Online & Operations Summary

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UCR

MICE CM32 – RAL Feb 2012

MICE Online 2011 – October CM

- Group had settled into new reorganization
- Bi-weekly meetings plus additional offline scheduled discussions to address specific needs
- Very busy improving our infrastructure and preparing for the December data-taking run
- Developing plan for Step IV
- Beginning to implement changes needed for Step IV

Online Group – Who Are We?

- **Linda Coney** – head and Online Reco
- **David Colling** – head of Software & Computing, contact for GRID PP
- **Yordan Karadzhov** – incoming head of DAQ, OnMon
- **Pierrick Hanlet** – head of C&M, connection to Config DB
  - **Daresbury Lab – C&M - Adrian Oates & Brian Martlew** (head of DL group)
  - **Paul Hodgson** – C&M (target)
  - **Matt Robinson** – C&M (target,tracker), EPICs connection to Config DB
- **Mike Courthold** – Networking
- **Henry Nebrensky** – GRID, Data Transfer, MICE Data Manager
- **Janusz Martynikk** – MICE Data Mover – Data of Online System
- **Paul Kyberd** – GRID, Contact person for GRID PP
- **Matt Robinson** – SysAdmin for MLCR Computers
- **Craig Macwaters** – MLCR Network, Hardware, Computing
- **Antony Wilson** – Config DB, MICE PPD IT Contact
- **Chris Rogers/Chris Tunnell** – link with Software Group

Progress[1] – Where We Stand Now

- **Overall**
  - Developed Online Group micemine webpage – includes agenda/minutes for all meetings
  - Completed extremely successful December run – more later – All
  - Submitted 5 abstracts to CHEP – all accepted – three talks – Antony/Matt L/Linda/Mike J/Chris T

- **Infrastructure**
  - Recovered micewww – Antony
  - Prepared OS upgrade test computers and installed in MLCR – Matt R.
  - Miceraid1 updated to become active backup machine for miceraid2 (event builder) – Yordan/Matt R.
  - Updated OS on onrec machines – Matt R.
  - Using Launchpad as official code repository – All
  - Developing comprehensive backup plan – Matt R/All
  - Decided to use SL5.7 as MLCR OS – All
  - Developed new plan with PPD for front-of-house machines (micewww, EPICS gateway, mousehole, Jenkins test machine, onrec mimic machine, new database machine) – Antony

Progress^2 – Where We Stand Now

- **C&M – more on this later…**
  - Began new work on tracker C&M – Matt R./Pierrick
  - Finished new HV control application – Pierrick
  - New target controls – Matt R
  - Error handling/announcement for Target – Matt R/Paul S
  - Webcams active on MICO page again – Henry/Antony
  - New monitoring for Target, DAQ, DATE, CKOV – Pierrick
  - Alarm Handler Upgrade – Pierrick
  - Send info to DAQ – Pierrick/Yordan
    - Beam type and polarity, magnet currents, target settings
  - Implementing MICE Run Control – Pierrick

- **DAQ – more on this later…**
  - Adapted DAQ to new target controller – Yordan/Vassil/Paul S.
  - Fixed timing of DAQ spill gate w/new target system – Yordan/Vassil/Paul S.
  - DAQ brought online smoothly for Dec run – Yordan
  - DAQ communicating directly with EPICs and ConfigDB – Yordan/Pierrick/Antony
    - Run number, trigger condition, scaler information/spill, DAQ status
  - Tracker unpacker done – Yordan

Progress^3 – Where We Stand Now

- **Online Monitoring/Reconstruction/Data Quality**
  - Prototype visualization tool written – Matt R.
  - Developed plan for Online Analysis (accelerator side) – Chris R./MICE
  - Restored full capability and ran G4MICE Online Reco – Chris R
  - Installed MAUS in MLCR – Chris R/Chris T
  - MAUS read data over socket in MLCR – Yordan/Vassil
  - MAUS Online operational – Mike J(talk)/Chris T/Durga

- **Data Transfer & Access**
  - All MICE data now on GRID – Janusz/Henry
  - Improvements made to datamover – Henry/Janusz/Matt R.
  - Imperial webserver now hosts MICE data – transferred from GRID for easy access – David C.

