

5. Meeting Modernisation HKR UNILAC - Potiboard-

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New Potiboard? (1)

- ◆ The (old) potiboard in production



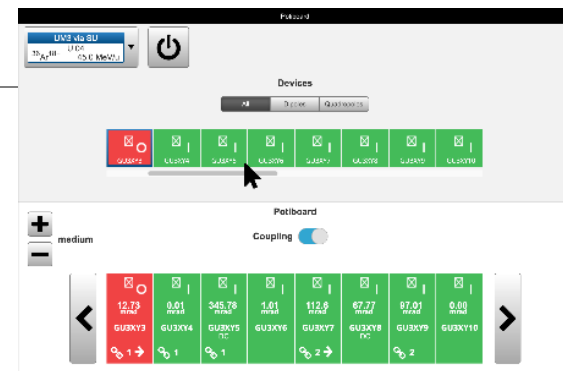
New Potiboard? (2)

- ◆ Development of a new rotary encoder device connecting to a GUI application to manually adjust magnet properties for beam optimisation.
- ◆ The system shell focus on UNILAC operation.
- ◆ The project includes the rotary encoder device and the GUI application.



Potiboard-Encoder-Device

USB



PotiboardApp Application

Project Reorganisation

- ◆ End of September 2023 the decision was taken to divide the 'Potiboard project' into two sub-projects:

- ◆ **Potiboard-Encoder-Device**

The group *Hardware and Electronics (HEL)* from ACO will develop, build and maintain the potiboard encoder devices.

Volker Kleipa is the sub-project lead.

- ◆ **PotiboardApp Application**

The main development of the application is outsourced. This sub-project is under supervision of the group *Applications (APP)* of ACO.

Jutta Fitzek and Christian Hillbricht (both of group *APP*) are the coordinators.

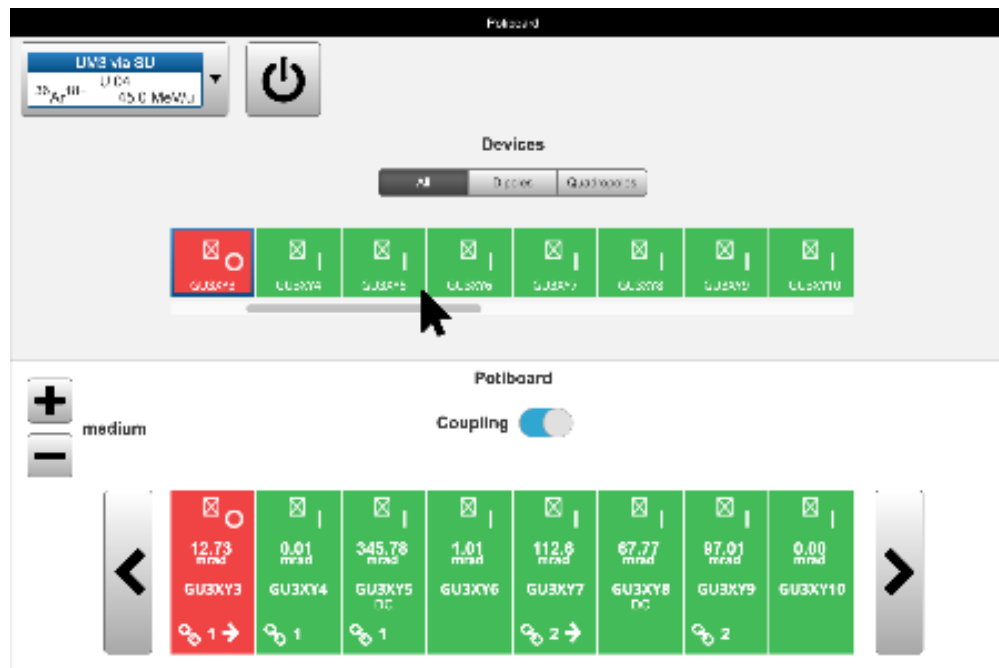
Arthur Halama of the group *Application Support (APS)* of ACC is **Product Owner**.

Sub-projects' coordination

- ◆ Sub-projects communicate and regular meetings are held. The set of requirements necessary for the Emergency System was discussed and planned together (contract).
- ◆ *Operations* provide help in and out of meetings by Arthur Halama (PO), Martin Stein (PM) and operators.
- ◆ Functional and Integration Tests are planned together, e.g. a *test encoder device* will be provided by Volker Kleipa to facilitate the outsourced development of the *PotiboardApp Application*.

