How robots are helping to map out the future for the NHS by supporting hospital staff

Paul Jenkins – AGM Facilities

Exceptional healthcare, personally delivered

Why we introduced robots into Southmead Hospital

- **Thinking differently**

- **New build opportunity**

- **Manual handling**

- **Time constraints**

- **Distances to be covered**

- **Minimise damage to the building**
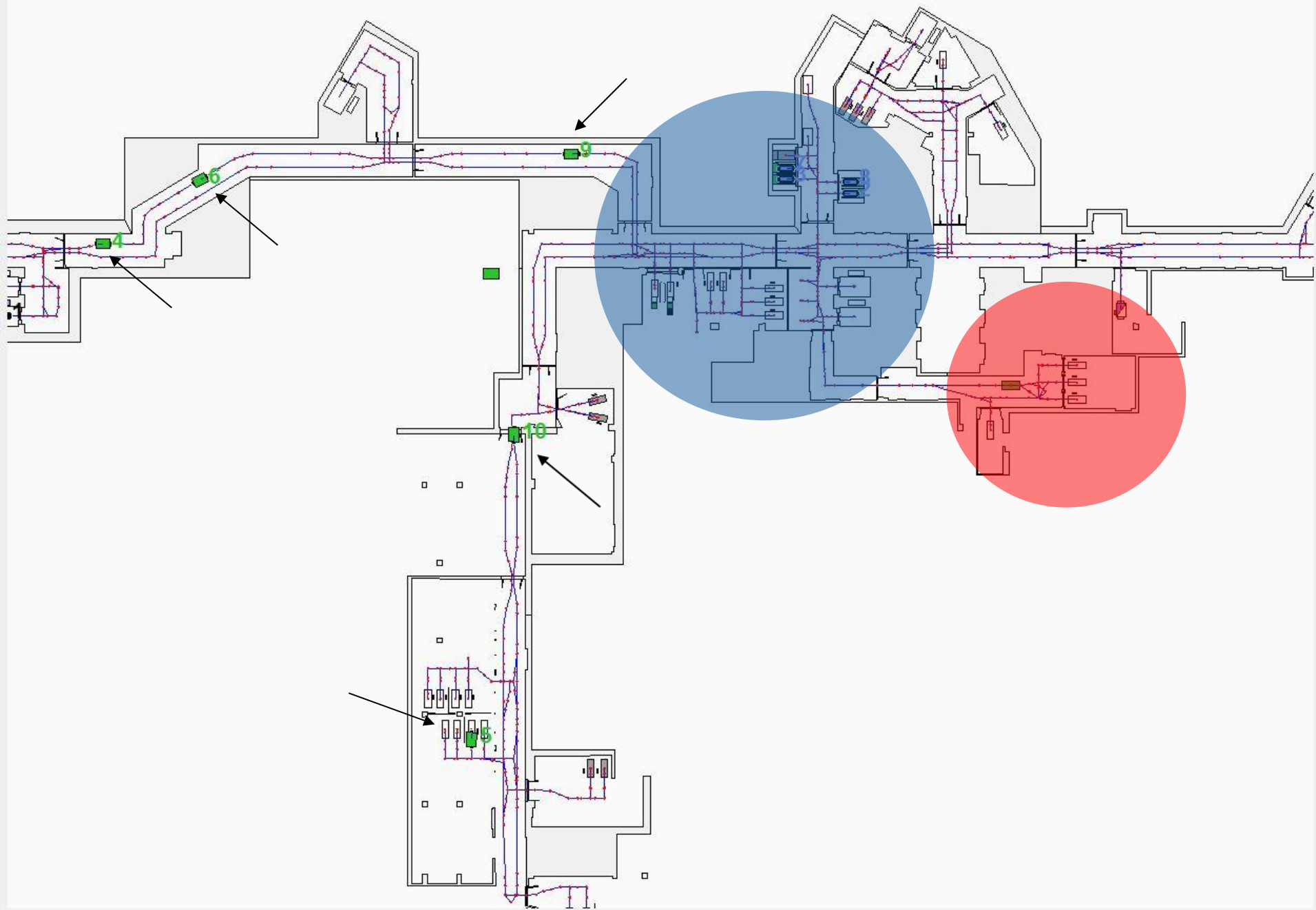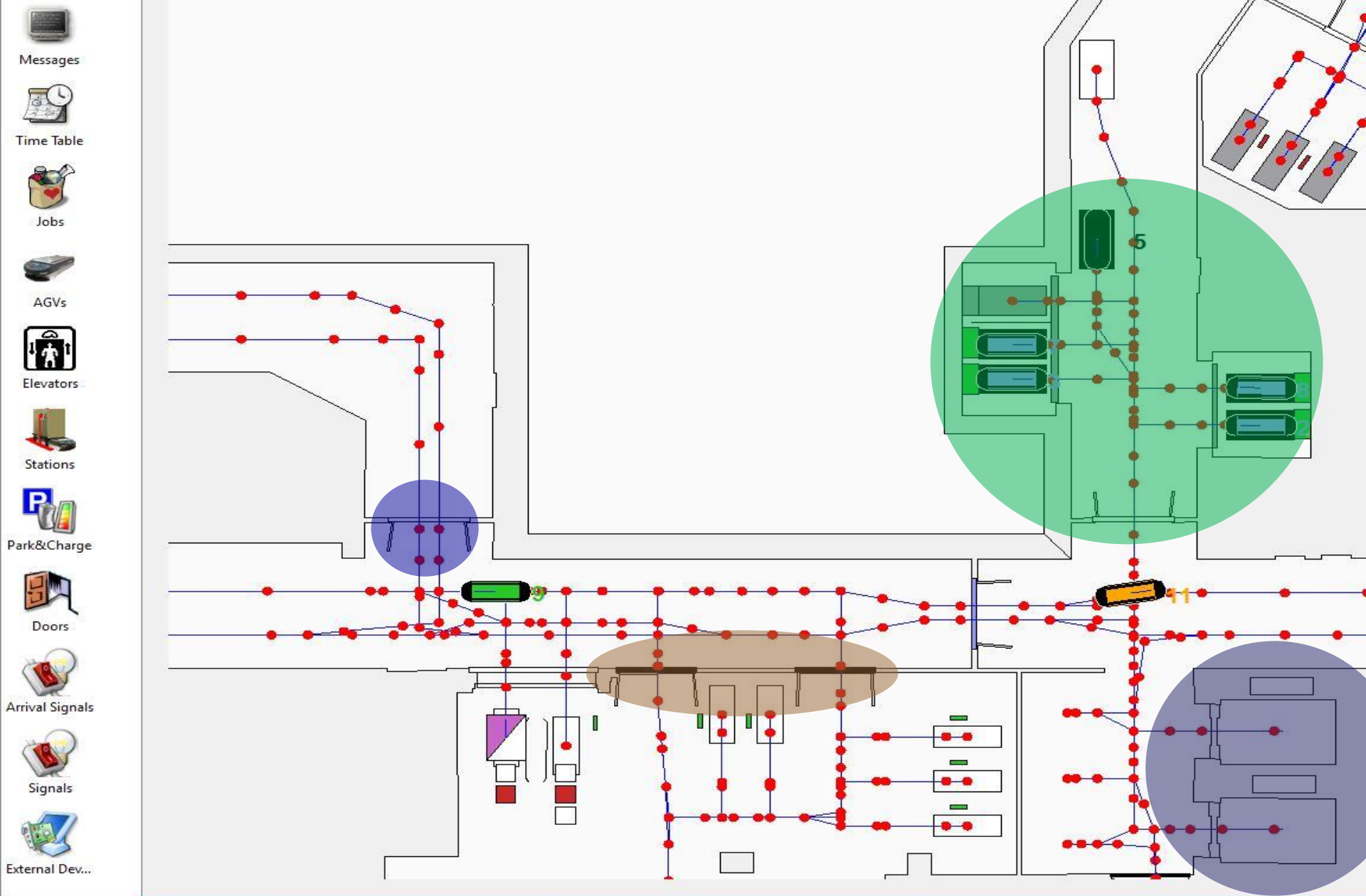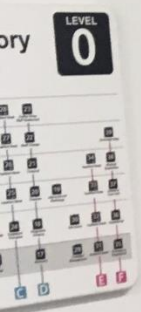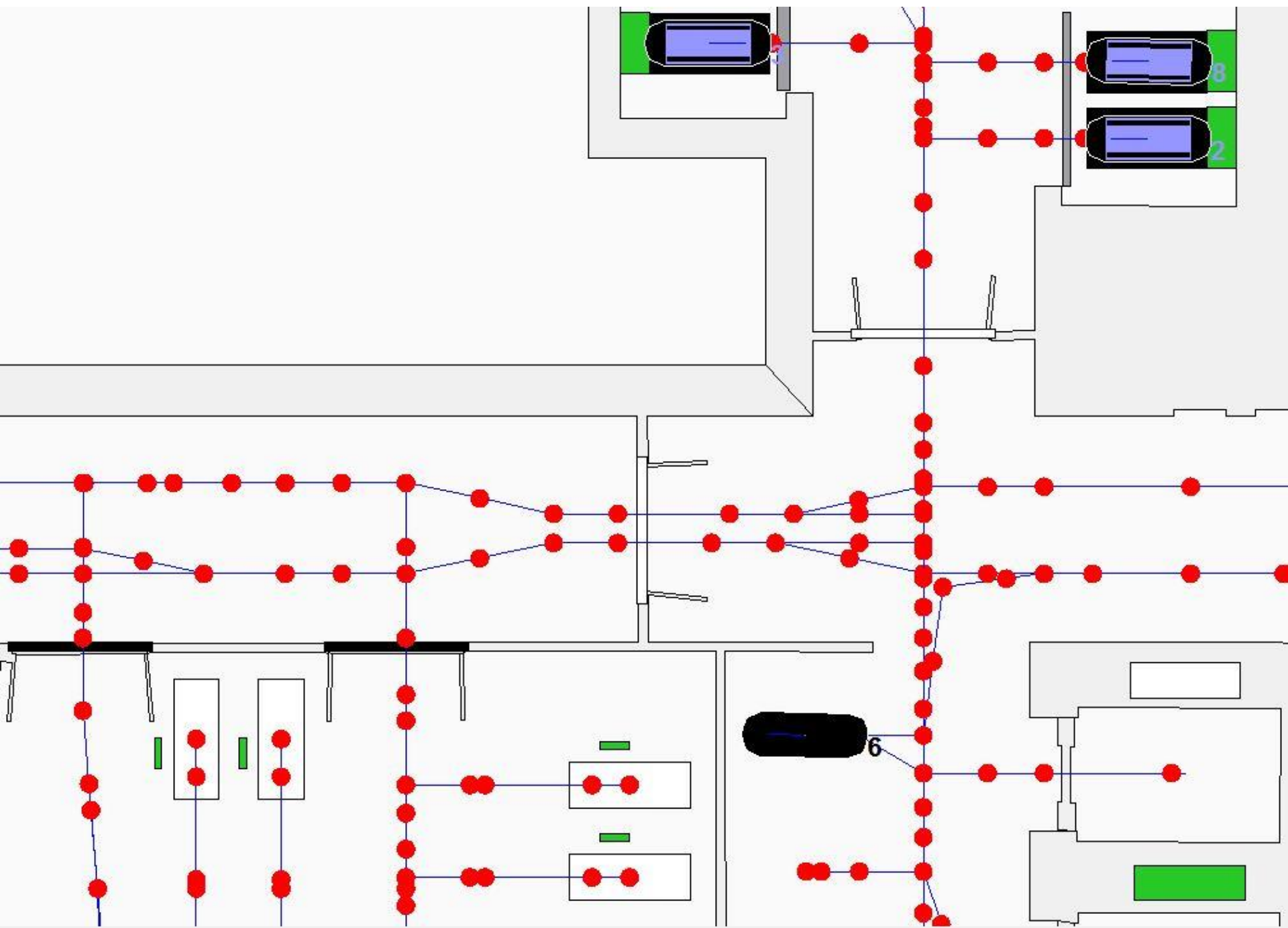
- **Dedicated 'Send' and 'Receive' hubs**

