GEM TN-93-443

Local GEM Computing Meeting - SSCL

June 20, 1993

Abstract;

Agenda, attendees, and presentations for the Local GEM Computing Meeting- SSCL held on July 20, 1993.

2:00 Tuesday 20 July 93, GEM conference room

Agenda

(15')	Ken McFarlane	- Formation of a group to write a 'computing' chapter for the test beam proposal.
(15')	Henk Uijtervaal	- An NQS Review
(20')	Shuichi Kunori	- Relationships between some basic SDCSIM data entities

July 20, 1993

Name	MS	e-mail
Gary Word	2005	Gary_Word@ssc.gov
Irwin Sheer	2300	Irwin_Sheer@ssc.gov
KMcFarlane	2005	mcfarlan@sscvx1
Antonio Morelos	2005	morelos@sscvx1
George Yost	2005	sscvx1::YOST
John Womersley	2005	womersley@ssc.gov
John Hilgart	2003	hilgart@sscvx1
Lee Roberts	2003	lroberts@sscvx1
HENK Uijterwaal	2005	henk@pdsf.ssc.gov
YONGZHAO ZHOU	2005	YZHOU@SSCVX1
Yuri Fisyak	2005	Fisyak@sscvx1
Shuichi Kunori		

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Presentation by:

Henk Uijterwaal

NQS.

PDSF Users Meeting, July 16, 1993.

* The Utopia evaluation license has expired. Although the users were satisfied with Utopia, it is not possible to renew the license right now. (Or even to ask for bids for a batch system).

* For the time being, NQS is used as the batch system for PDSF.

* **4 machines in each corral are still BATCH-ONLY.** Last week, the load on these machines was almost 0%. There are 6 HP CPU upgrades at the lab, they will be put in the batch-only machines.

* Users should start using NQS. Several queues are available, see message 199 on `ssc.pdsf.announce`.

* Documentation is available in:

  `/usr/pdsf/share/doc/nqs.qr`

* Man pages in

  `/usr/pdsf/share/man`

* Send mail to `pdsfhelp` for help. Please let me know your positive/negative experiences with NQS.

From henk@pdsf.ssc.gov Thu Jul 15 14:01:12 1993
Date: Thu, 15 Jul 93 13:57:43 -0500
From: Henk Uijterwaal <henk@pdsf.ssc.gov>
To: henk@pdsf.ssc.gov
Subject: NQS queues reconfigured - ssc.pdsf.announce #199
Content-Length: 1274

In article <1993Jul14.145353.23831@sunova.ssc.gov>, stevem@sscux1.ssc.gov (Steve Mestad) w
rites:

The nqs generic queues have been reconfigured. Instead of distributing the jobs across all the nodes in the corrals, the jobs are now only distributed to the batch only nodes (8, 9, a, b). Operation of the queues handling parallel jobs or jobs for the corral's dataserver are essentially unchanged.

queue	executes on
dssg3-parallel	dssg3
dssg0-long	dssg0
dssg1-long	dssg1
dssg2-long	dssg2
dssg3-long	dssg3
cssn0-parallel	cssn08
cssn0-short	cssn08, cssn09
cssn0-mid	cssn0a, cssn0b
cssn0-long	cssn08, cssn09, cssn0a, cssn0b
cshp1-parallel	cshp18
cshp1-short	cshp18, cshp19
cshp1-mid	cshp1a, cshp1b
cshp1-long	cshp18, cshp19, cshp1a, cshp1b
cssn2-parallel	cssn28
cssn2-short	cssn28, cssn29
cssn2-mid	cssn2a, cssn2b
cssn2-long	cssn28, cssn29, cssn2a, cssn2b
cshp3-parallel	cshp38
cshp3-short	cshp38, cshp39
cshp3-mid	cshp3a, cshp3b
cshp3-long	cshp38, cshp39, cshp3a, cshp3b

Online documentation is availabe in /usr/pdsf/share/doc/nqs.qr and man pages in /usr/pdsf/share/man (which must be in your MANPATH to work).
--

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Presentation by:

Shuichi Kunori

Relationships between some basic SDCSIM data entities

S. Kunori

July 20, 1993

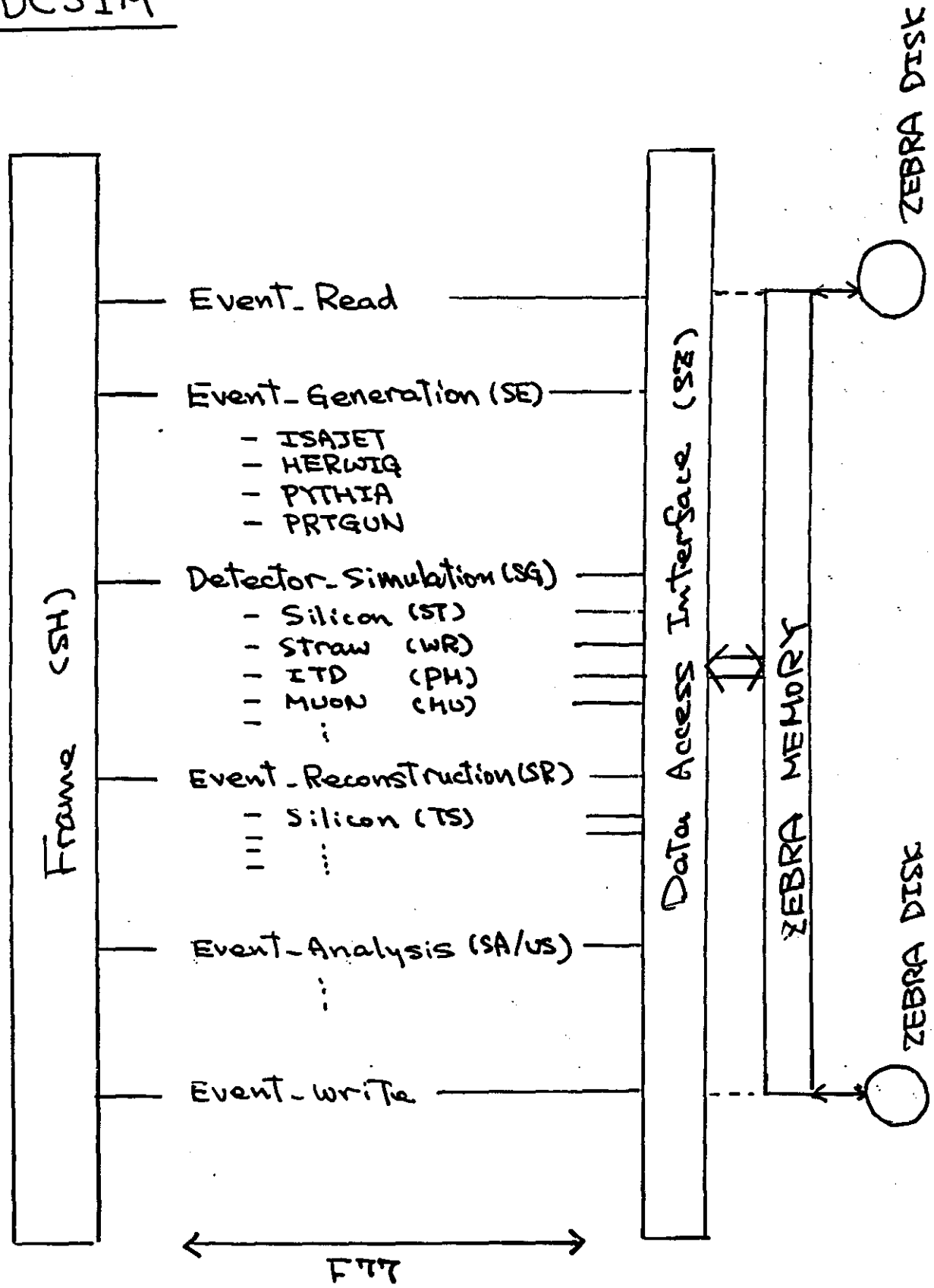
outline :

- what is SDCSIM ?
- Event Data Structure
  (Tree Structure)
- Mapping to Rumbaugh representation
- upgrade plan.

