



---

**User's Guide**  
**and Software Design of**  
**a Web Based Task Tracking System**

**2004-01-28**

**Version 1.0**



## Revisions

Table 1: Document Revisions			
Revision Number	Date	Who	Details
1.0	2004-01-28	Effland	Initial



## Contents

<b>1. INTRODUCTION.....</b>	<b>1</b>
<b>2. HISTORY.....</b>	<b>1</b>
<b>3. FEATURES.....</b>	<b>1</b>
<b>4. USING THE TASK TRACKING SYSTEM.....</b>	<b>1</b>
4.1 TASK LISTING SCREEN.....	1
4.2 INPUT FORM FOR NEW TASKS.....	2
4.3 TASK EVENT LISTING SCREEN.....	2
4.4 INPUT FORM FOR NEW TASK EVENTS.....	2
<b>5. APPENDIX A: SOFTWARE AND DATABASE DESIGN.....</b>	<b>1</b>
5.1 DESIGN PHILOSOPHY.....	1
5.2 DATABASE SCHEMA.....	1
5.3 WEB PAGE SOFTWARE.....	3
5.3.1 <i>Software Locations</i> .....	3



## List of Figures

FIGURE 1: BROWSER SCREEN SHOWING TASK LISTING .....	4
FIGURE 2: NEW TASK INPUT SCREEN .....	5
FIGURE 3: TASK EVENT LISTING SCREEN SHOWING EVENTS FOR THE TASK SELECTED FROM SCREEN SHOWN IN FIGURE 1.....	6
FIGURE 4: SCREEN TO ADD AN "EVENT" TO SELECTED TASK .....	7



## List of Tables

<b>TABLE 1: DOCUMENT REVISIONS</b> .....	II
TABLE 2: ENTRY FIELDS FOR NEW TASK INPUT FORM.....	2
TABLE 3: ENTRY FIELDS FOR TASK INPUT FORM .....	3
<b>TABLE 4 : DESCRIPTION OF TABLES IN MYSQL DATABASE FILE DBCDL</b> .....	1
<b>TABLE 5 :DESCRIPTION OF TABLE TASKS</b> .....	2
<b>TABLE 6:DESCRIPTION OF TABLE TASKEVENTS</b> .....	2
<b>TABLE 7:DESCRIPTION OF TABLE TASKPROJECTS</b> .....	3
TABLE 8: <b>DESCRIPTION OF TABLE TASKSUBPROJECTS</b> .....	3
<b>TABLE 9:TASK MANAGEMENT PROGRAM FILE LOCATIONS</b> .....	4

## 1. Introduction

A web-based tracking system, based on a similar design for tracking machine shop jobs<sup>1</sup>, has been developed to manage the progress of tasks. This system was developed to provide better coordination for tracking tasks involved in building ALMA Band 6 Cartridges but can be enhanced for use with other projects.

This memo provides instructions for using the system and the design methodology is described in an Appendix.

## 2. History

The present approach for tracking tasks involves managing a list of tasks in two different formats: The tasks are typed or copied into MS Word and discussed at twice-weekly status meetings, and then are updated and e-mailed in plain text formats to all team members. Managing this list is cumbersome and tasks are frequently lost.

The intent of the system described here is to simplify the management of tasks and to get team members to be more active in updating the status of tasks assigned to them.

## 3. Features

The task tracking system has the following features:

- a) All tasks are visible to anyone with a web browser inside NRAO's intranet (Figure 1).
- b) Team members can enter new tasks using a web form, by typing a task description and notes (Figure 2).
- c) Events for a task selected in the main screen are listed by clicking on the task number (see Figure 3)
- d) Anyone can enter a new event for a selected task (see Figure 4)

## 4. Using the Task Tracking System

The initial web form that displays the status of all uncompleted tasks, as shown in Figure 1, is available at

<http://www.cv.nrao.edu/~jeffland/nrao-only/Progs/Tasks/Tasks3.php3>

Table data on the form are stored in a database (see Appendix for details) and a listing of completed tasks is available from a hyperlink at the top of the page.

### 4.1 Task Listing Screen

From the task listing screen shown in Figure 1, the user can either enter a new task by clicking the appropriate button, see events for a particular task by clicking on the task number, or view a listing of all completed tasks.

