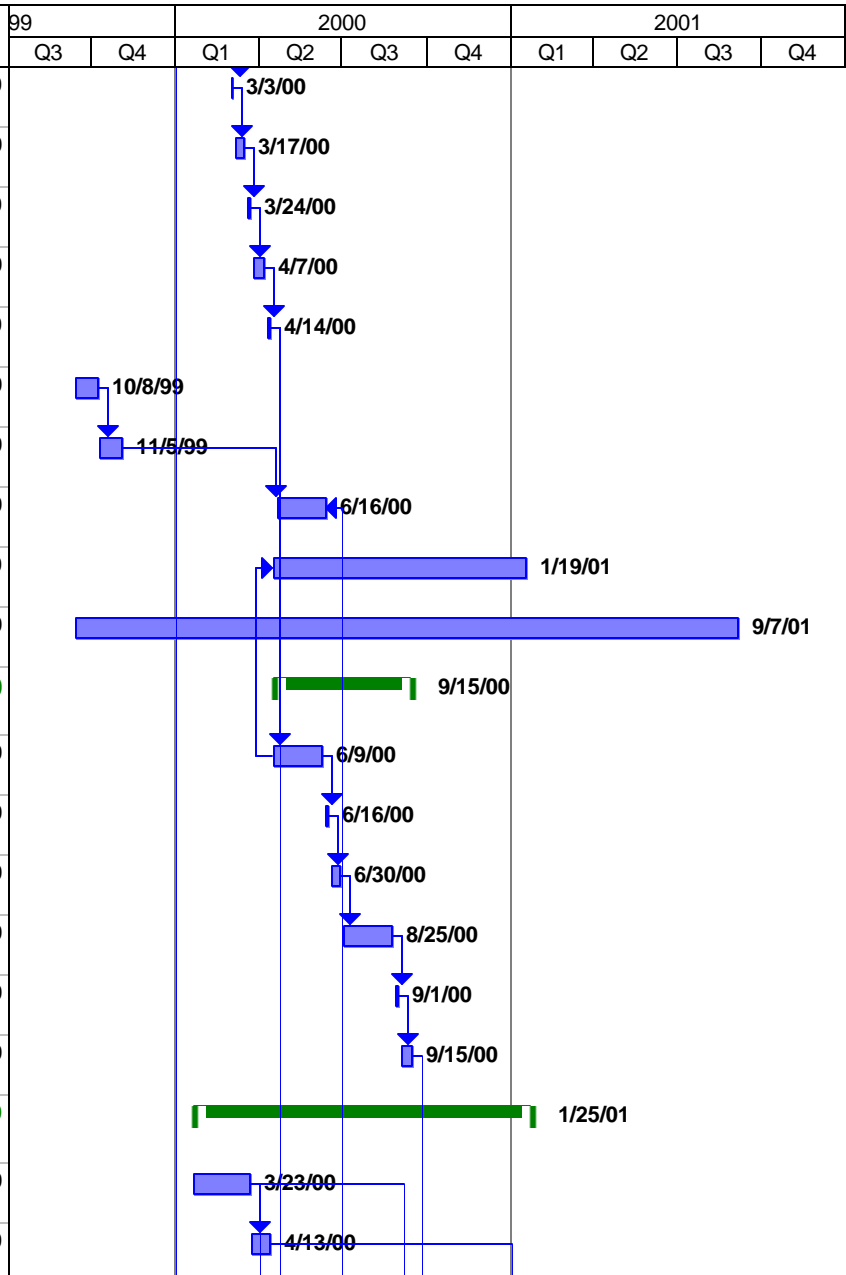


## NLC Controls Software R & D Project

ID	Task Name	Duration	Total Cost	99				2000				2001			
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
1	<b>NLC Control Software R&amp;D Project</b>	<b>120 wks</b>	<b>\$228,000</b>	[Purple bar spanning from start of 99 to end of 2001]											
2	<b>Requirements</b>	<b>46.8 wks</b>	<b>\$8,000</b>	[Green bar from start of 99 to 8/3/00]											
3	Send 1-2 people to "Requirements Management with Use Cases" Class.	0.5 wks	\$1,400	[Blue arrow pointing to 11/3/99]											
4	Send one or two people to "Rational RequisitePro"	0.2 wks	\$600	[Blue arrow pointing to 11/18/99]											
5	Teach the rest of us what was learned and establish our Requirements standards	2 wks	\$0	[Blue arrow pointing to 12/2/99]											
6	3 Copies of RequisitePro. 1-3 people will maintaining THE requirements documents.	1 wk	\$6,000	[Blue arrow pointing to 12/9/99]											
7	Document SLC functional Requirements	6 wks	\$0	[Blue box from 10/22/99 to 11/18/99]											
8	Develop requirements standard for NLC documents	1 wk	\$0	[Blue arrow pointing to 10/29/99]											
9	Assemble, format and analyze the initial SLC requirements list	6 wks	\$0	[Blue box from 10/29/99 to 1/20/00]											
10	Derive NLC Requirements from SLC functional description	12 wks	\$0	[Blue box from 1/20/00 to 4/13/00]											
11	Update, review and analyze the requirements. This is ongoing.	16 wks	\$0	[Blue box from 4/13/00 to 8/3/00]											
12	<b>Techniques, Tools and Environments</b>	<b>104 wks</b>	<b>\$126,500</b>	[Green bar from start of 99 to 9/7/01]											
13	ClearCase Fundamentals Class. Send 2 people 1 UNIX and 1 NT to evaluate and	0.2 wks	\$2,000	[Blue arrow pointing to 1/21/00]											
14	Group presentations, evaluate, recommend ClearCase vs CVS + tools.	2 wks	\$0	[Blue arrow pointing to 2/4/00]											
15	Install a document version control system	3 wks	\$0	[Blue arrow pointing to 2/25/00]											
16	Evaluate Commercial and free Java tools, present and recommend	2 wks	\$0	[Blue arrow pointing to 1/14/00]											
17	Purchase Java development tools for the group	1 wk	\$2,500	[Blue arrow pointing to 1/21/00]											
18	Bring in an instructor to teach a Java to the group	1 wk	\$8,000	[Blue arrow pointing to 2/4/00]											
19	OO Analysis & Design class with UML for 6 people	1 wk	\$10,000	[Blue arrow pointing to 2/25/00]											
20	Introduction to Rational Rose 98i class	0.5 wks	\$5,000	[Blue arrow pointing to 3/1/00]											