- **Documentation**
  - Updated instructions for DAQ, Online Monitoring, Set Particle Trigger, Set DAQ Spill Gate, Alarm Handler, Online Reco, MAUS Online, DataMover, Target Control

December Run - Milestones

Countdown to December running – December 1				
Task	Baseline	Status		
Target T2.9 installed on ISIS - Long	14/9/11			
Fix miceraid2 – Coney – fixed, but a MYSTERY	21/9/11		COMPLETE	
DAQ w/o EMR – Coney - COMPLETE	28/9/11			
EMR should be out - complete	15/10/11			
Unpacking PID detectors – Rogers - COMPLETE	1/10/11			
G4MICE OnRec ready - Rogers	15/10/11			
Step I C&M done – Hanlet – need doc.	15/10/11		IN PROGRESS	
Data-mover ready - Coney	22/10/11		COMPLETE	
TOF spacepoints – Rogers	1/11/11		COMPLETE	
OS upgrade done – Coney – not vital	1/11/11		IN PROGRESS	
MLCR backups – Coney – not vital	1/11/11			
Prototype online histos – Rogers	1/11/11		COMPLETE	
Work on proton absorber – Hanlet/Barber – not vital	1/11/11		later	
PPS must be commissioned – Hanson ask Macwaters – Done. PPS is on target.	7/11/11		COMPLETE Formalities	
Power substations tests complete - Nichols	10/11/11		15/11/11	COMPLETE
MAUS on OnRec01a - Rogers	15/11/11		COMPLETE	
OnMon running and beam test - Coney	5/10/11			
DK solenoid cool-down start 14 days before run start - Courthold	17/11/11			
Check that detectors can be turned on	17/11/11			
People	17/11/11			
Update documentation	23/11/11			
Config DB - Hanlet	1/12/11			
Computing access – Coney – not vital	1/12/11		IN PROGRESS	

- **Step I C&M**
- **DAQ**
- **Data mover**
- **OS upgrade**
- **MLCR backups**
- **Computing access**
- **MAUS online**

Next – Where We Need to Be

- **Immediate Future**
  - **Short March run – primarily testing for Software and Online**
  - **May/June EMR run – also run single tracker station**
- **Step IV – new milestones added due to progress being made**

DAQ Milestones

DAQ – Yordan Karadzhov			
Task	**Baseline**	**Status**	
Migration to the new version of the unpacking software, including software review.	1/9/11		**DONE**
Finalize the implementation of all EMR equipment in DATE	1/11/11		**29/2/2012 – Stands**
Create cosmic test stand for EMR modules at University of Geneva, using the latest version of DATE	1/12/11		
Extend the information provided by the DAQ to EPIS, including scaler information	1/01/12		**DONE**
Migrate LCR DAQ system to latest version of DATE	1/02/12		**1/5/2012 – May Run**
EMR completely integrated in the MICE DAQ	1/02/12		

- **Migrate to the new unpacking software – DONE**
- **Tracker unpacking – DONE**
- **Extend information provided to EPICs from DAQ – run number, errors, etc – DONE**
- **Finalize the implementation of all EMR equipment in DATE**
  - **Delivery date was 1/11/2011 – now 29/2/2012 – Late EMR to Geneva, December running**