A list box below the **Filter By** button allows the user to show just those tasks assigned to a particular person. To use this feature, select the person in the list box and press the **Filter By** button.

---

<sup>1</sup> "System to Track the Progress of Jobs in the CDL's Machine Shop," Internal NRAO memo by J. Effland, 2002-11-15.



A serious limitation in the existing design is that there is no way for users to change any of the entries once they are entered into the database. I can change things using other programs to access the database.

## **4.2 Input Form for New Tasks**

New tasks are entered using the form shown in Figure 2, which is available by clicking the **Add a Task** button on the main task listing screen shown in Figure 1. Fill in the fields shown in Table 2, then press the **Enter new task in database button** on the form to add the task to the database.

**Table 2: Entry Fields for New Task Input Form**

<b>Field Name</b>	<b>What to enter</b>
Project	Select a Project for the task using the list box.
Task Description	Enter a brief but descriptive title for the task
Date Entered	Automatically filled in
Person Responsible	Enter the last name of the person responsible for this task.
Estimated Completion Date	Enter the date when the task should be completed. A default date is shown as an aid for entering the correct date format, which is YYYY-MM-DD. Limited format conversion is available but please use the format shown in the field.
Notes	Enter short text here. Lengthy notes should be entered in the input form for Task Events, discussed in Section 4.4.
<i>Required Completion Date</i>	<i>Not supported in this software version.</i>
Be sure to press the <b>Enter new task in database</b> button on the form to add the task to the database	

## **4.3 Task Event Listing Screen**

Each task has certain events associated with it, and the “Task Event Listing” screen (Figure 3) tabulates events for a selected task. This screen is produced by clicking on the task number hyperlink in the Task Listing screen (Figure 1). Task events include:

- a) Notes about the task. The note field can include the text of e-mails associated with this task, as shown in the second event in Figure 3.
- b) A change in the person assigned to the task.
- c) A change in the estimated completion date for the task.

## **4.4 Input Form for New Task Events**

New events for a particular task are entered using the form shown in Figure 4, which is available by clicking the **Add an Event** button on the “Task Event Listing” screen (Figure 3). Fill in the following fields:

**Table 3: Entry Fields for Task Input Form**

<b>Field Name</b>	<b>What to enter</b>
Your name	Enter your last name
Change person assigned to this:	Enter last name of person now assigned to this task
Task Complete On:	Check this box to indicate that the task is complete. Note that this task will disappear from the "Incomplete Tasks" listing screen and will appear on the "Completed Tasks" listing screen.
New Estimated Completion Date	Use one of the radio buttons or select and manually enter the new estimated completion date.
Notes	Notes about the task. Text from e-mails can also be pasted into this field.
Be sure to press the <b>Enter new event in database</b> button on the form to add the task to the database	

Events cannot be changed once they are entered into the system, which admittedly is a serious limitation that will be addressed in future software versions. The work-around is to simply enter another event that includes the corrections.





**Band 6 Cartridge Tasks - Microsoft Internet Explorer**

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit

Address <http://www.cv.nrao.edu/~jeffland/nrao-only/Progs/Tasks/Tasks3.php3> Go Links »

