



# Status of the software migration



- ◆ **Migration strategy:**
  - Where we should be
  
- ◆ **Status:**
  - Where we are
  
- ◆ **Plans**



# Migration strategy as presented at last plenary



- ◆ **Step 1: separate SICBMC and SICBREC**
  - To be ready by Jan 10th
- ◆ **Step 2: wrap SICBREC algorithms into Gaudi framework**
  - To be ready by end February
- ◆ **Step 3: gradually replace FORTRAN with C++ algorithms**
  - Timescale dictated by sub-detector priorities..see in February
  - Development/integration in Gaudi can start now



# Status, step 1



- ◆ **Pre-release SICBMC v230 and SICBDST v230**
  - Available since 9th February
  - SICBMC
    - No major changes apart from addition of rawHit banks
    - Could be used in production now
  - SICBDST
    - Getting the initialisation right was not trivial
    - Requires extensive testing
  - Delay in delivery (also) due to many intervening SICB releases
    - Higher priority, Moving target
  
- ◆ **Problems outstanding:**
  - Pileup
  - Verification
  - Ongoing SICB development



# Step 1: pileup



- ◆ **SICBMC has access to GEANT hits**
  - Knows how to do pileup
  
- ◆ **Interim solution:**
  - Run existing MC tapes through SICBMC to produce rawHit banks with pileup
  - Run rawHit files through SICBDST to make DST1, DST2, DST3...
  
- ◆ **Status:**
  - See Andrei's talk



# Step 1: Verification



- ◆ **We must be convinced that SICBMC/SICBDST give same results as SICB**
  - **Need comprehensive set of checking programs**
    - Producing a comprehensive set of data quality histograms
  - **Can only be done by sub-detector groups**
    - See status reports at this meeting
    - Is list of contacts correct?
- ◆ **Data quality programs to be run on:**
  - **DST (~1000 b-bar) produced by SICB from a MC tape**
  - **DST produced by SICBMC/SICBDST from same MC tape**
    - And investigations made by SD experts if results are not the same
- ◆ **Side-product:**
  - **Data-quality checks can be run by program manager prior to every future release.**



# Step 1: SICB development



- ◆ **Many developments foreseen in “SICB”**
  - **Need well defined procedure for new releases**
    - To define content, testing procedure, deadlines
    - See Agnieszka’s talk
- ◆ **Currently we have parallel development**
  - **Two versions of each package:**
    - Changes for SICBMC/SICBDST go to CVS head revision
    - Changes for SICB go to CVS “bug fix” branch
- ◆ **HOW CAN WE CONVERGE?**
  - **Only bug fixes to SICB**
  - **All new features to SICBMC/SICBDST**
    - But only after verification work is finished
- ◆ **How urgent is next production version?**
  - Can it wait until after SICBMC/SICBDST verification?



# Step 1: Proposal



- ◆ **Test samples have been produced**
  - (see mail from Eric van Herwijnen)
  
- ◆ **SICBMC/SICBDST checks and fixes to be made by 15th March**
  - **This is the highest priority**
    - Requires work from all sub-detector contacts
    - Report problems and fixes to Florence Ranjard
  - **Next released version of "SICB" will be SICBMC/SICBDST "v230"**
  
- ◆ **No new features until this works**
  - **Current list of foreseen "SICB" improvements will go to following version of SICBMC/SICBDST**



## Step 2: Brunel status



- ◆ **Wrapping SICBDST FORTRAN modules is trivial**
  - Difficulty lies in getting the initialisation right
- ◆ **All SICBDST digitisation and reconstruction modules already wrapped as GAUDI algorithms**
  - Trigger modules to be done next week
- ◆ **Need to implement reading of sicb.dat**
  - To allow modification of the FORTRAN defaults
  - Possible solution is known, to be tried next week
- ◆ **Functionally identical to SICBDST by early March**
  - Same testing procedure as for SICBDST
  - Follows SICBDST developments (uses the same libraries)
- ◆ **Then ready to accept new OO algorithms**
  - And to replace SICBDST in production
    - Decision at April software week?





# Brunel structure



## ◆ One top algorithm per Brunel “phase”:

```
ApplicationMgr.TopAlg = { "BrunelInitialisation/BrunelInit",  
                          "BrunelPhase/BrunelDigi",  
                          "BrunelPhase/BrunelTrigger",  
                          "BrunelPhase/BrunelReco",  
                          "BrunelPhase/BrunelFinalFit",  
                          "BrunelFinalisation/BrunelFinish" };
```

## ◆ One child algorithm per sub-detector per phase

```
BrunelDigi.DetectorList = { "VELO" , "TRAC" , "RICH" , "ECAL" , "HCAL", "MUON" };  
BrunelReco.DetectorList = { "TRAC" , "RICH" , "ECAL" , "HCAL" };  
BrunelFinalFit.DetectorList = { "TRAC" };
```

```
Brunel.Digi.VELO.cpp, Brunel.Digi.TRAC.cpp, Brunel.Digi.RICH.cpp,  
Brunel.Reco.TRAC.cpp, Brunel.Reco.RICH.cpp, Brunel.Reco.ECAL.cpp,  
Brunel.FinalFit.TRAC.cpp
```

## ◆ Calls corresponding FORTRAN algorithm

- Can replace call to FORTRAN with new OO algorithm



# Step 3: OO reconstruction software



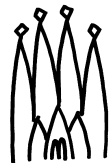
- ◆ **Ongoing work in many areas (see later talks)**
  - **Calorimeter data model design review (18/02/2000)**
    - Very useful both for calorimeter team and GAUDI team
    - Highlighted needs for LHCb-wide solutions/conventions
      - How to access MC truth from reconstructed data
      - Direct access (c.f. sequential access) to contained objects in transient store
  - **Implementation of ECAL geometry in GAUDI**
  - **Implementation of SICB Converters for Level 1 and VELO**
  - **Track Fit ready to be made public in GAUDI**
  - **etc...**



# Conclusions



- ◆ **SICBMC/SICBDST split is complete**
  - Verification is needed at highest priority, leading to retirement of SICB by mid-March
  - Next production version of "SICB" will be SICBMC/SICBDST
  
- ◆ **Wrapping of FORTRAN in Brunel is nearly complete**
  - Verification will be needed soon
  
- ◆ **Better procedures for new versions**
  - Planning of contents, with deadlines, in place
  - Definition of data quality procedures urgently needed
  
- ◆ **Implementations in GAUDI have begun**



# Software contacts



A.Jacholkowska and E. van Herwijnen (production)  
M.Cattaneo (Brunel)  
P.Mato (Gaudi)  
J.Harvey (Computing)  
H.Dijkstra (Trigger)  
T.Ruf (Velo)  
G.Gracia, M.Needham, M.Merk (outer tracker, kalman)  
G.Wilkinson (Rich)  
G.Corti (Analysis)  
A.Tsaregorodtsev (management, pileup)  
P.Colrain (Muon)  
I.Korolko, O.Callot (Calorimeters)  
Generators (Bartalini)