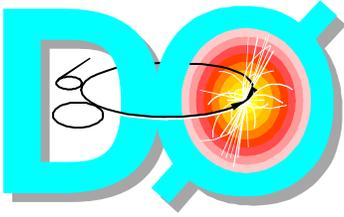


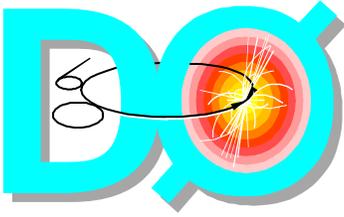
Online Computing

WBS 1.5
Stuart Fuess



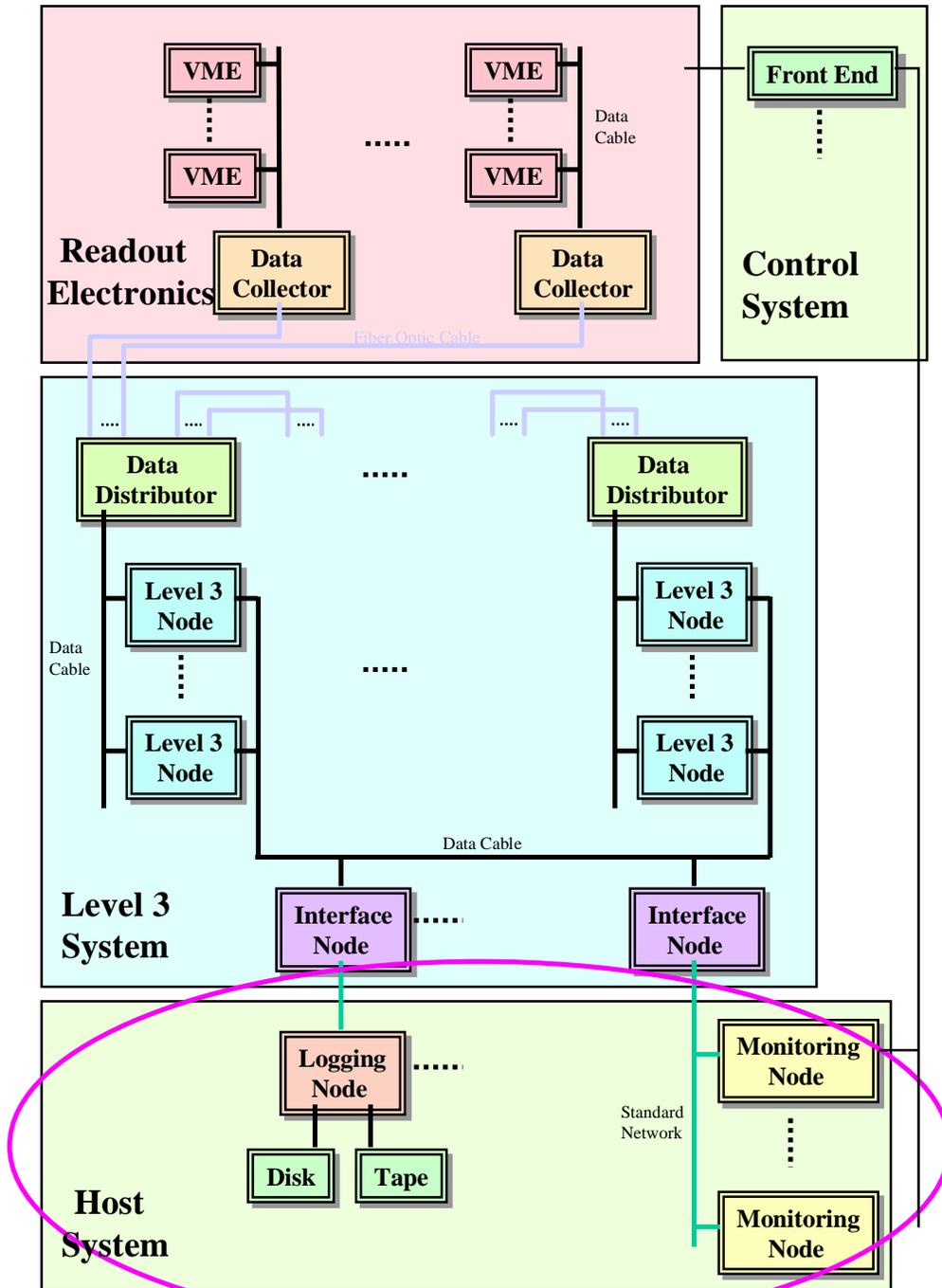
Outline

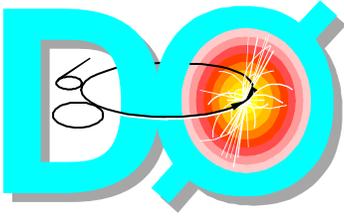
- **Hardware components**
- **Software components**
- **Hardware acquisition**
- **Software development**
 - ◆ **Progress**
 - ◆ **Schedule**
- **Organization**