## Incomplete Tasks

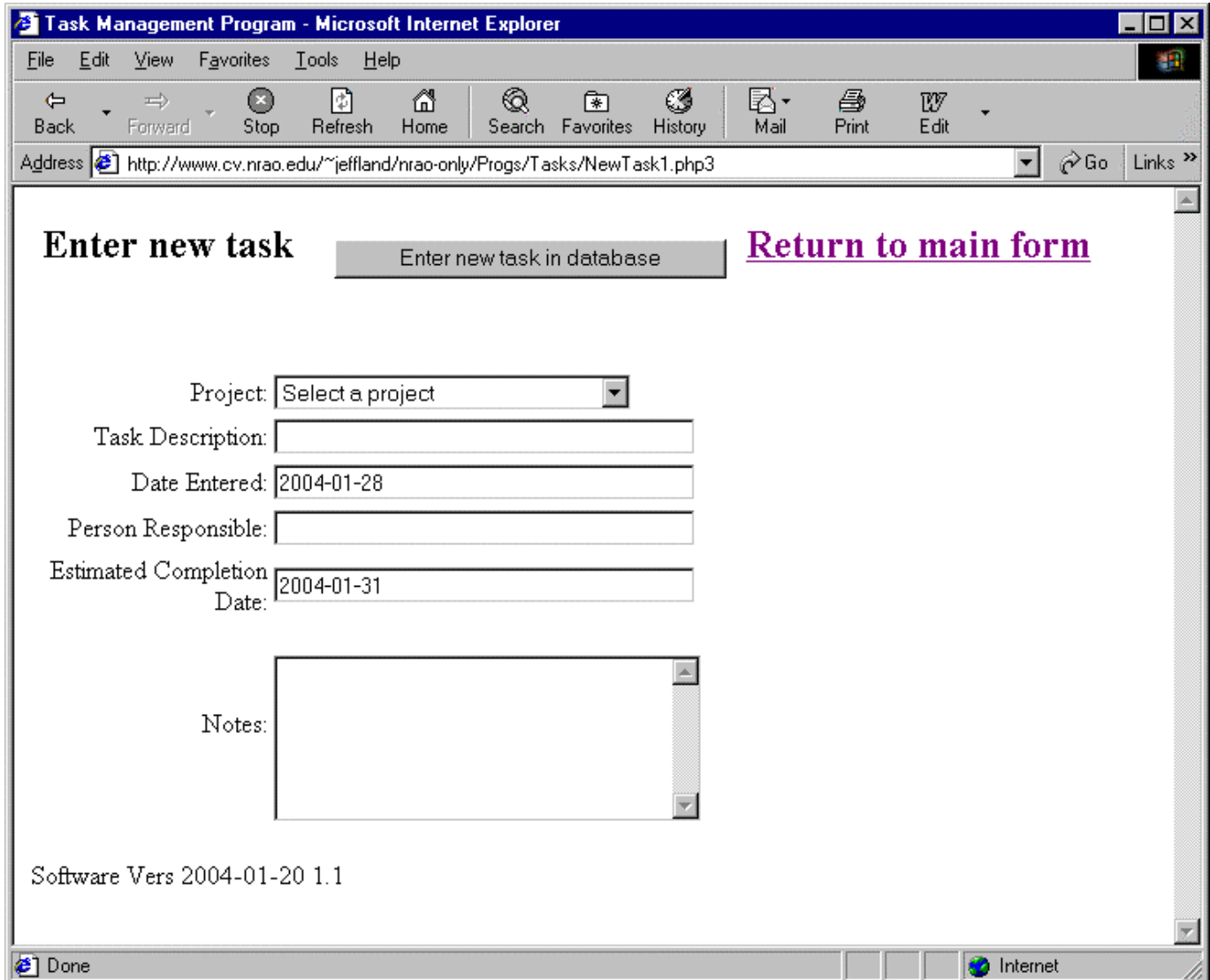
Sorted by Date Entered (most recent first) [Show completed tasks](#)

(Click on a task number to view or add details for that task)

Task Number	Description	Assigned To	Dates: Entered / Completion	Notes
<b>Cartridge Test Set</b>				
<a href="#">129</a>	Design and Build Noise Diode Power Supply	Koller	2004-01-28 2004-01-31	
<a href="#">128</a>	Update Block Diagram	Koller	2004-01-28 2004-01-31	
<a href="#">112</a>	Document heat load of Cartridge Test Dewar	Koller	2004-01-23 2004-01-26	Need to update graph to include annotation.
<a href="#">107</a>	Fix Networking addresses on CTS	Koller	2004-01-23 2004-01-26	Must use IP addresses rather than //cvfiler.
<a href="#">104</a>	Make LO windows	Koller	2004-01-21 2004-01-24	Need 5 mil sections with windows and 40 mil spacers.
<a href="#">94</a>	Buy 5 or 6-way switch for Warm IF	Koller	2004-01-15 2004-01-18	
<a href="#">59</a>	Give Koller clearance required at bottom of Cartridge	Sullivan	2003-12-19 2003-12-22	E-mail sent this morning.