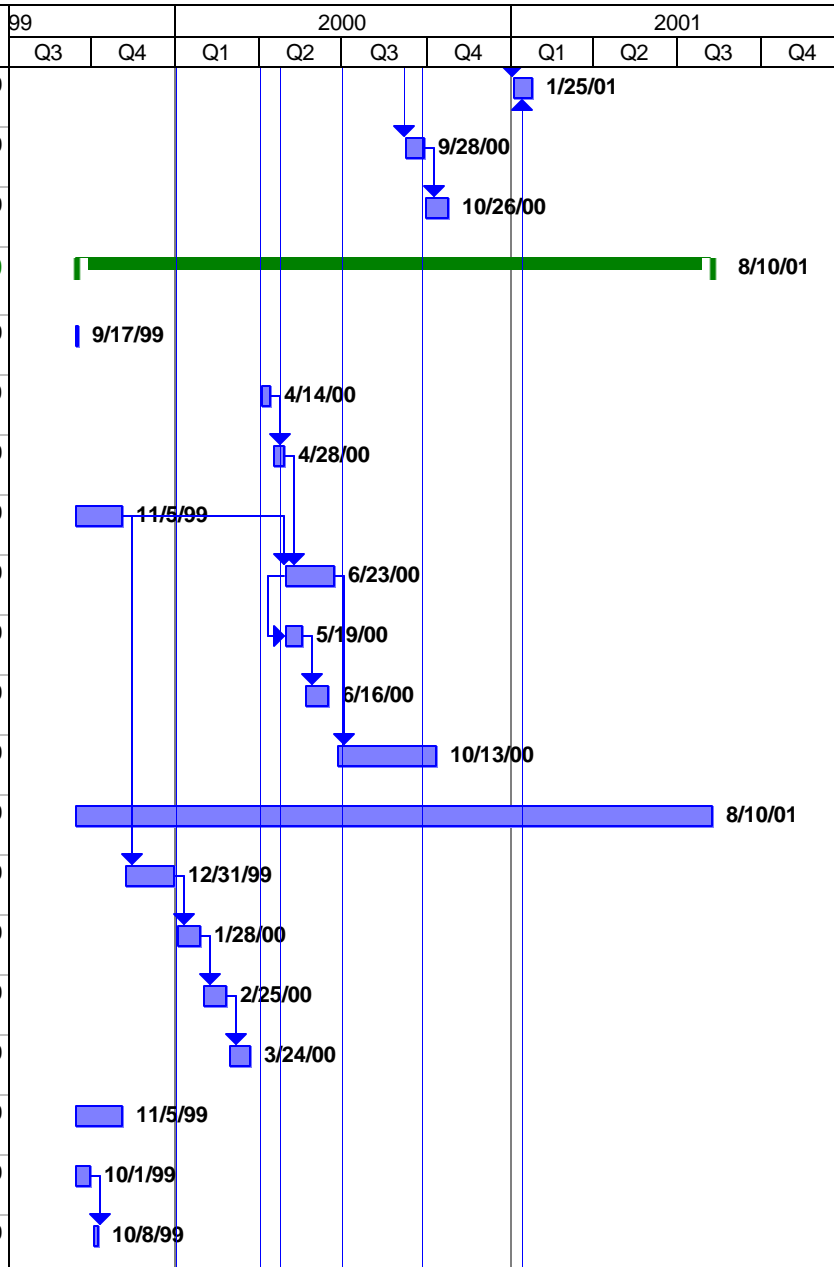
## NLC Controls Software R & D Project

ID	Task Name	Duration	Total Cost	99		2000				2001								
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4					
21	Rational Unified Process Class. Send 2 people to evaluate	0.5 wks	\$4,000															
22	Group presentations, evaluate recommend Rational Unified Process method.	2 wks	\$0															
23	Send 2 people to the Rational Suite Quickstart Team Workshop	1 wk	\$5,000															
24	Evaluate, present & recommend which Rational Suite family products to use.	2 wks	\$0															
25	Purchase the required # of seats for the selected Rational tools.	1 wk	\$10,000															
26	Evaluate products for managing development of distributed object	4 wks	\$0															
27	Write a requirements spec for our distributed development multi-lab	4 wks	\$0															
28	Implement an R & D subset of the ultimate development environment based on	8 wks	\$0															
29	Hire/Contract an OO Mentor	40 wks	\$80,000															
30	EPICS installation, maintenance & Update	104 wks	\$0															
31	<b>Systems Analysis &amp; Overall Design</b>	<b>22 wks</b>	<b>\$0</b>															
32	High-level Systems Analysis	8 wks	\$0															
33	Review key system specifications	1 wk	\$0															
34	Update & write formal document	2 wks	\$0															
35	High-level system design (system objects)	8 wks	\$0															
36	Review	1 wk	\$0															
37	Publish Version 1.0 high-level system design	2 wks	\$0															
38	<b>CORBA/DCOM</b>	<b>53 wks</b>	<b>\$4,000</b>															
39	install a freeware (Tao?) CORBA package on our UNIX & NT servers. Test & evaluate	9 wks	\$0															
40	Install & evaluate payware CORBA	3 wks	\$4,000															



# NLC Controls Software R & D Project

ID	Task Name	Duration	Total Cost	99	2000				2001												