- **Create cosmic test stand for EMR at UniGeneva**
  - **Deadline ➜ 29/2/2012**

- **Migrate DAQ to latest version of DATE – requires prototyping of this at Geneva – good progress being made**
  - **Deadline ➜ 29/2/2012**
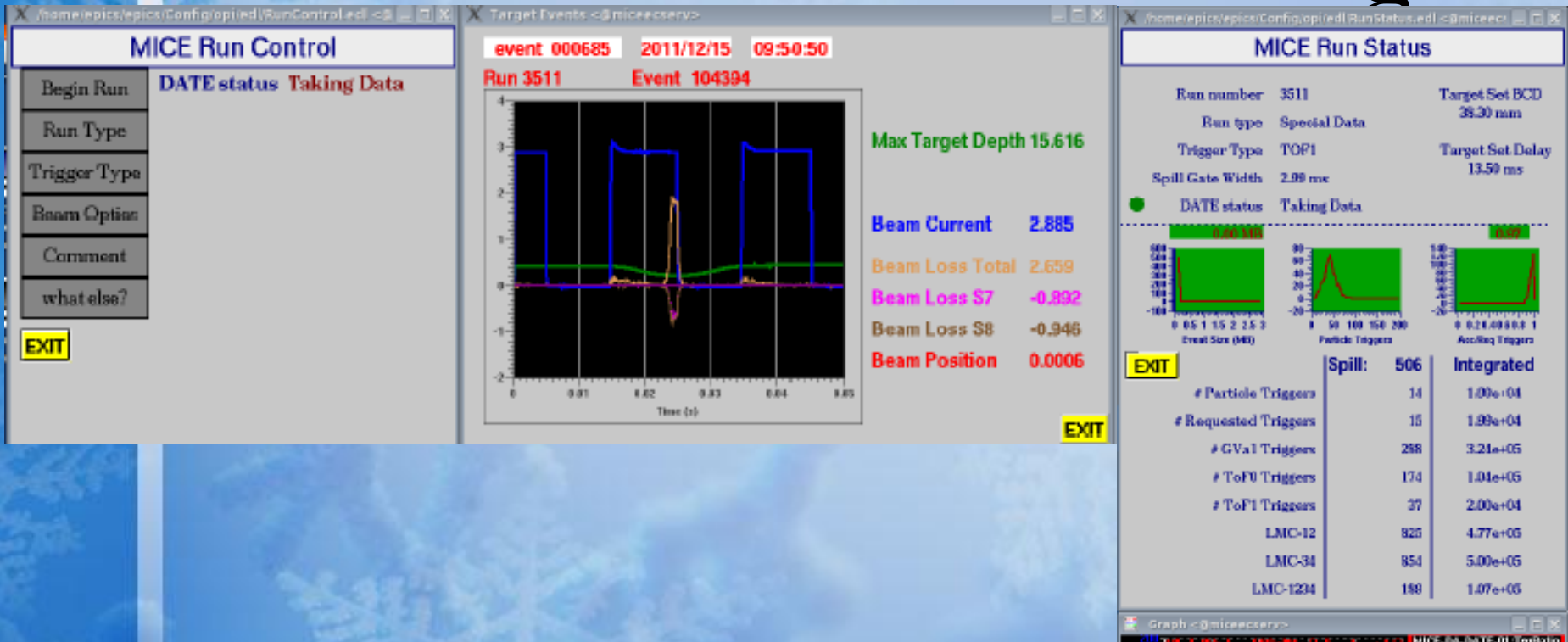 - **New event builder machine – Migrate to SL 5.7 and DATE 7.27**

Controls & Monitoring – Pierrick Hanlet

Task	Baseline	Status	
Config DB – Hanlet - COMPLETE	1/12/11		**DONE**
Complete Step I items – need doc.	15/10/11		
Tracker Initialization Controls	1/11/11		**1/3/2012 Stands**
Stand alone SS C&M	1/11/11		
Stand alone FC C&M	1/11/11		**25/3/2012 ?**
Absorber Controls	1/01/12		
Implement MICE State Machines	15/01/12		**15/4/2012 Stands**

- **Step I – DONE – need last 2% of EPICS documentation**
- **Stand Alone SS – on schedule for March 1**
- **Stand Alone FC – cooldown scheduled for 3rd week March – controls schedule matches this**
  - **Delayed from Feb 1**
- **Concern: need essential personnel in two places at once**
- **Absorber Controls – recently heard from DL that are in progress**
- **MICE state machines – on schedule for mid-April**

C&M Progress

- **New monitoring & Run Control**
- **Target – want to add correct beam loss & beam position**
- **Expand on Run Control**
- **Implement State Machines to define possible Operations Actions**

Top 10 Online Group Issues (Oct)