Internet

Figure 1: Browser Screen Showing Task Listing



The screenshot shows a Microsoft Internet Explorer browser window titled "Task Management Program - Microsoft Internet Explorer". The address bar contains the URL "http://www.cv.nrao.edu/~jeffland/nrao-only/Progs/Tasks/NewTask1.php3". The main content area displays a form for entering a new task. The form includes a "Project" dropdown menu with "Select a project" as the selected option, a "Task Description" text input field, a "Date Entered" text input field with "2004-01-28", a "Person Responsible" text input field, and an "Estimated Completion Date" text input field with "2004-01-31". Below these fields is a "Notes" text area. A button labeled "Enter new task in database" is positioned to the right of the "Project" dropdown. A purple link labeled "Return to main form" is located to the right of the button. At the bottom left of the form area, the text "Software Vers 2004-01-20 1.1" is displayed. The browser's status bar at the bottom shows "Done" and "Internet".

**Enter new task**      Enter new task in database      [Return to main form](#)

Project:

Task Description:

Date Entered:

Person Responsible:

Estimated Completion Date:

Notes:

Software Vers 2004-01-20 1.1

Figure 2: New Task Input Screen

**Event listing**            [Return to main form](#)

Task Number	Description	Assigned To	Dates: Entered / Completion	Notes
<b>Cartridge Test Set</b>				
128	Update Block Diagram	Koller	2004-01-28 2004-01-31	

**Events:**

Date Event Entered (Most recent first)	Item	Notes
2004-01-28	Effland added notes.	Update path in drawing, too.
2004-01-28	Effland added notes.	<pre>-----Original Message----- From: John Effland [mailto:jeffland@nrao.edu] Sent: Wednesday, 2004 January 28 14:36 To: Dan Koller (E-mail) Subject: Revisions to Cartridge Test System</pre>

Software Vers 1.0 (2004-01-27)

Figure 3: Task Event Listing Screen Showing Events for the Task Selected from screen shown in Figure 1

Task Management Program - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit

Address <http://www.cv.nrao.edu/~jeffland/nrao-only/Progs/Tasks/NewEvent1.php3?TaskNum=128> Go Links >>

**Enter new event for task**  [Return to main form](#)

Task Number	Description	Assigned To	Dates: Entered / Completion	Notes
<b>Cartridge Test Set</b>				
128	Update Block Diagram	Koller	2004-01-28 2004-01-31	

Your name:

Change person assigned to this:

Task complete on

New estimated completion date

Tomorrow  
 2 days  
 1 week  
 4 weeks  
 Other:

Notes:

Software Vers 1.0

Internet

Figure 4: Screen to Add an "Event" to selected task



## 5. Appendix A: Software and Database Design

### 5.1 Design Philosophy

A database serves to hold the task and event information. Records in the database are displayed and updated with web-based input forms dynamically generated with PHP running on the NRAO's web server.. This allows the task information to be updated by simply adding or modifying records in the database.

### 5.2 Database Schema

The open source program MySQL is used as the database server because it has been tightly integrated with the Apache web server program and is presently supported by the NRAO for simple access from web pages. The MySQL server is located at `sql.cv.nrao.edu`.

MySQL lacks many of the advanced features of commercially available databases, such as facilities to graphically display database schemas, so schemas for the tables discussed below were generated manually. The free program "MySQL-Front" (<http://www.anse.de/mysqlfront/>) was used to manage the database tables.

All database tables reside in the MySQL "database" file `dbCDL`. The database tables listed in **Table 4** store the relevant data using a relational schema described later.

Table 4 : Description of tables in MySQL Database file dbCDL		
Table Name	Comments	Table Describing Schema
Tasks	Holds the task information	Table 5
TaskEvents	Holds events for tasks	Table 6
TaskProjects	Top-level project table that holds the project under which the task is assigned	Table 7
TaskSubProjects	Subproject level table that holds the project under which the task is assigned	Table 8

Records in table `TaskProjects` describe the top level project, and records in the child-table `TaskSubProjects` are related to `TaskProjects` in a one-to-many relationship using the foreign-key field `fkTaskProjects` in table `TaskSubProjects` to link multiple subproject records with a single project record. Similarly, the foreign key field `fkSubProject` links records in table `Tasks` to subprojects.

Records in table `TaskEvents` are related in a one-to-many relationship to parent records in table `Tasks`.