—— x —— x —— x —— x

/usr/ssc/sdc/shell/V07/doc
sdcsim.doc
banks.bnk

SDCSIM


Frame (SH)
Event_Read
Event_Generation (SE)
- ISAJET
- HERWIG
- PYTHIA
- PRTGUN
Detector_Simulation (SG)
- Silicon (ST)
- Straw (WR)
- ITD (PH)
- MUON (MU)
Event_Reconstruction (SR)
- Silicon (TS)
Event_Analysis (SA/US)
Event_write
Data Access Interface (SZ)
ZEBRA MEMORY
ZEBRA DISK
ZEBRA DISK
FTT

+DECK,DATA_TREE

file: data_tree.bnk

Data Bank Tree Sturctre
==========

Last Update: 15-Aug-1992 S.Kunori

Last bank added: /RECO/HTRK/TRCT/TREX

```
[HEAD]
   |
 1 |--[ID00]
   |    1 |--[IDHH]
   |      |    1 |---[EVID]                    . event ID
   |           |---[RAND]                    . random number seeds.
   |
 2 |--[RAWD]
   |      |
   |    3 |--[RTRK]
   |      |    1 |---[STRA]                    . silicon barrel tracker
   |      |      |    1 |---[STSS >                    . silicon layers
   |      |      |           1 |---[STHI]              . silicon MC hits
   |      |      |           2 |---[STDI >             . silicon digitizations
   |      |      |                  1 |---[STDP]       . pointers to hits
   |      |      |
   |      |    2 |---[STIA]                    .silicon forward tracker
   |      |      |    1 |---[STSS >                    . silicon layers
   |      |      |           1 |---[STHI]              . silicon MC hits
   |      |      |           2 |---[STDI >             . silicon digitizations
   |      |      |                  1 |---[STDP]       . pointers to hits
   |      |      |
   |      |      |
   |      |    3 |---[SFRA]                    .sci fi barrel
   |      |      |    1 |---[SFSS >                    . sci fi superlayers
   |      |      |           1 |---[SFHI >             . sci fi hits
   |      |      |           2 |---[SFDI >             . sci fi digitization
   |      |      |
   |      |    4 |---[SFIA]                    .sci fi intermediate angle
   |      |      |    1 |---[SFSS >                    . sci fi superlayers
   |      |      |           1 |---[SFHI >             . sci fi hits
   |      |      |           2 |---[SFDI >             . sci fi digitization
   |      |      |                  1 |---[SFDP]       . pointers to hits
   |      |      |
   |      |    5 |---[WFRA]                    .wire/fiber tracker
   |      |      |    1 |---[WFSS >                    . straw superlayers
   |      |      |           1 |---[WFHI]              . straw hits
   |      |      |           2 |---[WFDI]>             . straw digitization
   |      |      |                  1 |---[WFDP]       . pointers to hits
   |      |      |    2 |---[WFFS >                    . fiber superlayers
   |      |      |           1 |---[WFFH]              . fiber hits
   |      |      |           2 |---[WFFD>              . fiber digitization
   |      |      |                  1 |---[WFFP]       . pointers to hits
   |      |      |
   |      |    7 |---[WRRA]                    .straw outer tracker
   |      |      |    1 |---[WRSS >                    . straw superlayers
   |      |      |           1 |---[WRHI]              . straw hits
   |      |      |           2 |---[WRDI]>             . straw digitization
   |      |      |                  1 |---[WRDP]       . pointers to hits
   |      |      |
   |      |      |   (the following PM banks are not yet implemented)
   |      |    8 |---[PMRA]                    .intermediate angle gas microstrips
   |      |      |    1 |---[PMSS >                    . gas microstrip superlayers
```