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4								
41	Install production CORBA packages on all NLC test machines, clients and servers.	3 wks	\$0																		
42	Investigate state of DCOM/CORBA bridges. Give group talk and write report	3 wks	\$0																		
43	Survey market and test selected higher level application building tools for CORBA &	4 wks	\$0																		
44	<b>Database</b>	<b>100 wks</b>	<b>\$30,500</b>																		
45	Initial test instance of Oracle 8i	1 wk	\$0																		
46	Database Server for Oracle 8i and OO database testing. Includes large RAID	2 wks	\$30,000																		
47	Install our own instance of 8i on our said dedicated server.	2 wks	\$0																		
48	Evaluate how other labs have used Oracle. Give group talk, write report and make	8 wks	\$0																		
49	Using our dedicated server, write a test plan and run tests for storing and retrieving	8 wks	\$0																		
50	Evaluate naked Oracle 8 for large tables. Could these be used for Archive data and	3 wks	\$0																		
51	Evaluate the other aspects of Oracle 8 such as the ability to use it as a file system,	4 wks	\$0																		
52	Select and evaluate at least 2 pure OO databases. Define and implement	16 wks	\$0																		
53	Support the gradual construction of the NLC Component database.	100 wks	\$0																		
54	Device modeling with SLC data	8 wks	\$0																		
55	Depot modeling with SLC data	4 wks	\$0																		
56	CAPTAR modeling	4 wks	\$0																		
57	Generate EPICS database from Oracle	4 wks	\$0																		
58	Evaluate Jdeveloper and how its use in our application dev. environment.	8 wks	\$0																		
59	Take ClearQuest class, evaluate and contrast with CATER	3 wks	\$500																		
60	Campare/Contrast Remedy with ClearQuest	1 wk	\$0																		