Sidebar icons (left column):
- Messages
- Time Table
- Jobs
- AGVs
- Elevators
- Stations
- Park&Charge
- Doors
- Arrival Signals
- Signals
- External Dev...

System panel:

System	
Time:	09:42:37
State:	Running
#AGVs:	8
#Carts:	21
#Jobs:	5
#Today:	104

Error Messages:

<2018-11-16 09:39:32.001> E External Unit Device 'SHB.PLC.P2.CR1': device error.
<2018-11-16 09:39:32.003> E External Unit Device 'SHB.PLC.P2.CS1': device error.

Gate Directory

LEV 0

6
5
4
3
2
1
0

AGV & FM Transports Only

Please use bed lifts

Taylor

North Bristol NHS

What our Automatic Guided Vehicles (AGV's) can do

They can be scheduled or called on demand to carry:

- **Linen**

- **Sterile Services**

- **Catering**

- **Pharmacy**

- **Materials Management**

- **Waste**

But never people!

Battery Value panel

Job Id	Battery Value
779887	49%
0	100%
0	100%
0	62%
779890	46%
779891	62%
0	57%
0	90%
779892	47%
779884	48%
0	50%
779889	33%

Agvs panel

Id	Host	State	Electronic State	Mode	Tcms2 State	Current Node
1	tc1	Halt	Charge	Autom...	To Charger	GF.C.CP_PP.CP5.Charger.Or
2	tc2	Confirmed Er...	On	Autom...	Normal	GF.W.X8.TG1.fromF12_10
3	tc3	Halt	On	Autom...	Reserved	GF.C.Kitchen.WL.Place1
4	tc4	Action	On	Autom...	Normal	L3.Core11.3Q-DP3(TH2).R1
5	tc5	Halt	On	Autom...	Normal	GF.C.DomesticWaste.XR.toF
6	tc6	Action	On	Autom...	Normal	GF.C.P2-D31.fromR_D_2a
7	tc7	Halt	Charge	Autom...	To Charger	GF.C.CP_PP.CP2.Charger.Or
8	tc8	Pre Action	On	Autom...	Normal	Lift.LG4_5.F4.Cabin.InBSOu
9	tc9	Halt	On	Autom...	Normal	GF.W.toCentral_51
10	tc10	Action	On	Autom...	Reserved	GF.W.AF6.X.toF6_14
11	tc11	Halt	Charge	Autom...	Battery L...	GF.E.CP_PP.CP6.Charger.On
12	tc12	Halt	Charge	Autom...	Battery L...	GF.C.CP_PP.CP4.Charger.Or

Jobs panel

	Job Id	State	Type	Source	Target	Alternative Target	Appearance	Priority	Pick Up	Arrival	Agv	Cart Type
1	779890	Transport	Transp...	L4.Core11.4G-DP3.SR3.S	GF.C.DomesticWaste.Return.R...		09:48:35	+00:00:00	09:52:04	10:01:37	5	DomesticWaste
2	779892	Transport	Transp...	L2.Core1.2A-HUB1.SR2.S	GF.C.Conveyor.R1.R		09:49:01	+00:00:00	09:59:24	10:09:09	9	StockItems-NHS_Supply...
3	779893	Fetch Reserv...	Transp...	GF.C.RandD.SR.5.S	L3.Core11.3Q-DP3(TH2).R1.R		09:53:36	+00:00:00	00:00:00		4	CleanLinen
4	779895	Fetch	Transp...	L3.Core9.3P-DP2(TH1).SR2.S	GF.C.Conveyor.R1.R		09:53:56	+00:00:00	00:00:00		8	StockItems-NHS_Supply...
5	779896	Waiting	Transp...	L2.Core9.2N-DP2(TH1).SR...	GF.C.Conveyor.R1.R		09:54:22	+00:00:00	00:00:00		10	StockItems-NHS_Supply...
6	779897	Fetch	Transp...	GF.C.RandD.SR.4.S	L3.Core9.3P-DP2(TH1).R1.R		09:54:28	+00:00:00	00:00:00		10	NonStockItems-NHRP
7	779898	Fetch	Transp...	L1.Core4.1L-RENAL-W2.S...	GF.C.DomesticWaste.Return.R...		09:54:43	+00:00:00	00:00:00		2	DomesticWaste