Hardware Components

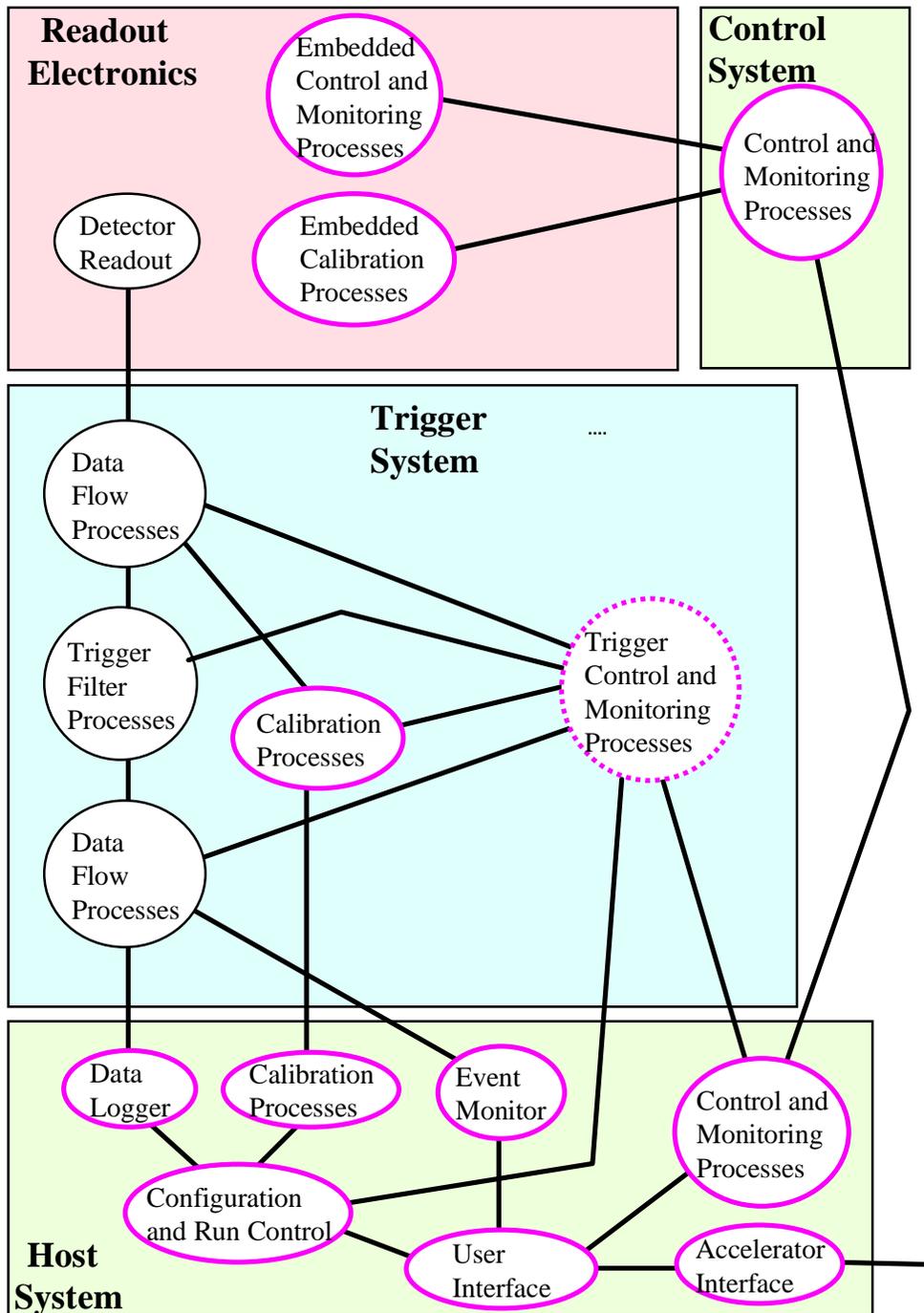
○ = WBS 1.5.1

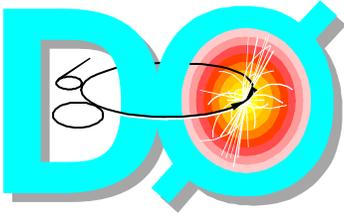




Software Components

 = WBS 1.5.2-10





Hardware Acquisition

WBS 1.5.1

All of the equipment funds in the Online Computing sub-project are included in WBS 1.5.1

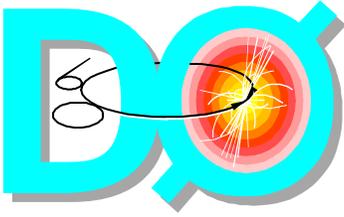
◆ **Goals:**

to acquire a system with

- **Data logging capacity of 5 MB/sec average, 25 MB/sec peak**
- **99% uptime level of reliability**

◆ **Spending profile:**

FY97 / 98 / 99 = 1 / 2 / 3 parts



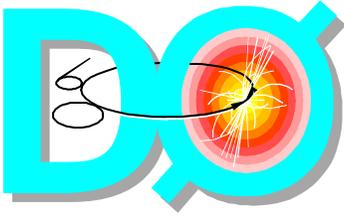
WBS 1.5.1

- **M&S cost estimate in FY95\$**
 - ◆ **Contingency on total estimated cost**

WBS	ITEM	M&S TOTAL	Cont. %	TOTAL Cost
1.5.1	ONLINE EQUIPMENT			
1.5.1.1	<i>Workstations</i>	260,000	18	306,000
1.5.1.2	<i>Network (switch,bridge,router)</i>	80,000	25	100,000
1.5.1.3	<i>Disk/tape Peripherals</i>	90,000	25	112,500