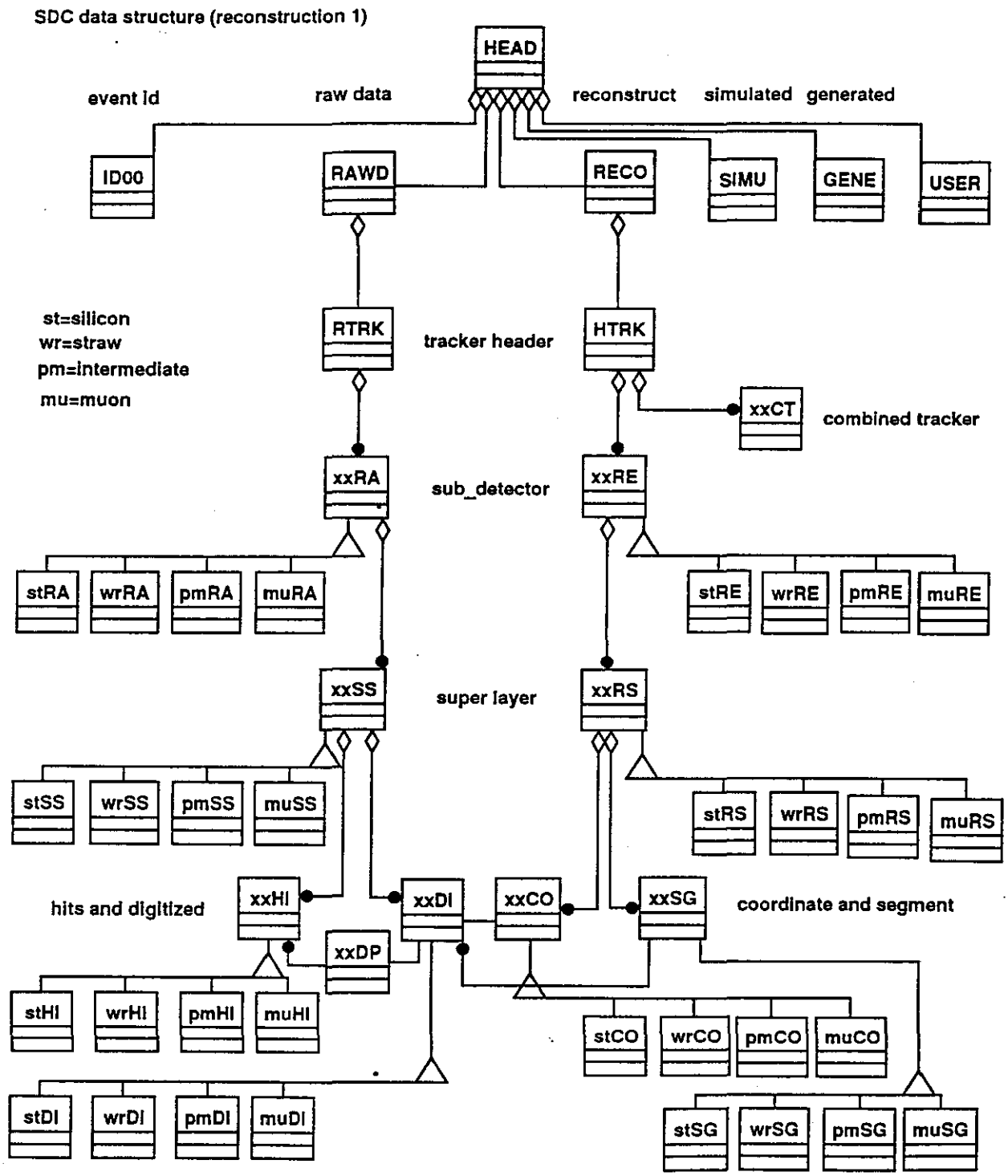
```
|     |     |          1 |---[PMHI]          . gas microstrip hits
|     |     |          2 |---[PMDI]>         . gas microstripdigitizations
|     |     |                1 |---[PMDP]    . pointers to hits
|     |     |
|     | 11 |---[PXRA]                .pixel inner tracker
|     |     |    1 |---[PXSS >                . pixel layers
|     |     |          1 |---[PXHI]          . pixel hits
|     |     |          2 |---[PXDI]>         . pixel digitization
|     |     |                1 |---[PXDP]    . pointers to hits
|     | 12 |---[PXIA]                .pixcel intermediate angle
|     |     |    1 |---[PXSS >                . pixel layers
|     |     |          1 |---[PXHI]          . pixel hits
|     |     |          2 |---[PXDI]>         . pixel digitization
|     |     |                1 |---[PXDP]    . pointers to hits
|   4 |--[RMUO]
|     |   1 |---[MWRA]                . wide angle muon
|     |     |    1 |---[MWHI]>                . hits
|     |     |    2 |---[MWXI]>                . hits at exit of tracker
|     |
|   5 |--[RCAL]
|         1 |---[CCRA]              . central calorimeter  (not available)
|         2 |---[CERA]              . end calorimeter      (not available)
|         3 |---[CFRA]              . forward colorimeter  (not available)
|
3 |--[RECO]
|   1 |--[HTRG]
|     |   1 |---[TRIG]
|     |
|   2 |--[HEVT]
|     |     |---see SIMU section
|     |
|     |
|   3 |--[HTRK]
|     |   1 |---[STRE>              . silicon barrel tracker
|     |     |    1 |---[STRS>                . reconstructed layers
|     |     |      |    1 |---[STCO]         . space coordinates
|     |     |      |      |    1 |---[STCP]* . pointers to digitizations
|     |     |      |    2 |---[STSG>         . track segments
|     |     |      |      |    1 |---[STSP]  . pointers to digitizations
|     |     |    2 |---[STTK>*               . reconstructed tracks
|     |     |      |    1 |---[STTP]*        . pointers to segs or digis
|     |   2 |---[STIE>              . silicon forward tracker
|     |     |    1 |---[STRS>                . reconstructed layers
|     |     |      |    1 |---[STCO]         . space coordinate
|     |     |      |      |    1 |---[STCP]* . pointers to digitns
|     |     |      |    2 |---[STSG>         . track segments
|     |     |      |      |    1 |---[STSP]  . pointers to digitizations
|     |   3 |---[SFRE]              . fiber barrel tracker
