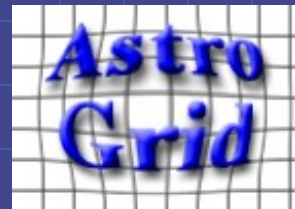


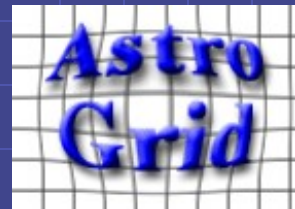
# Workflow within Astrogrid

Phillip Nicolson  
Leicester University



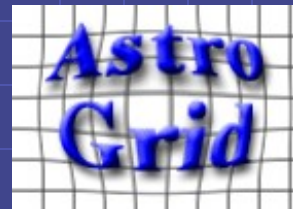
# Outline

- ◆ Workflow overview
- ◆ Workflow definition
- ◆ Workflow execution environment
- ◆ Workflow within Astrogrid



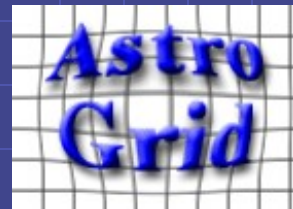
# Workflow overview

- ◆ Astrogrid workflow is a multi-user batch system for the unattended execution of potentially long running astronomical workflows
- ◆ Input is a *workflow document*, authored by a user, that describes which remote *applications* are to be used
- ◆ The workflow document is passed to a *Job Execution Server (JES)* for execution