1.5.1.4	<i>Printers/Monitors</i>	75,000	5	78,750
1.5.1.5	<i>Software</i>	100,000	25	125,000
1.5.1	TOTAL ONLINE EQUIPMENT	605,000	19	722,250

<i>OTD</i>	<i>CTC</i>	<i>EAC</i>	<i>CR</i>	<i>% CCTC</i>
<i>k\$</i>	<i>k\$</i>	<i>k\$</i>	<i>k\$</i>	
20	584	604	118	20

OTD=Obligated to date
 CTC=Cost to complete
 EAC=Estimate at Completion
 CR=Contingency Remaining
 %CCTC=% contingency on CTC

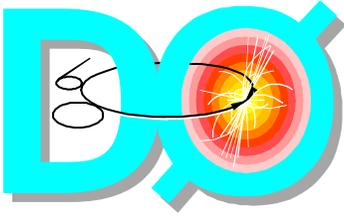


Hardware Acquisition

WBS 1.5.1

◆ Key issues:

- * **1st purchases in FY97**
- * **Items of interest:**
 - **Other activity at lab: CDF, DART**
 - **UNIX clustering capability**
 - **RAID capability**
 - **I/O options: Fibre Channel vs Ultra SCSI**
 - **Networking options**
 - **Compiler maturity and support**
 - **Licensing flexibility**
 - **UNIX - NT interoperability**
 - **System management tools**