The benefits achieved to date

- **Reduced manual handing**

- **More time for patient logistics**

- **Minimise damage to the building**

- **Time bound food delivery**

- **Reduced delivery location errors**

- **Workforce duties realignment**

- **Clear corridors**

- **Easy expansion / increase of activity**

NHS
North Bristol
NHS Trust

Total Jobs Completed Per Month

NHS
North Bristol
NHS Trust
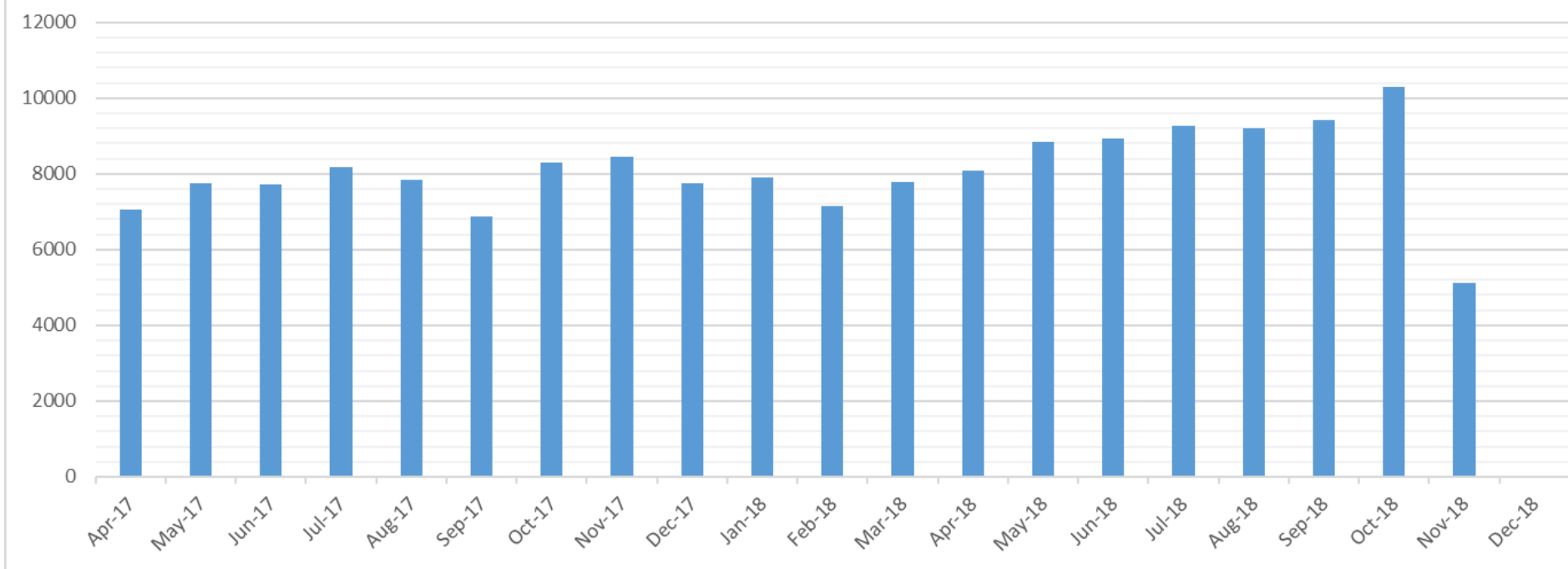
Lessons learned

- **Culture and acceptance**

- **Education / training**

- **Information Technology**

- **Maximum capacity**

- **Responsibilities, who does what?**

- **Who has priority?**

- **The disappearing card**

- **Other robots!**

Thank you for listening

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