|     |     |    1 |---[SFRS>                . recons superlayers
|     |     |      |    1 |---[SFCO>         . space coordinate
|     |     |      |      |    1 |---[SFCP]  . pointers to digitns
|     |     |      |    2 |---[SFSG>*        . track segments
|     |     |      |      1 |---[SFSP]* . pointers to digitns
|     |     |    3 |---[SFTK>*               . recons tracks.
|     |     |      1 |---[SFTP]*             . pointer to seg. etc
|     |   4 |---[SFIE]              . fiber intermediate tracker
|     |     |    1 |---[SFRS>                . recons superlayers
|     |     |      |    1 |---[SFCO>         . space coordinate
|     |     |      |      |    1 |---[SFCP]  . pointers to digitns
|     |     |      |    2 |---[SFSG>*        . track segments
|     |     |      |      1 |---[SFSP]* . pointers to digitns
|     |     |    2 |---[SFTK>*               . recons tracks.
|     |     |      1 |---[SFTP]*             . pointer to seg. etc
|     |   5 |---[WFRE]              . wire/fiber tracker
|     |     |    1 |---[WFRS>                . recons superlayers
|     |     |      |    1 |---[WFCO>*        . space coordinate
```

```
|      |      |      |      |      |    1 |---[WFCP]* . pointers to digitns
|      |      |      |      |    2 |---[WFSG>          . track segments
|      |      |      |      |           1 |---[WFSP]   . pointers to digitns
|      |      |    2 |---[WFRF>                        . recons superlayers
|      |      |      |    1 |---[WFCF>*                . space coordinate
|      |      |      |      |    1 |---[WFGP]* . pointers to digitns
|      |      |      |  . 2 |---[WFSF>          . track segments
|      |      |      |           1 |---[WFFP]   . pointers to digitizations
|      |      |    3 |---[WFTK>*                       . recons tracks.
|      |      |           1 |---[WFTP]*                 . pointer to seg. etc
|      |    7 |---[WRRE]                    . straw outer tracker
|      |      |    1 |---[WRRS>                        . recons superlayers
|      |      |      |    1 |---[WRCO]*                . space coordinate
|      |      |      |      |    1 |---[WRCP]* . pointers to digitns
|      |      |      |    2 |---[WRSG>          . track segments
|      |      |      |           1 |---[WRSP]   . pointers to digitizations
|      |      |    2 |---[WRTK>*                       . recons tracks.
|      |      |           1 |---[WRTP]*                 . pointer to seg. etc
|      |    8 |---[PMRE]*                   . gas microstrip intermediate tracker
