

Modernization of the GSI Pager System for the FAIR Control Room



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During the beam time at GSI a failure can occur at any time and the operators have to solve it as fast as possible. If they are not able to solve the problem, they need the support of an expert and during the normal working hours at GSI they can use the existing pager system. A call is triggered by simply pressing a button on a keypad in the main control room.

Previously, the keypad was limited to a small number of pager numbers. Since the panel could not be expanded, additional experts had to be paged by phone. Some groups even had to share the same pager number.

From FAIR's perspective, with its predominantly digital control room, we developed a new software to meet the needs of such a large facility. At the same time, we optimized the existing hardware in preparation for the upcoming challenges ahead until FAIR's completion.

Initial System



Pager System Cabinet

Old Cabinet with Pager Central, PBX Interface & I/O-Modules. The wiring has grown wildly over the years. Cable routes have been rebuilt or removed as a result of renovation work.



Pager Buttons located in MCR

The pager buttons are integrated in a panel in the console. No more space for additional buttons. Some are already in double use.



System Upgrade

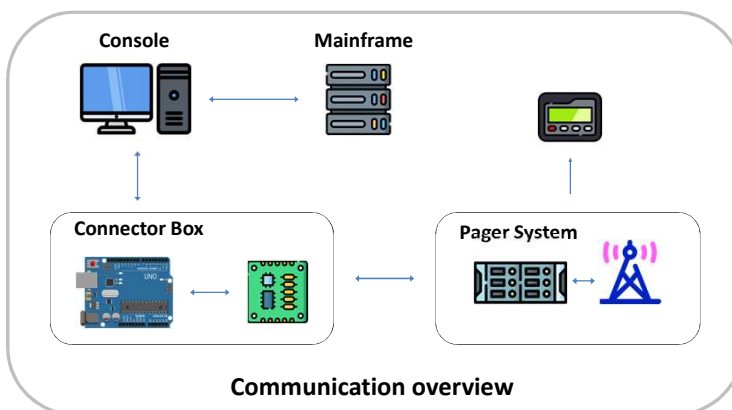


Pager System Cabinet with Connector Box

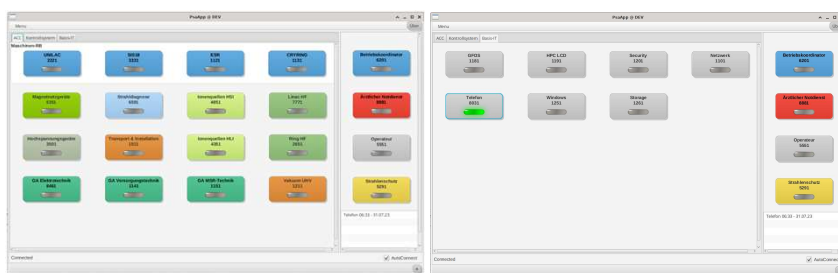
New Cabinet with Pager Central, PBX Interface, I/O-Modules and self-made Arduino based connector box. Hardwired connections are replaced with network converters.

The new PSA software is hosted on the server of the control system. In principle on each console can be used to send a call. But for better control, the program will start on a fixed screen.

The new GUI is permanently and flexibly extensible. The expert groups are grouped thematically on several tabs. The four most important pager numbers are always visible. The list shows the last requested pagers with date and time.



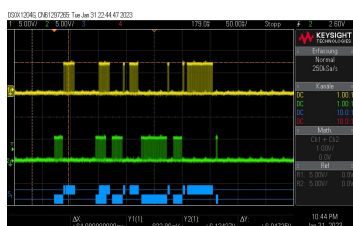
Communication overview



Pager Software

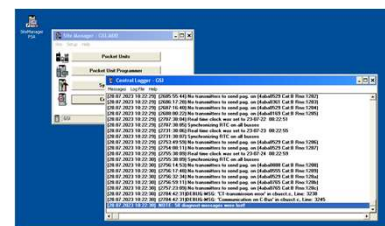
Further Projects

We started to analyze the communication protocol. So we can talk with one of the centrals. The next step is to develop an own online status monitoring software.



Protocol analysis

S1	4	38	30	46	46	1	33	30	2	36	30	1F	31	3	23									
A1	38	30	6	4	34	30	46	46	1	33	30	2	36	30	1F	32	3	2C						
A2	34	30	6	4	38	31	46	46	1	33	32	2	36	36	1F	31	3	26						
S3	4	34	31	6	4	33	32	46	46	1	33	30	2	36	30	1F	32	3	22					
A3	38	32	6																					
A4	4	34	32	46	46	1	33	32	2	36	36	1F	30	3	28									
S4	4	34	32	6	4	33	33	46	46	1	33	31	2	34	1F	31	2E	30	1E	33	1F	32	37	1E
A5	38	33	6																					
S5	4	30	34	46	46	1	33	32	2	36	36	1F	30	3	22									



Site Manager