- **DAQ functional for EMR & Tracker**
- **C&M for Step IV**
- **Move to MAUS Online Reco/Data Quality**
- **Easy data access**
- **Equipment reliability**
- **MLCR Automatic & comprehensive backups**
- **Equipment reliability**
- **OS upgrade**
- **Agreement with RAL Networking for access to computing information & computers**
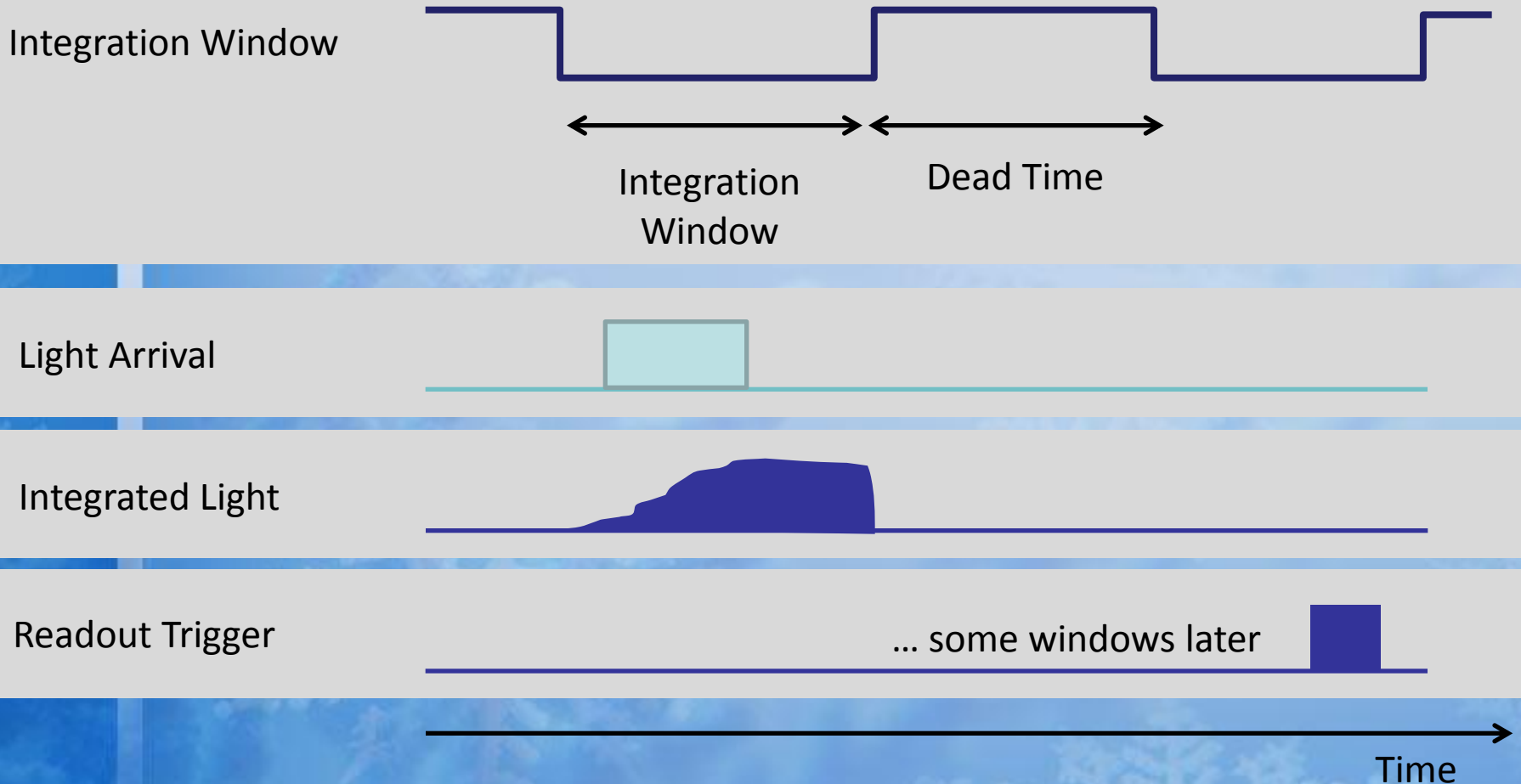- **?**

Timing

- **Master DAQ trigger – DONE**
- **Timing in of DAQ Spill Gate – DONE**
- **Incorporation of new tracker controls – DONE**
- **Tracker timing with ISIS RF – Ed O**
- **Timing with MICE RF? – Paul S**