Hardware Acquisition

WBS 1.5.1

◆ Milestones:

9/97 Initial purchases

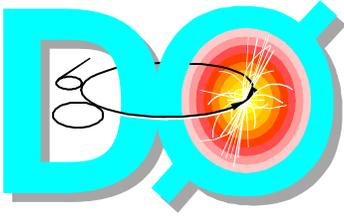
- 1st DAQ node
- 1st Monitoring node
- associated peripherals
- development software (compilers etc)

7/98 Phase 2 purchases

- Network backbone
- 2nd DAQ node
- 2nd Monitoring node
- utility software (database etc)

3/99 Final purchases

- Remaining DAQ nodes
- Remaining Monitoring nodes
- (Upgrade existing nodes)
- Control room screens
- Disk / Tape capacity

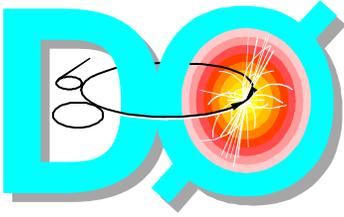


Software Development

Much of the Online Computing sub-project is concerned with the development of software. We use WBS numbers to track effort, but there are no associated equipment monies in the cost estimate.

◆ Goals:

- * Control and monitoring of the D0 detector
- * Detector and trigger configuration
- * Run control
- * Trigger and DAQ monitoring
- * Event data monitoring



Software Development

◆ Progress:

* Run II Software External Review

2/14/97

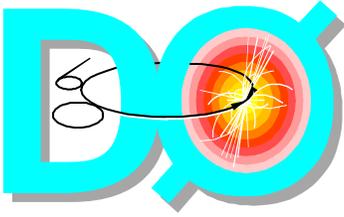
- Endorsement of methodology

* Test Beam activity

- EPICS installed and in use
- DART (FNAL/CD product) installed and in use
- Silicon Front End components done

* OOAD and C++ progress

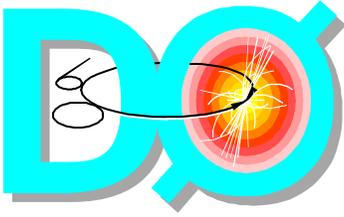
- Projects
 - Analysis framework
 - Data model, object persistency
 - Calorimeter reconstruction
 - Tracking
- Training
 - ~ 50 DØ people have taken week-long OOAD and/or C++ classes



Milestones

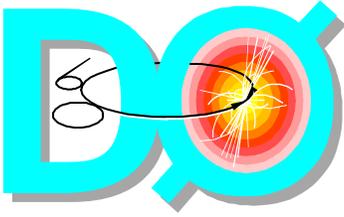
Online Computing

ID	Milestones- Online Computing	Date
18	Test Beam Phase 1 operational	8-Apr-97
19	Test Beam Phase 2 operational	2-Jun-97
46	COOR Phase 1 available	27-Jun-97
65	Data Distributor operational	3-Jul-97
50	TAKER available	30-Jul-97
54	M3-Online Level 1 Readout Available	1-Oct-97
20	Test Beam Phase 3 completed	10-Dec-97
47	COOR Phase 2 available	20-Jan-98
48	M3-Online Run Control System Operational	20-Jan-98
62	M3-Online Data Logger Operational	23-Jul-98
26	M3-EPICS Control System Operational	6-Aug-98
41	M3-Online Alarm System Operational	16-Sep-98
35	Clock Server available	6-Nov-98
31	High Voltage Phase 1 available	2-Feb-99
37	M3-Online Parameter Page Available	23-Feb-99
39	C&M Logger available	23-Feb-99
58	M3-Online Level 3 Readout Available	1-Mar-99
24	M3-Online Database Populated	20-Apr-99
55	L2 Readout available	1-Jun-99
33	High Voltage Phase 2 available	5-Nov-99
28	COMM_TKR operational	30-Nov-99