|      |      |    1 |---[PMRS>*                       . recons superlayers
|      |      |      |    1 |---[WRCO]*                . space coordinate
|      |      |      |      |    1 |---[WRCP]* . pointers to digitns
|      |      |      |    2 |---[WRSG>*         . track segments
|      |      |      |           1 |---[WRSP]* . pointers to digitizations
|      |   11 |---[PXRE>                    . pixcel barrel tracker
|      |      |    1 |---[PXRS>                        . reconstructed layers
|      |      |      |    1 |---[PXCO]                 . space coordinates
|      |      |      |      |    1 |---[PXCP]   . pointers to digitizations
|      |      |      |    2 |---[PXSG>*         . track segments
|      |      |      |      |    1 |---[PXSP]* . pointers to digitizations
|      |   12 |---[PXIE>                    . pixcel intermediate tracker
|      |      |    1 |---[PXRS>                        . reconstructed layers
|      |      |      |    1 |---[PXCO]                 . space coordinates
|      |      |      |  .   |    1 |---[PXCP]   . pointers to digitizations
|      |      |      |    2 |---[PXSG>*         . track segments
|      |      |      |      |    1 |---[PXSP]* . pointers to digitizations
|      |   14 |---[TRCT>                    . combined tracks
|      |      |    1 |---[TRCP>                        . pointers from tracks
|      |      |    2 |---[TRCM>                        .
|      |      |    3 |---[TREX>                        . track extrapolation
|      |   15 |---[TRCS>                    . combined tracks
|      |      |    1 |---[TRST>                        .
|      |      |           1 |---[TRSP>                  .
|      |      |           2 |---[TRSM>                  .
|      |
|    4 |--[HMUO]
|      |      |---see SIMU section
|      |
|    5 |--[HCAL]
|           |---[CALE]                    . cal cells
|
4 |--[SIMU]
|    1 |--[HTRG]
|      |    1 |---[TRIG]
|      |
|    2 |--[HEVT]
|      |    1 |---[EVNT]
|      |      |
|      |    2 |---[VINT>                    . beam-beam interaction infor.
|      |      |
|      |    3 |---[VERT>                    . vertex
|      |      |    1 |---[VTRK>             . tracks used to reconstruct
|      |      |      |                        this vertex
|      |      |    2 |---[PTRK>             . particles associated with    [TRFT]
|      |      |      |
|      |      |           1 |---[PTRJ]       . track trajectory
```