**Table 5 :Description of table *Tasks***

<b>Purpose:</b>	<b>Each record provides information about events related to a particular task</b>	
<b>Field Name</b>	<b>Field Type</b>	<b>Comments</b>
keyTasks	int (10) unsigned	Auto-incremented key field
fkSubProject	int (10) unsigned	Foreign key field linked to the parent table <i>TaskSubProjects</i>
<i>Priority</i>	<i>tinyint (6)</i>	<i>Integer giving task priority (Future use)</i>
AssignedTo	varchar (50)	Name of person assigned to task
DateEntered	datetime	Date when task was entered into database
Description	varchar (255)	Description of task
<i>DateRequired</i>	<i>datetime</i>	<i>Date that task is required to be completed (Future use)</i>
DateEstCompletion	datetime	Estimated completion date for this task
DateCompleted	datetime	Date that task was actually completed (note that this is redundant with field <i>DateCompleted</i> in table <i>TaskEvents</i> )
Notes	text	Notes about this task

**Table 6:Description of table *TaskEvents***

<b>Purpose:</b>	<b>Each record provides information about events related to a particular task</b>	
<b>Field Name</b>	<b>Field Type</b>	<b>Comments</b>
keyTaskEvents	int (10) unsigned	Auto-Incremented key field
fkTasks	int (10) unsigned	Foreign key field linked to the parent table <i>Tasks</i>
DateUpdated	datetime	Date updated
EntryBy	varchar (50)	Name of person entering this event
AssignedPrev	varchar (50)	Name of person previously assigned to this task (Person presently assigned is stored in table <i>Tasks</i> ).
DateEstCompletionPrev	datetime	Previous estimated completion date. (Present estimated completion date is stored in table <i>Tasks</i> ).
DateCompleted	datetime	Date that task was actually completed
<i>Effort</i>	<i>float</i>	<i>Effort required (Future use)</i>
Notes	text	Notes about this task

**Table 7:Description of table** TaskProjects

<b>Purpose:</b>	<b>Each record provides information about the top-level project for which the task is assigned</b>	
<b>Field Name</b>	<b>Field Type</b>	<b>Comments</b>
keyTaskProjects	int (10) unsigned	Auto-Incremented key field
Name	varchar (50)	Name of top-level project for which the task is assigned
DateEntered	timestamp (14)	Date task was entered into database
EnteredBy	varchar (50)	Name of person entering this project
Notes	text	Notes about this task

**Table 8:Description of table** TaskSubProjects

<b>Purpose:</b>	<b>Each record provides information about the subproject for which the task is assigned</b>	
<b>Field Name</b>	<b>Field Type</b>	<b>Comments</b>
keyTaskSubProjects	int (10) unsigned	Auto-Incremented key field
fkTaskProjects	int (6)	Foreign key field linked to the parent table TaskProjects
Name	varchar (50)	Name of subproject for which the task is assigned
DateEntered	timestamp (14)	Date task was entered into database
EnteredBy	varchar (50)	Name of person entering this project
Notes	text	Notes about this task

### **5.3 Web Page Software**

The web page and database access software was written using the scripting language PHP. There is an incredible number of scripting languages available for dynamic web page construction, but Pat Murphy recommended PHP. The free program PHPCoder Version 2.3 (<http://www.phpide.de>) was used to write and edit most of the PHP code.

When a URL pointing to a PHP file is entered using a browser, the web server first executes the PHP statements in the file, and the PHP program then outputs HTML to the browser. A notable limitation is that PHP programs can't be executed from the Window's explorer because that program somehow circumvents the HTTP protocol. You must type the URL into a browser to run this code, you can't just double-click from Windows Explorer.

Listings will be provided later.

#### **5.3.1 Software Locations**

**Table 9** tabulates the PHP routines used here along with their locations.

**Table 9: Task Management Program File Locations****All files are located in** <http://www.cv.nrao.edu/~jeffland/nrao-only/Progs/Tasks>

<b>File Name</b>	<b>Comments</b>
Tasks3.php3	Code to generate main task form
NewTask1.php3	Code to generate task input form
Events2.php3	Generates events listing screen.
NewEvent1.php3	Generates the new event input screen.
../taskconst.php3	Holds constants, CdbTask database class, and common functions
../database.php3	Holds common database information