

SIS 18 BPM Upgrade

Minutes of Kick-off Meeting

Document History

Revision	Date	Changed/ reviewed	Section(s)	Modification
1.0	2008-07-23	iverstovsek / gjansa	All	Created.

1. MEETING MINUTES

These meeting minutes were written by Igor Verstovsek.

Date: 2008-07-22

Location: GSI, Darmstadt

Duration: 11:00 - 13:30

Present:

- Marcus Schwickert (GSI-SD)
- Udo Rauch (GSI-SD)
- Ludwig Hechler (GSI-BEL)
- Solveigh Matthies (GSI-BEL)
- Peter Kainberger (GSI-BEL)
- Ralph Baer (GSI-BEL)
- Kevin Lang (GSI-SD)
- Tobias Hoffmann (GSI-SD)
- Gasper Jansa (Cosylab)
- Klemen Zagar (Cosylab)
- Igor Verstovsek (Cosylab)

These meeting minutes also contain relevant information from two follow-up meetings:

- Technical meeting, 2008-07-22, 14:45 - 16:00, present: Marcus, Tobias, Ralph (present 15:30 - 16:00), Gasper, Klemen and Igor.
- Scope and budget meeting, 2008-07-23, 10:30 - 11:30, present: Ralph, Marcus, Gasper, Klemen and Igor.

At the beginning, Marcus has briefly presented the history of the project: this will be an upgrade project of SIS 18 BPM system. It was initially co-developed together with CERN, as part of the EU FP6 program. Later, GSI chose Liberas, and CERN did not, so the development took separate ways.

Brief self-presentations of the people present:

- Marcus Schwickert: head of beam diagnostic group
- Udo Rauch: development of algorithms, extraction of frequency data, PhD student.
- Ludwig Hechler and Solveigh Matthies: not involved in BPM project yet, will take part in FESA development.
- Peter Kainberger: responsible for supporting old GSI CS
- Ralph Baer: leader of control department. Ralph mentioned that the project involves work on complex devices and new development, so it is a showcase that SD and BEL groups can work together and that Cosylab can show its competence in delivering on a large project where the specifications are not known in advance.
- Kevin Lang: Libera, DAQ part, responsible for FPGA programming.
- Tobias Hoffmann: responsible for the project in the GSI-SD group.
- Gasper Jansa: lead developer on the project.
- Klemen Zagar: system architect. He will be present primarily at the beginning of the project.
- Igor Verstovsek: responsible for the project in Cosylab.

People not present at the meeting:

Marcus showed an overview slide of all the people that will be involved in the project. Note: Dmitry Liakin will only be available for the next two weeks.

For physics use cases, contact Mr. Forck.

Cosylab developers that will work from Ljubljana:

- Matej Sekoranja: lead developer for CERN. Knows FESA very well.
- Sunil Sah and Anze Zagar: developers for CERN / FESA.
- Primož Kolaric: software developer with experience with Libera Electron from ANKA.

1.1. PROJECT MANAGEMENT ISSUES

Cosylab will organize **project progress meetings** every two weeks. The purpose of the meetings is to:

- Present project progress - current developments and progress towards the milestones. Technical discussions will not be handled in these meetings.
- Gasper is in charge of the meetings. He prepares the protocol of the meeting. GSI does not need to prepare additionally for these meetings.

The meeting should have a constant time slot every fortnight - for example every second Monday at 14h. Gasper will synchronize the most suitable time with GSI.

We have defined the following **milestones** for the project:

- M0: Start of project, 2008-07-22
- M1: Use case definition and testing of technical risks, in October, 2008-10-10
- M2: FESA part of implementation complete.
- M3: All implementation complete, including GUI.
- M4: Project completed, including testing, bug fixing and documentation.

See also WP-GSI-SD-Libera_and_GSI-CS-FAIR-2008.xls for definition of work packages and milestones.

Dates for M2, M3 and M4 will be defined as soon as all the use cases and relevant risks are known.

The scope and budget of the project will be finalized during week 35 (25.8. - 29.8.). Until then Cosylab determines all the relevant use cases for the project, and provides time estimates, based on this input.

Gasper will prepare a project plan in MS Project. It should have approximately 25 tasks, not more. Take milestones into account.

External deadline for the completion of the project is summer 2009 (before August).

GSI will set up a Wiki page for the project.