A feature of the Tracker AFE Board

Integration Window

Integration Window   **Dead Time**

Light Arrival

Integrated Light

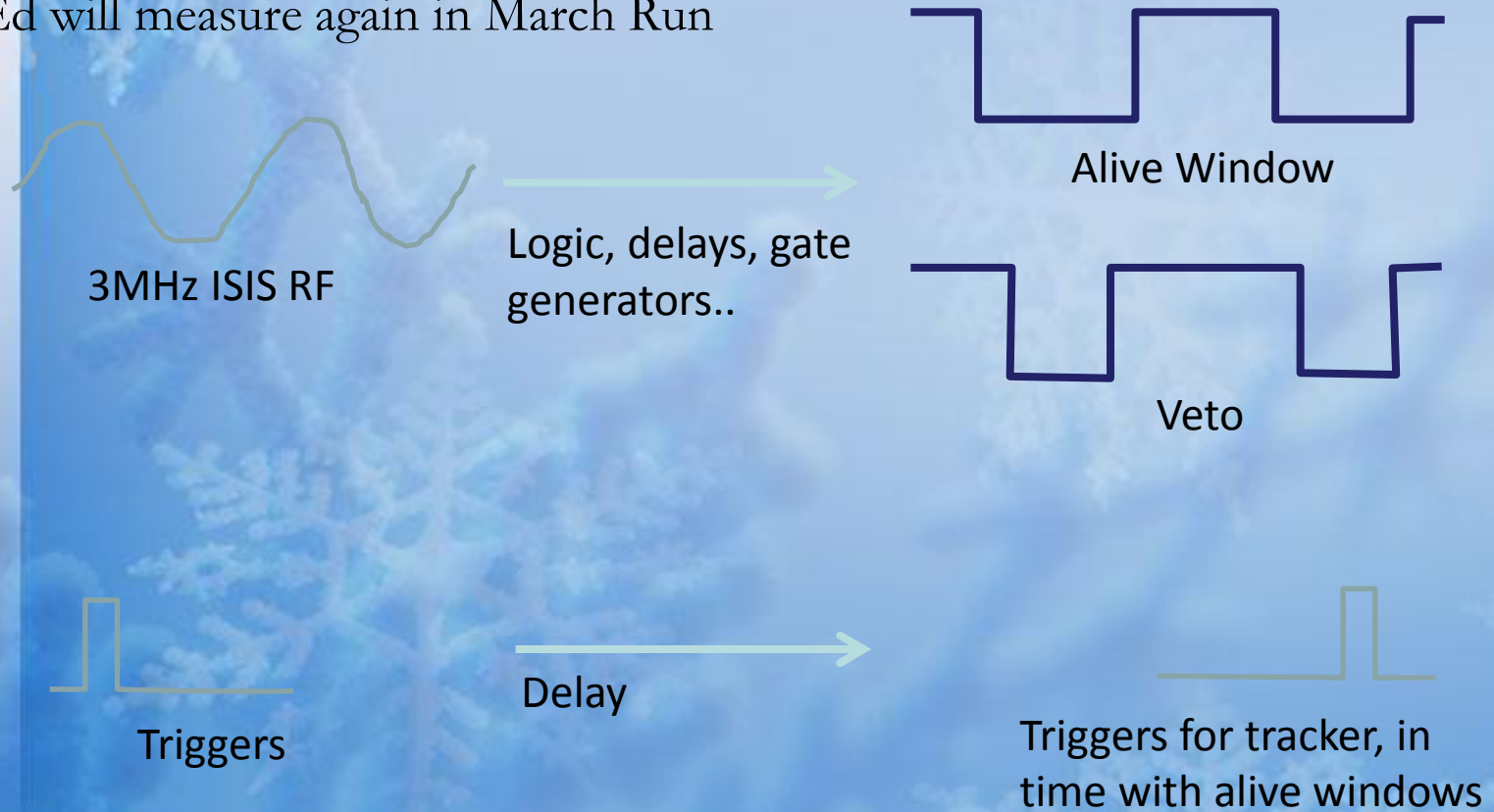**Readout Trigger**   ... some windows later

Time

- The tracker needs to be synchronised to incoming particles so that the alive window is in the right place.

ISIS RF and MICE

- We need to use the ISIS RF signal to generate a alive window and a veto window for the tracker.

- Ed will measure again in March Run

3MHz ISIS RF

Logic, delays, gate generators..

Alive Window

Veto

Triggers

Delay

Triggers for tracker, in time with alive windows

Operations

- **Recent discussions**
  - **Address various issues during run prep and running**
- **PPS operational and used routinely**
- **Changes due to new target controller and associated interlocks**
- **New beam control**
- **Led to updates to procedures**
  - **Key storage/use**
  - **Target operation rules**
  - **New startup/shutdown checklists**
  - **Controlled access rules**
  - **Operation rules**

Operations – Training

- Now that PPS operational – need training regime
- Craig Macwaters volunteered to implement PPS training
- Needs to be part of:
  - MOM training
  - BLOC training
  - Shifter training – only qualify as Shift Leader with PPS training certification
- Need register of people trained to use PPS
- Has become evident that we need better-defined and better-executed Shifter training
- Need fill shifts only with sufficiently trained personnel
- Ideally – have database with relevant training status

Operations Needs

- **New magic spreadsheet**
- **New takeover of G4Beamline**
- **Need solid definition of Beamline Configurations**
  - See talk by M. Rayner **–** work done on beam matching by Mark and Victoria
  - Operations must know what to run
- **Need analysis of recent data to determine # muons/spill**
  - Useful/necessary for planning
  - Necessary for MICE measurement
- **Proper training**
- **Documentation to be (remain) current**
- **Documentation of changes to procedure**