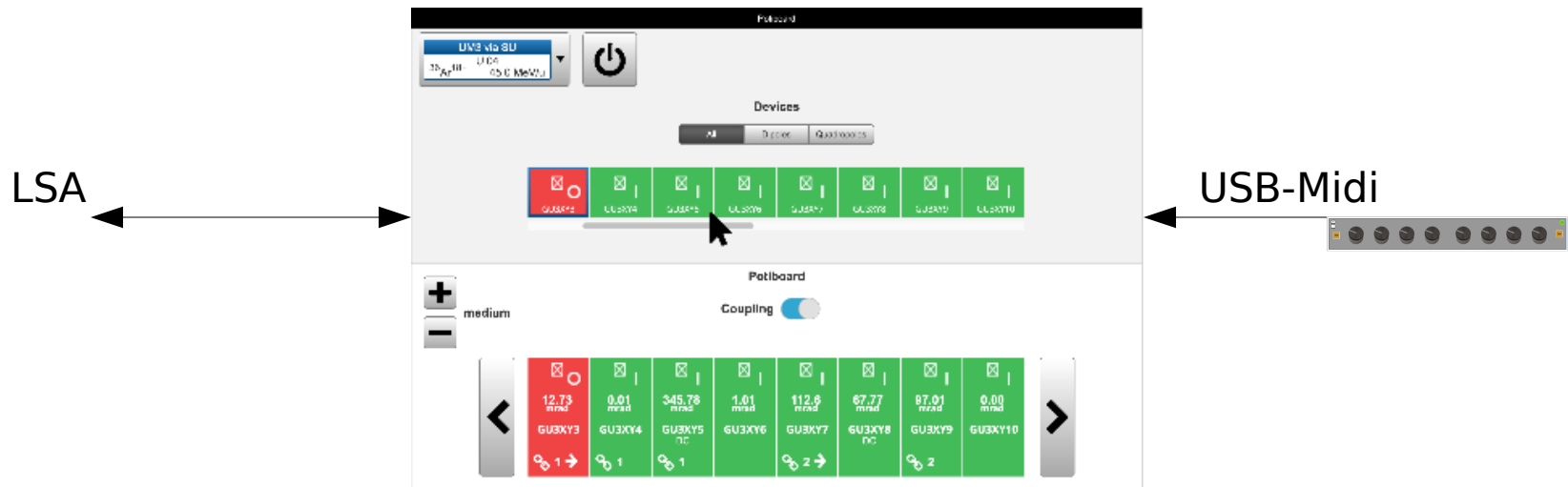
Status of sub-project PotiboardApp Application (1)

- ◆ The specification focusing on the Emergency System Milestone was made available to the outsourced partner.
- ◆ The development has started and several implementation goals have already been reached.
- ◆ Mockup:



Status of sub-project PotiboardApp Application (2)

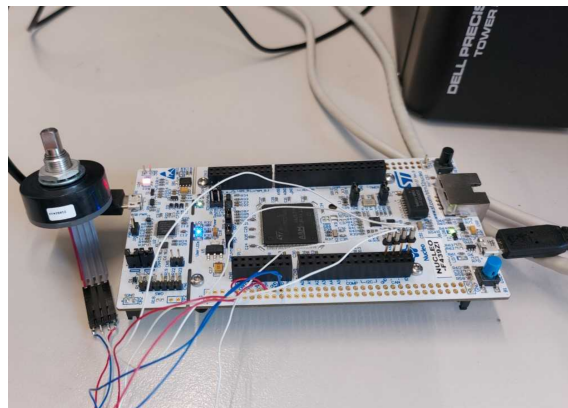
- ◆ Work on the interfaces to external components has started:



LSA support is given by the LSA team (APP),
USB-Midi support by the APS group

Status of sub-project Potiboard-Encoder-Device

- ◆ Microprocessor STM32 was evaluated and chosen
- ◆ Three STM32 boards of type Nucleo-F439ZI were acquired
- ◆ USB-Midi C library for STM32 was tested and adapted to the needs.
- ◆ First MIDI-data packages were sent to a PC and read out with Python code
- ◆ Package with STM32 Nucleo-F439ZI board and a optical rotary encoder has been prepared and is ready to be send to the external partner developing the *PotiboardApp Application*.



Milestone Emergency System (1)

Compulsary lists of requirements (uncomplete):

- ◆ PotiboardApp Application:
 - ❖ Context Selection Widget
 - ❖ Pictogram-View (horizontal row) of all magnets in chain (for selection)
 - ❖ Filter function
 - ❖ Second horizontal row with icon list representing selected magnets
 - ❖ A Left and Right Button to change (selected magnets) on beam line
 - ❖ Two Buttons to decrease/increase Increment
 - ❖ Sleep Button (block all input)
 - ❖ Coupling Switch (Master Mode)

Milestone Emergency System (2)

Potboard

LINE via SU
10 Apr 11:04
OSC Menu

Devices

Devices

GU3XY3 GU3XY4 GU3XY5 GU3XY6 GU3XY7 GU3XY8 GU3XY9 GU3XY10

Potboard

medium

Coupling

Device	Value	Unit
GU3XY3	12.73	mrad
GU3XY4	0.01	mrad
GU3XY5	345.78	mrad
GU3XY6	1.01	mrad
GU3XY7	112.8	mrad
GU3XY8	67.77	mrad
GU3XY9	87.01	mrad
GU3XY10	0.00	mrad

Milestone Emergency System (3)

Compulsary lists of requirements (uncomplete):

- ◆ Potiboard-Encoder-Device:

- ❖ Two equal devices should be ready for Emergency System
- ❖ Total of 8 rotary encoders should be in one line
- ❖ A light should indicate the connection status
- ❖ A Left and Right Button to change (selected magnets) on beam line
- ❖ Two Buttons to decrease/increase Increment



3. Potiboard Project Plan of Emergency System

	Description	Comment	Date
1.	Review	Status and Planning	17th-21th June
2.	Functional and Integration Test	Dry-Run July 2024	15th-19th July
3.	Review	Status and Planning	Begin of Sept.
4.	Review	Status and Planning	Begin of Oct.
5.	Functional and Integration Test for Emergency System	Dry-Run October 2024	22 nd - 25 th October
6.	Meeting für weiteres Vorgehen Richtung Vollausbau		Nov. 2024
7.	Fertigstellung funktionsfähiges Vollausbau-Potiboard	Zur Strahlzeit	Q2 2026

Test during Dry-Run July 2024

◆ Functional Test

- ❖ Connect *Potiboard-Encoder-Device* to one of the HKR Unilac console PC with (Rocky Linux)
- ❖ Discover the *Potiboard-Encoder-Device* on the HKR Unilac console PC in the *PotiboardApp Application*
- ❖ *etc.*

◆ Integration Test

- ❖ Set Unilac magnets of different types (MU, MS, QT, QQ) from the *PotiboardApp Application* with LSA
- ❖ Set Unilac magnets from the *Potiboard-Encoder-Device* via the *PotiboardApp Application*