  - User has no further input (yet)
  - JES orchestrates workflow



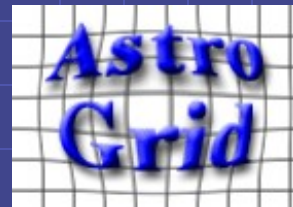
# Workflow definition

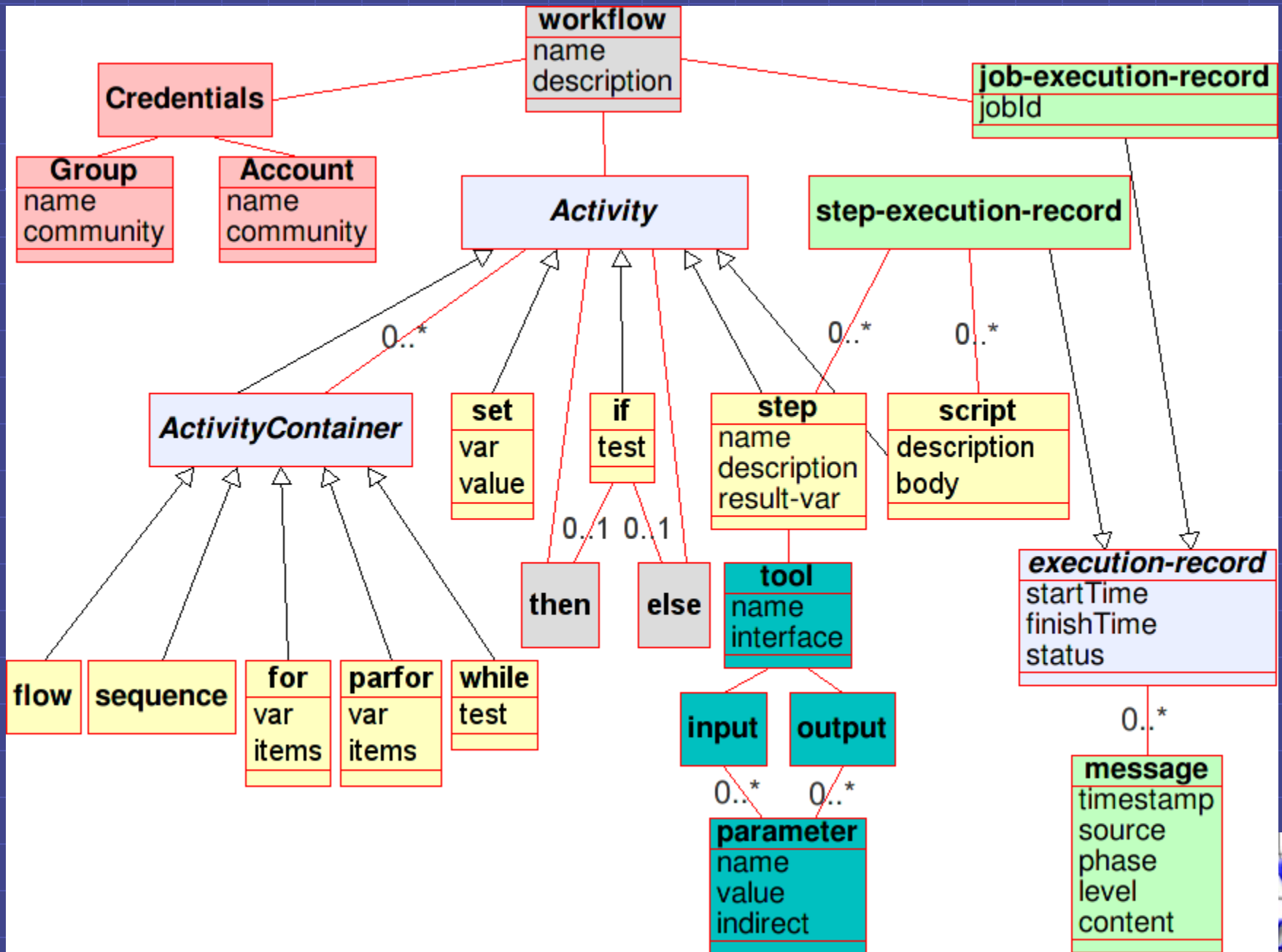
- ◆ A workflow performs a complex piece of work
- ◆ Each step invokes a separate computer program
  - Distributed execution of a CEA application
- ◆ Step has input and output parameters
  - Inputs – control and astronomical data
  - Output – final results, or intermediate results for input to a subsequent step
- ◆ Parameter values can be
  - Inline (direct parameters)
  - References to external resources (indirect parameters)
    - ◆ <http://...>, <ftp://...>, <ivo://...>



