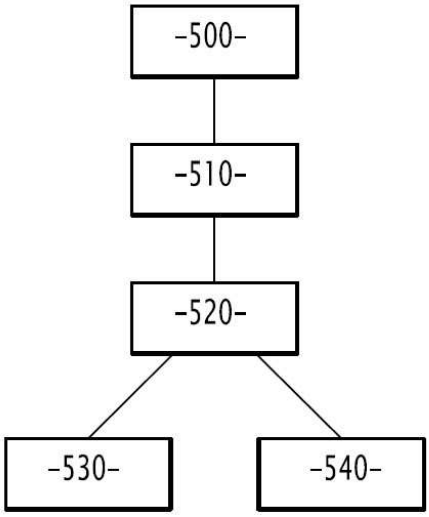


FIG.20

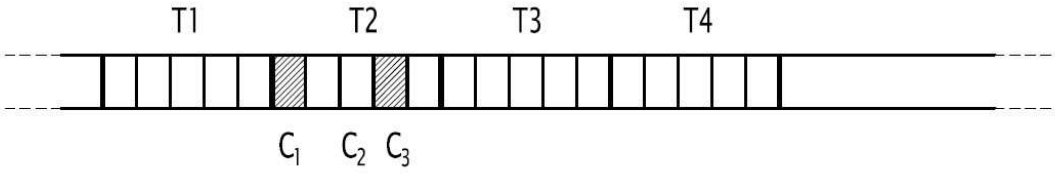


FIG.21

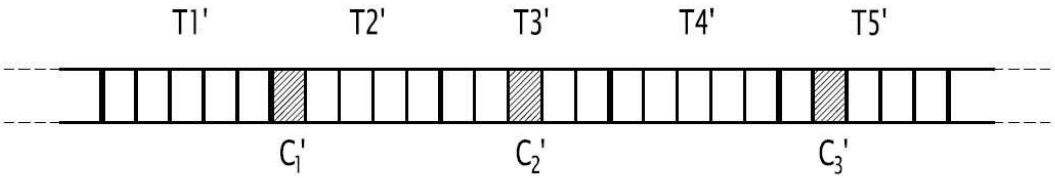


FIG.22