## NLC Controls Software R & D Project

ID	Task Name	Duration	Total Cost	99		2000				2001			
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
61	<b>Hardware</b>	<b>62 wks</b>	<b>\$59,000</b>							[Green bar spanning Q4 2000 to Q4 2001]			
62	1 each UNIX, NT and LINUX distributed object servers (in Mark's budget?)	8 wks	\$40,000							[Blue bar: 12/7/00 to 1/4/01]			
63	Set up network for servers and developer clients. Use Mark's HW?	4 wks	\$0							[Blue bar: 1/4/01 to 8/2/01]			
64	1-2 laptops for testing Oracle Lite DB updates with & w/o ntwk, test DM display	4 wks	\$4,000							[Blue bar: 8/2/01 to 8/30/01]			
65	Bar code scanners to attach to PDA/ laptop. Use for both input and query	4 wks	\$1,000							[Blue bar: 8/30/01 to 9/27/01]			
66	Digital camera	4 wks	\$1,000							[Blue bar: 9/27/01 to 10/2/01]			
67	Digital sound recorder. Again for storing sound clips in the database. E.g. can attach	4 wks	\$1,000							[Blue bar: 10/2/01 to 11/2/01]			
68	Setup at least 2 IOCs. Use Mark's?	4 wks	\$10,000							[Blue bar: 11/2/01 to 11/2/01]			
69	1-2 Pilot and CE PDA, test DB updates with & w/o network and DM update	4 wks	\$2,000							[Blue bar: 11/2/01 to 11/2/01]			
70	<b>Component Implementation</b>	<b>67 wks</b>	<b>\$0</b>							[Green bar spanning Q4 2000 to Q4 2001]			
71	Define functions to implement with distributed arch. & DM. Useful to PEP-II	4 wks	\$0							[Blue bar: 10/13/00 to 9/29/00]			
72	Define a set of Database components to be implemented	2 wks	\$0							[Blue bar: 9/29/00 to 9/22/00]			
73	Define one or more legacy components to be implemented	1 wk	\$0							[Blue bar: 9/22/00 to 10/20/00]			
74	High-level OO design of all of the selected components.	4 wks	\$0							[Blue bar: 10/20/00 to 12/29/00]			
75	Detailed design of the selected components	10 wks	\$0							[Blue bar: 12/29/00 to 7/13/01]			
76	Implementation: iterative with detailed design, more detail > comp. def.	28 wks	\$0							[Blue bar: 7/13/01 to 9/7/01]			
77	Integrate selected components, define & perform systems level tests.	8 wks	\$0							[Blue bar: 9/7/01 to 11/2/01]			
78	Define and run detailed performance tests for the component suite implemented.	16 wks	\$0							[Blue bar: 11/2/01 to 11/2/01]			
79	Using SLC PCAS, install selected components in SLC control room.	8 wks	\$0							[Blue bar: 11/2/01 to 11/2/01]			
80	<b>EDD/DM</b>	<b>85 wks</b>	<b>\$0</b>							[Green bar spanning Q4 2000 to 9/6/01]			

## NLC Controls Software R & D Project

ID	Task Name	Duration	Total Cost	99		2000				2001				
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
81	EDD/DM grand wish list requirements: to interface with CORBA, Database, CA on	6 wks	\$0			3/2/00								
82	Understand and get copies of previous and current EPICS efforts.	4 wks	\$0			2/17/00								
83	UML based high-level design of display generation and processing	4 wks	\$0			4/20/00								
84	Detailed design of those parts to initially implement.	8 wks	\$0			6/15/00								
85	Implement and test initial version. Iterate detailed design & implement.	8 wks	\$0			8/10/00								
86	Define & perform tests. group presentation, document the results.	4 wks	\$0			9/7/00								
87	Maintain, improve production releases. Probably an ongoing effort.	52 wks	\$0										9/6/01	
88	<b>Documentation</b>	<b>89.2 wks</b>	<b>\$0</b>											
89	Accumulate the NLC Control System Basic Implementers Guide (BIG).	10 wks	\$0										11/	
90	Define and write coding standards (C++, Java)	3 wks	\$0											
91	Define CORBA coding standard	2 wks	\$0			4/6/00								
92	Define R&D component design document standards	1 wk	\$0			4/21/00								
93														
94	<b>Miscellaneous</b>	<b>24 wks</b>	<b>\$0</b>											
95	The Object/Web technology will continue to evolve as we learn. We need to keep	16 wks	\$0											
96	Keeping our development Web current and accurate needs constant effort. Ongoing.	24 wks	\$0											
97	Get HyperNews code and expertise from BaBar and implement a server for NLC	8 wks	\$0											