Cosylab will set up a mailing list for the project. Name of the list will be

gsi-bpm@lists.cosylab.com

1.2. PROJECT SCOPE

Two representative use cases will be implemented. In the requirements and design document, also additional use cases will be collected.

Feedback is out of scope of this project.

The design should take into account also the following, which is not in scope of implementation for this project:

- Scalability of the system - up to 84 Liberass, at maximum 6 MHz revolution frequency. Idea for design is to use hierarchies of concentrators.
- Feedback. Question: is this feedback loop closed via the CS, or is it a sort of low-level feedback, as suggested by Dmitry (via DAC on the CCCP to a fast orbit corrector)

CERN BPM solution should be examined. CERN PS accelerator is comparable to SIS 18 in terms of BPM requirements. Uli Reich is contact person at CERN.

Block diagrams should be added to design document, in order to explain the layout of the system.

1.3. DEVELOPMENT ENVIRONMENT AND FESA

Development will be done using the GSI infrastructure for FESA. The infrastructure must be consistent with CERN's.

FESA 2.10: Tobias checks for FESA 2.10 and the GSI test system will be migrated to this version. CERN will assist in this migration. This will be done when Klaus returns next week (week starting with 28.7.)

FESA provides several modes for properties - e.g. expert (for advanced use) and normal (used in day to day operation).

One of the goals of GSI-SD group is to become FESA power user.

Computations could be realized within dedicated FESA classes. Cosylab should contact CERN if this approach is reasonable, and how to implement it.

Timing is not critical for this project. The necessary timing simulations will be provided for the purpose of this project by the GSI-SD group.

Fundamental parameters of the beam should be known at the FESA level (beam species, energy, etc.). In the final implementation, this information will come from the timing system. In the meantime, it will be acquired from somewhere else (e.g. configuration file).

1.4. CCCP AND COMMUNICATION TO LIBERAS

CCCP stands for Concentrator and Control ComPuter.

CCCP is large and powerful, so that it justifies its name :-).

CCCP has Scientific Linux 4 installed.

CCCP should fit nicely into FESA development environment.

Cosylab has already provided a draft design and architecture for implementation on the CCCP (see SPE-Beam_Position_Monitor.doc) that can serve as a reference.

To access the data from CCCP, NFS can be used.

Since CCCP has a lot of RAM, usage of ram disks is an option to explore.

Marcus and Tobias: it seems reasonable to use the 1 Gbit link for all data transfer, also for retrieval of raw data for offline purposes. Note: this results in additional work for Kevin (export of raw data via the SPF port, and the possibility to switch between modes). This design decision must be backed up by a relevant use case.

Tobias: FFT calculations will always be performed with a fixed number of calculation points, probably 2^n where n will be known and fixed. FFT calculations can be performed after all the data is acquired (it is not necessary to perform FFT calculations while the data is still being acquired).

1.5. SERVICE LAYER BETWEEN FESA AND GUI

All the essential CMW services that are needed to get the project completed should be explained in the design document.

1.6. END USER APPLICATION

- A rudimentary GUI should be implemented already in the beginning of the project.
- End user application should be decoupled or loosely coupled to the present system.
- The application should provide simple mode (for easy usage), and an expert mode with all the features. Gasper should take a look at the application that is currently being used; the functionality of the current application is the minimal requirement.
- Definition of how the GUI should be implemented should be synchronized with Ralph and GSI-BEL group.

On-line and offline disposal - terms, as defined by Tobias:

On-line: you see the data cycle by cycle (in "real-time" for the human user)

Off-line: you see the data within reasonable time (a few seconds)

The expected response times should be clearly specified in the use cases, since the design will rely on them.

1.7. NEXT STEPS

Use cases will be known by the end of August - relevant people that will know how to state the use cases will return in the second week of August.

Next progress report meeting will be on Tuesday, August 5th.

Initial work for Gasper:

- Helping transition of FESA 2.9 to 2.10 in GSI development environment.
- Work on CCCP - performance testing and evaluation (task 3 from CBU). 10 Gbit eth card, switch, benchmarking.

- Understanding of the Libera, performance testing. Kevin Lang has the overview of the Libera modes supported.
- Work on use cases and design document. Finish getting requirements, refine time estimates.
- Design of FESA classes. Design should include comparisons to the system used at CERN.
- With Wolfgang K. - demonstration of existing BPM application at GSI.
- Talk to Mr. Kaufmann about requirements. He is part of GSI-SD group but also operator.
- Time stamps to be defined and included in the design (with Kevin).