

CD Help for Beams

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CD Briefing

April 24, 2003

CD help for BD: Strategy

- Strategy for selection
 - Look for projects that are clearly defined and limited in scope
 - Determine contact person or established management chain inside or outside BD
- Priorities
 - Projects that will have an impact on Run II a luminosity
 - Projects that will save time for the experts, usually in the areas of testing and monitoring
 - Projects that will increase reliability
 - Prototypes for long-term improvements

Shot Data Analysis

- The Computing Division has contributed:
 - Engineering support for studying performance and robustness of the data paths.
 - Application programmers to write applications to present the data to the beams community.
 - Paul Lebrun has worked on data analysis.
 - Genser and Kouropatkine have created transverse and longitudinal Emittance tables including data verification and validation.
- Prospects:
 - Additional work is required to save D44 data (1 Hz data).
 - This work will probably be taken on by BD
 - Work on the DA for the SDA is on hold
 - This project may require more effort if it is decided that the problems with the data acquisition will force a rewrite of some of the infrastructure software that is currently supported by the Beams Division.
 - Application development work continues but at a slower pace.
 - The analysis work continues.

Recycler Ring Rehabilitation

- The goal was to come up with plan that will lead to a fully commissioned recycler in the Spring of 2003. (Now 2004?)
 - The recycler project RRR was started in the early fall 2002
 - Don Petravick was assigned as Software coordinator.
 - Sergio Zimmermann was asked the engineer for Instrumentation
 - (Joel Butler headed the Software/Instrumentation project.)
 - It was expected that Eric Nielsen would be part of this team (50% paid by BD).
- The RRR team did a first assessment of the recycler program.
 - There was a long list of work to be done on both Instrumentation and Software
 - Don requested about 7-10 people for software over the next 6-9 months. In the end, we contributed 2 people for flying wire and BPM software

Main Injector/Recycler

(Inside the Beams Division, the MI has been in the same department as the Recycler.)

- CD contributed to several projects in the recycler RRR project:
- The flying wire This project seems to be going well.
 - The flying wires were installed in the January shutdown but there were vacuum problems
 - Not currently installed.
- Recycler BPM project.
 - The BPM project was reviewed a few months ago
 - Production work began in early 2003.
 - CEPA/ESE and CSS/ESD are working on revising the preamps and some other electronics.
 - Marc Mengel is working on the calibration application software.
- MI SBD analysis (includes FE software)

Tevatron projects

- Application for emittance studies:
 - Luciano Piccoli worked with Valeri Lebedev on a program to semi-automate beam studies and return the data directly to disk for analysis. (Complete – not fully deployed)
- Orbit Smoothing
 - Mark Fischler is working with Mike Martens on an application for orbit smoothing of the Tevatron. This is a refinement of an existing algorithm, but should significantly speed up the existing process through automation.
- Tune meter (with feedback)
 - Paul Lebrun is developing an application that can measure the tune on the ramp and during the squeeze. John Marraffino worked on data access issues for this project.

Proton Source

- The Booster Monitoring project
 - This is a project to develop software to monitor magnets and other devices during ramping.
 - Jerry Guglielmo has working on this project with Eric Prebys, Peter Kasper and Jim Patrick.
 - It is expected that this new application will be useful for the other machines as well.
 - Almost complete, not deployed.
 - Phase II should be starting soon. It is not clear who will work on Phase II.

Instrumentation

- The instrumentation group used to be part of a larger group RF&I.
 - It was reorganized in the fall and was split apart from the RF group.
 - Bob Webber is now the head; Stephen Pordes has been our main contact over the past year.

We have been asked to help the Instrumentation group with Lab View.

- Dave Slimmer has been working with the instrumentation group since last summer for the next few months.

Controls

- Dinker Charak has been working with VXWorks
- Vax migration project
 - Joy Kyriakopoulos worked on a utility program to work with the new Java infrastructure.
 - Ron, Jerry and Luciano have developed some experience with the controls system.
 - There is much more to be done in the long term, but we need to know the plan.
 - Additional help for Vax migration?
 - There is a need for a review of the controls system and the migration plan
 - I expect that this review should be organized sometime soon.
 - Should we do more?

Beams Simulations in CD

- Space charge simulations for the Booster (Spentzouris, Amundson)
 - Developed simulation package and have tested the results with data from the Booster.
 - The project is Scidac funded
 - There is a connection to the other SCIDAC funded accelerator simulation groups. One of these groups is working on the Tevatron.
 - It would be good to strengthen this effort.

Other projects

- **BD Document Database (Lynn Garren)**
 - Deployed -- This project has been very well received. We currently maintain the computer and do the backups. (Will discuss with CSS on maintenance and backups)
- **BD reviews**
 - Pushpa has been working with Mike Church to set up technical reviews (for example on BPM systems). She is also helping with other internal and external reviews.

Conclusions

- The help CD has provided has been appreciated by the members of the BD including the new division head and the new head of the instrumentation group.
- The work is not done. There is much more that could be done.
- We have tried to be constructive and have tried not to redesign their systems from scratch -- but this may be necessary to be helpful in the future.
- We need to develop a plan for long term support.

- A Big Thank You to everyone who has contributed to this effort.