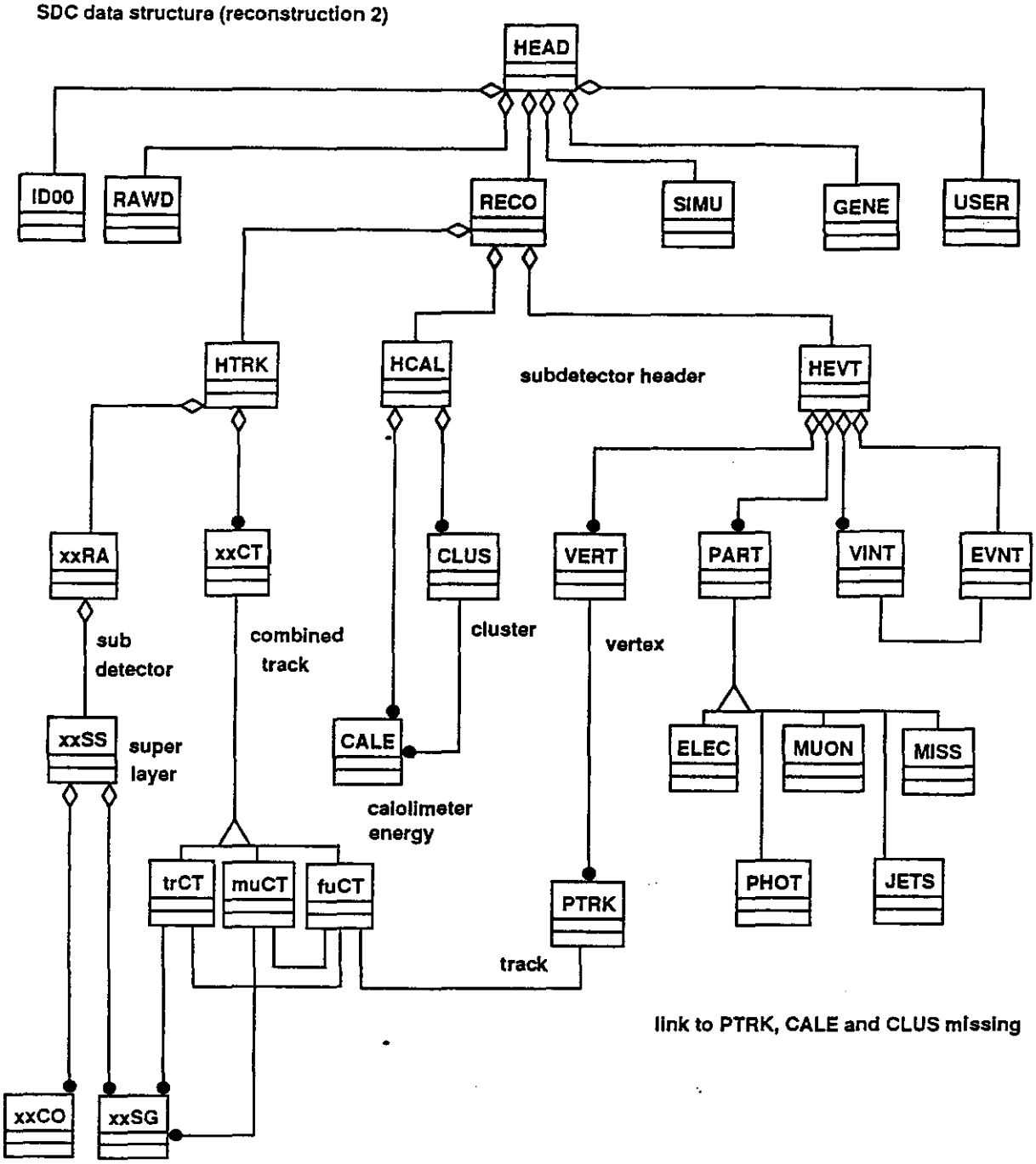
```
|      |      |
|      |   4 |---[PPHO>                  . photon
|      |   5 |---[PELE>                  . electron
|      |   6 |---[PMUO>                  . muon
|      |      |
|      |   7 |---[PNUT>                  . neutrino, i.e. missing energy
|      |      |
|      |   8 |---[WZHX>                  . W, Z, H, tau
|      |      |      |---[PWZH>
|      |      |
|      |   9 |---[CLUS>                  . cal energy cluster
|      |             |---[CPTS]          . pointers to CALE hits
|   3 |--[HTRK]                                                          [TRRE]
|      |
|   4 |--[HMUO]
|      |   1 |---[MURE]
|      |      |    1 |---[MURS>                  . recons superlayers
|      |      |      |    1 |---[MUCO]           . space coordinate
|      |      |      |      |    1 |---[MUCP>    . pointer to digitns
|      |      |      |    2 |---[MUSG>           . track segments
|      |      |      |           1 |---[MUSP]    . pointers to digitns
|      |      |    2 |---[MUTK>                  . muon in the muon system
|      |      |    3 |---[MUOT>                  . muon in the muon system
|      |      |                                      (px,py,pz,E)
|      |   2 |---[MUCT>                          . combined muon using both
|      |
|   5 |--[HCAL]
|      |   1 |---[GCAL]                  . cal hits from Geant
|      |   2 |---[CALE]                  . cal energy in cell
|      |
|
5 |--[GENE]
|   1 |--[HHEP]
|          1 |---[HEPE]                  . HEP event description bank
|          2 |---[HEPI>                  . HEP interaction   /HEPEVT/   [HPEN]
|                 1 |---[HEPP>            . HEP particle bank /HEPEVT/   [HEPP]
|                 2 |---[HEPN>            . partons
|
6 |--[USER]
9 |--[STP0]                               . hook for STPS bank in begin run
                                            event.
```