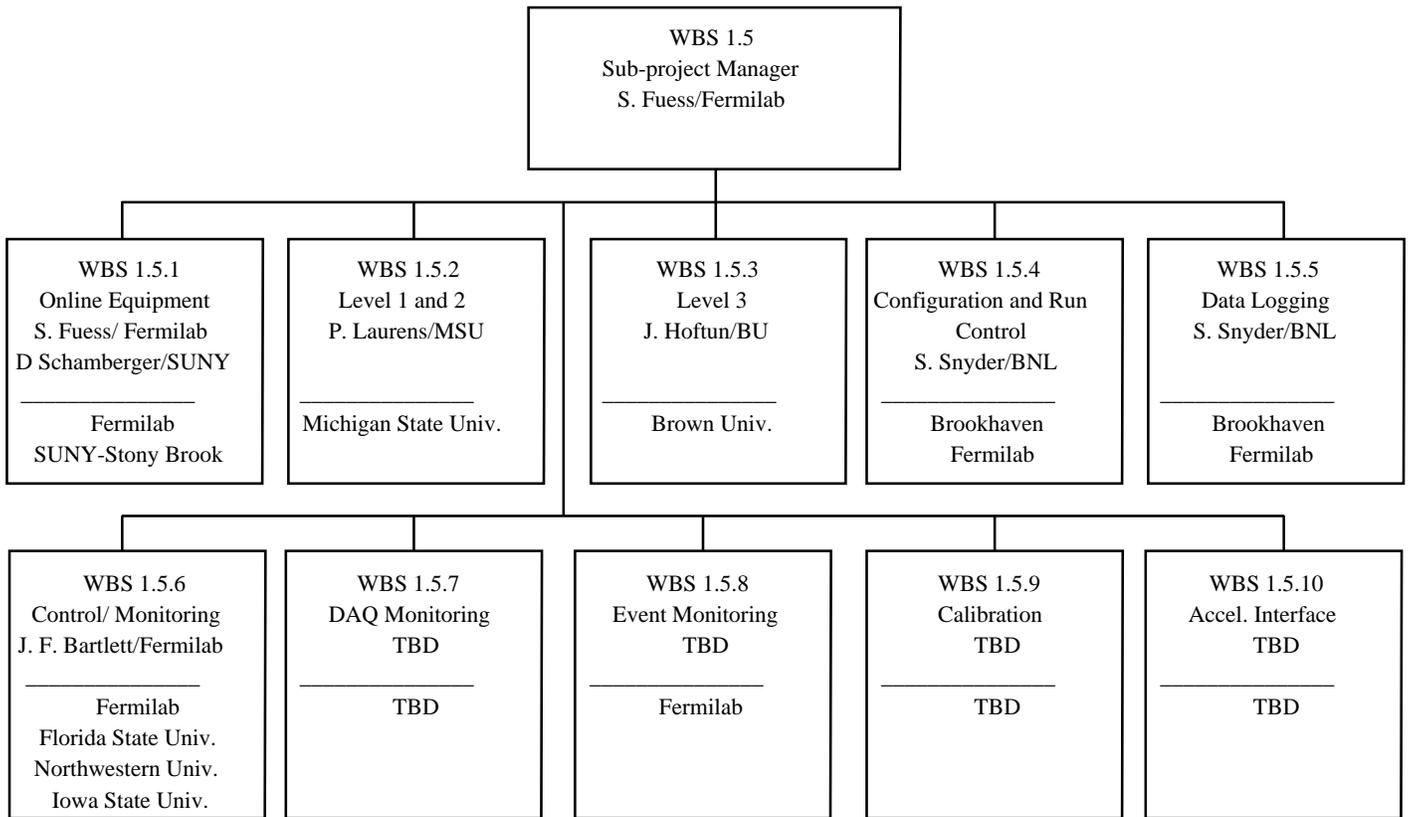
Software Development

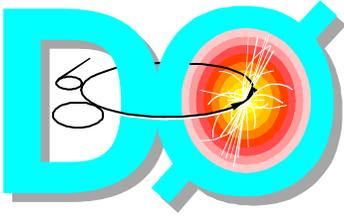
- **Key issues in schedule:**
 - ◆ **Communications**
 - * **Updating the Run I Client/Server package**
 - * **Class design beginning**
 - ◆ **Control & Monitoring**
 - * **Concentrating on Test Beam as software development opportunity**
 - * **Installing and using EPICS control system**
 - * **Need to merge with legacy hardware and software components**



Organization

Online Computing

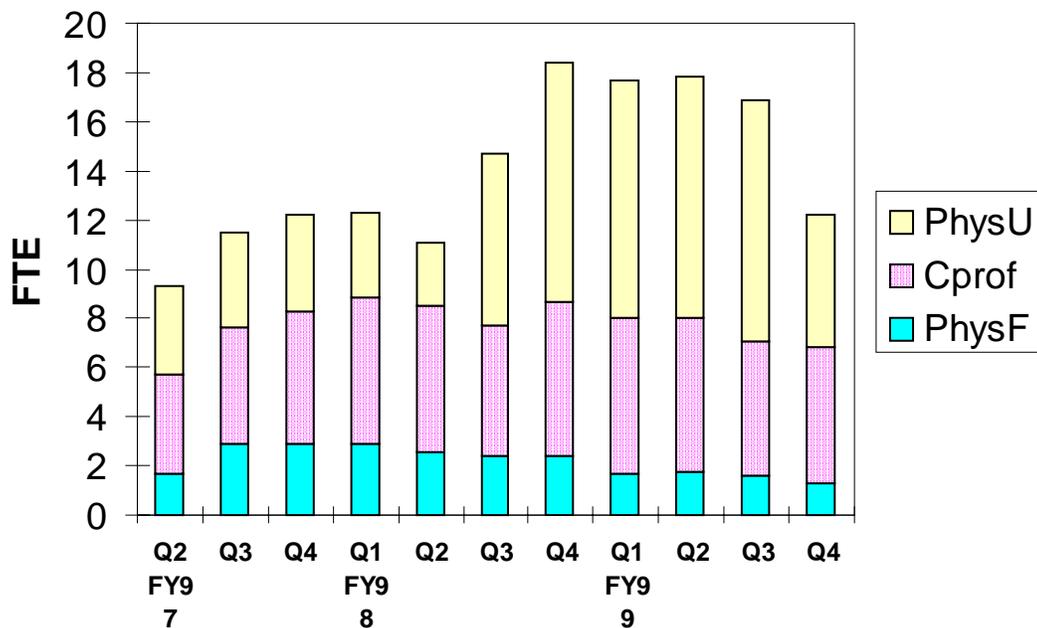




Resource Needs

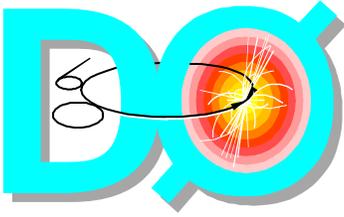
- Resource needs

Online Computing Resource Profile



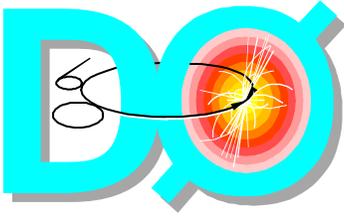
Notes:

- Several sub-projects do bulk of work in FY98 and FY99
- In FY00 will move from *Upgrade* to *Operation*



Summary

- **Two aspects of sub-project:**
 - ◆ **Hardware acquisition**
 - * **Purchase “off-the-shelf” components**
 - * **Purchase as late as possible**
 - * **First purchases FY97**
 - ◆ **Software development**
 - * **Identified critical items**
 - * **Incorporating external products**
 - * **Early phase driven by and benefitting from Test Beam effort**



Personnel Needs