Mapping between (ZEBRA) tree structure and Rumbaugh notation

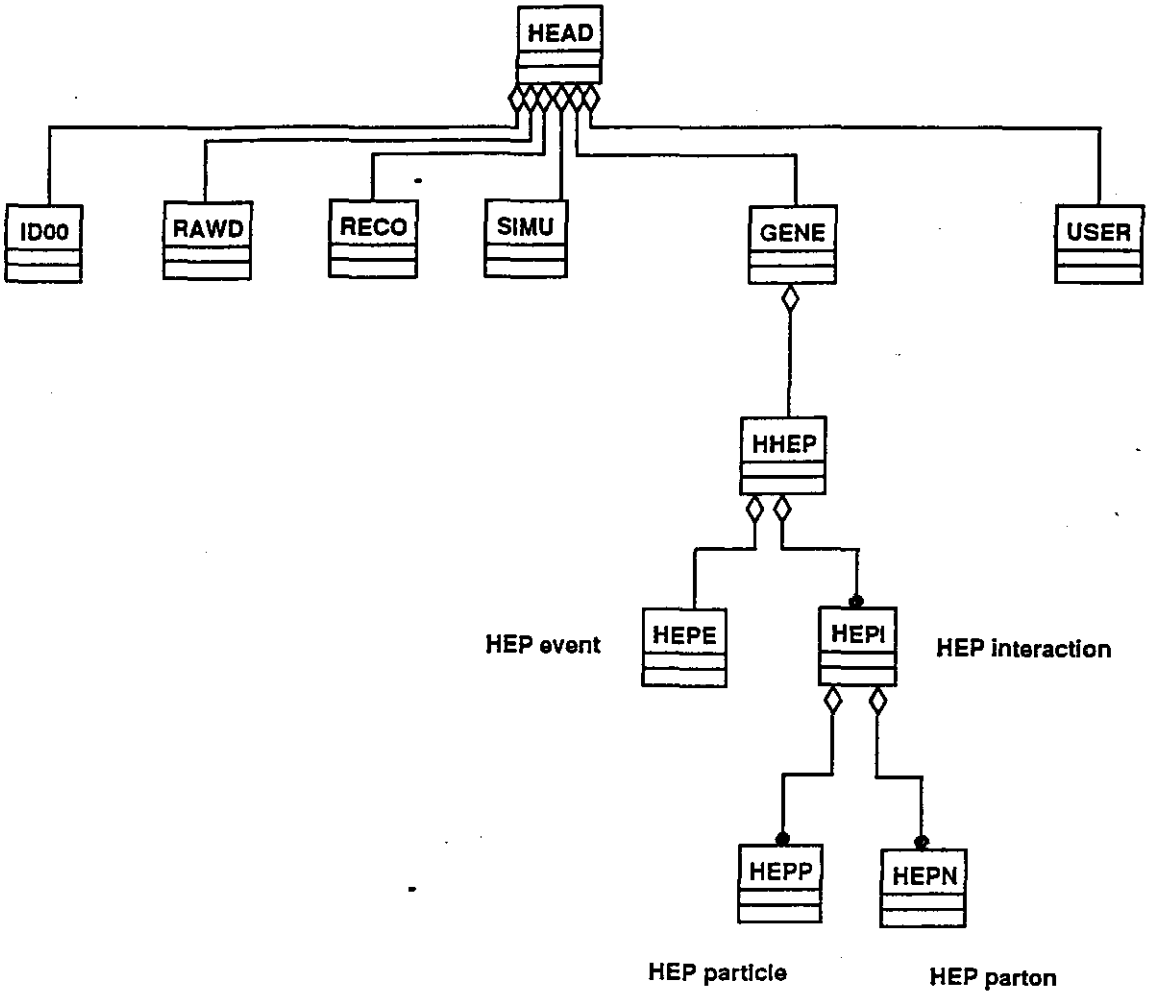
tree structure (ZEBRA)	Rumbaugh
structual link	aggregation
reference pointer	association
Template + code borrowing	generalization (inheritance)
(linear) bank	object


SDC data structure (reconstruction 1)
HEAD
event Id
raw data
reconstruct
simulated
generated
ID00
RAWD
RECO
SIMU
GENE
USER
st=silicon
wr=straw
pm=intermediate
mu=muon
RTRK
tracker header
HTRK
xxCT
combined tracker
xxRA
sub_detector
xxRE
stRA
wrRA
pmRA
muRA
stRE
wrRE
pmRE
muRE
xxSS
super layer
xxRS
stSS
wrSS
pmSS
muSS
stRS
wrRS
pmRS
muRS
hits and digitized
xxHI
xxDI
xxCO
xxSG
coordinate and segment
xxDP
stHI
wrHI
pmHI
muHI
stCO
wrCO
pmCO
muCO
stDI
wrDI
pmDI
muDI
stSG
wrSG
pmSG
muSG

SDC data structure (reconstruction 2)



SDC data structure (event generation)



SDCSIM upgrade plan ('93)

main purpose:

- cleaner data structure
  and
  more compact (on disk)
- cleaner code
- preparation for future

four working groups

- Event Data
- Detector Constants
- Event Display
- Framework