# Workflow structure

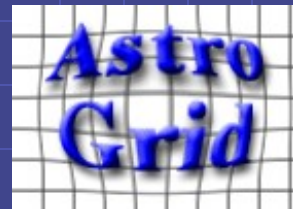
- ◆ XML – verbose but rigorous
- ◆ Descriptive info
- ◆ Steps to execute
- ◆ Control structures
- ◆ Scripts
- ◆ Execution traces
  - Logs generated from each step
  - Results of steps (if required)
- ◆ Workflow element can contain three elements:
  - Credentials
  - Activity
  - Job execution record



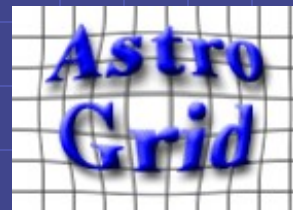
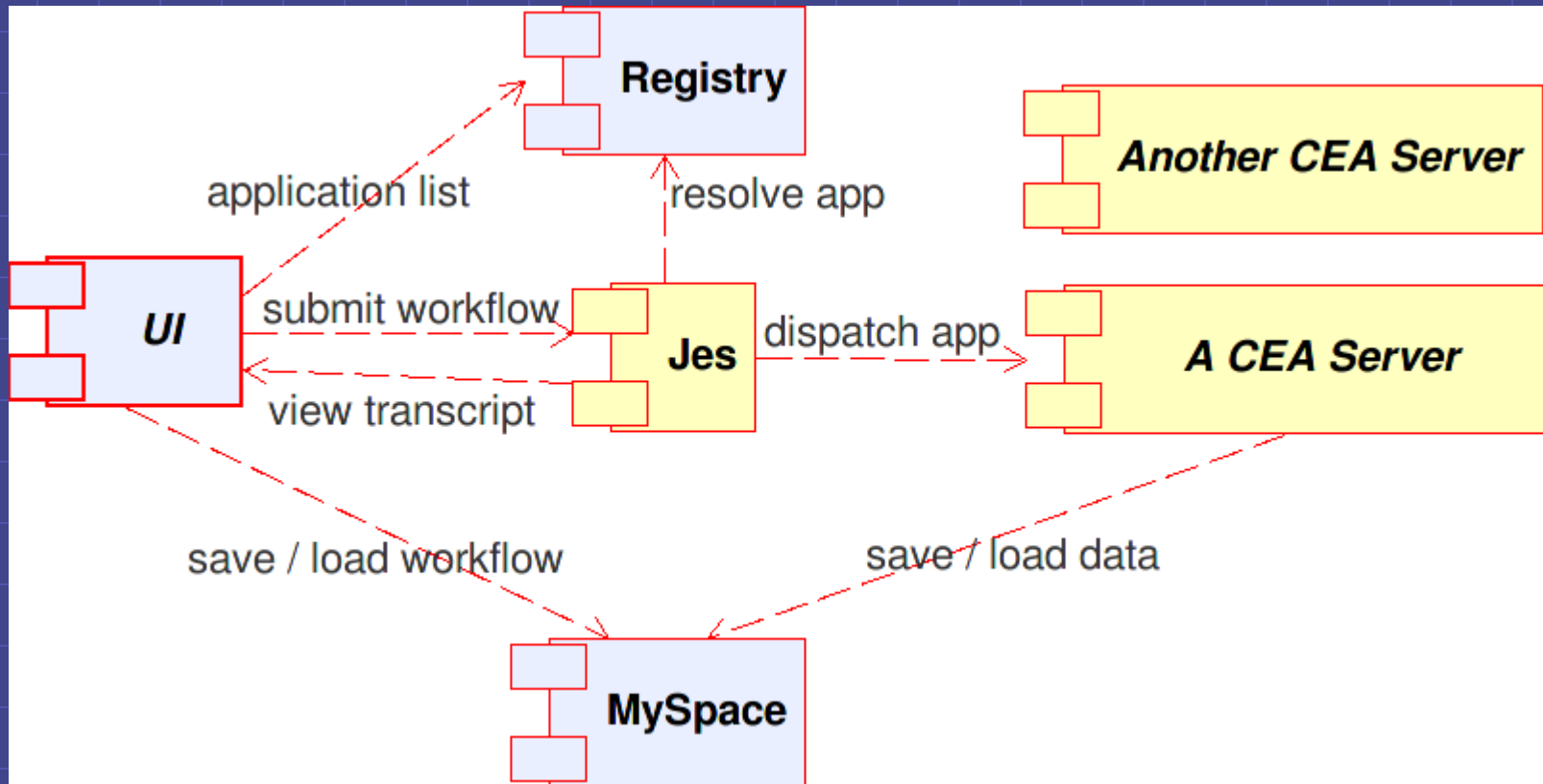


# Workflow execution environment

- ◆ JES – JOB Execution System
- ◆ Submitting a workflow to JES creates a job
- ◆ Globally unique job ID is returned
  - `jes:galahad.star.le.ac.uk/143.210.36.238/philnicolson1@uk.ac.le.star/4791`
- ◆ JES schedules and executes the workflow
  - Decides which CEA servers to place application calls on
  - Records log and results of application execution
  - Executes workflow control structures to decide which steps to run
  - Executes workflow scripts



# Workflow execution environment





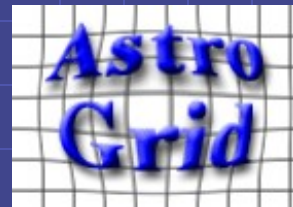
# Workflow within the workbench

## ◆ Portal

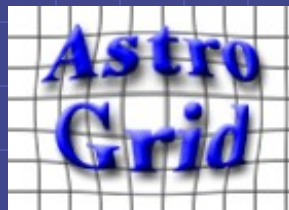
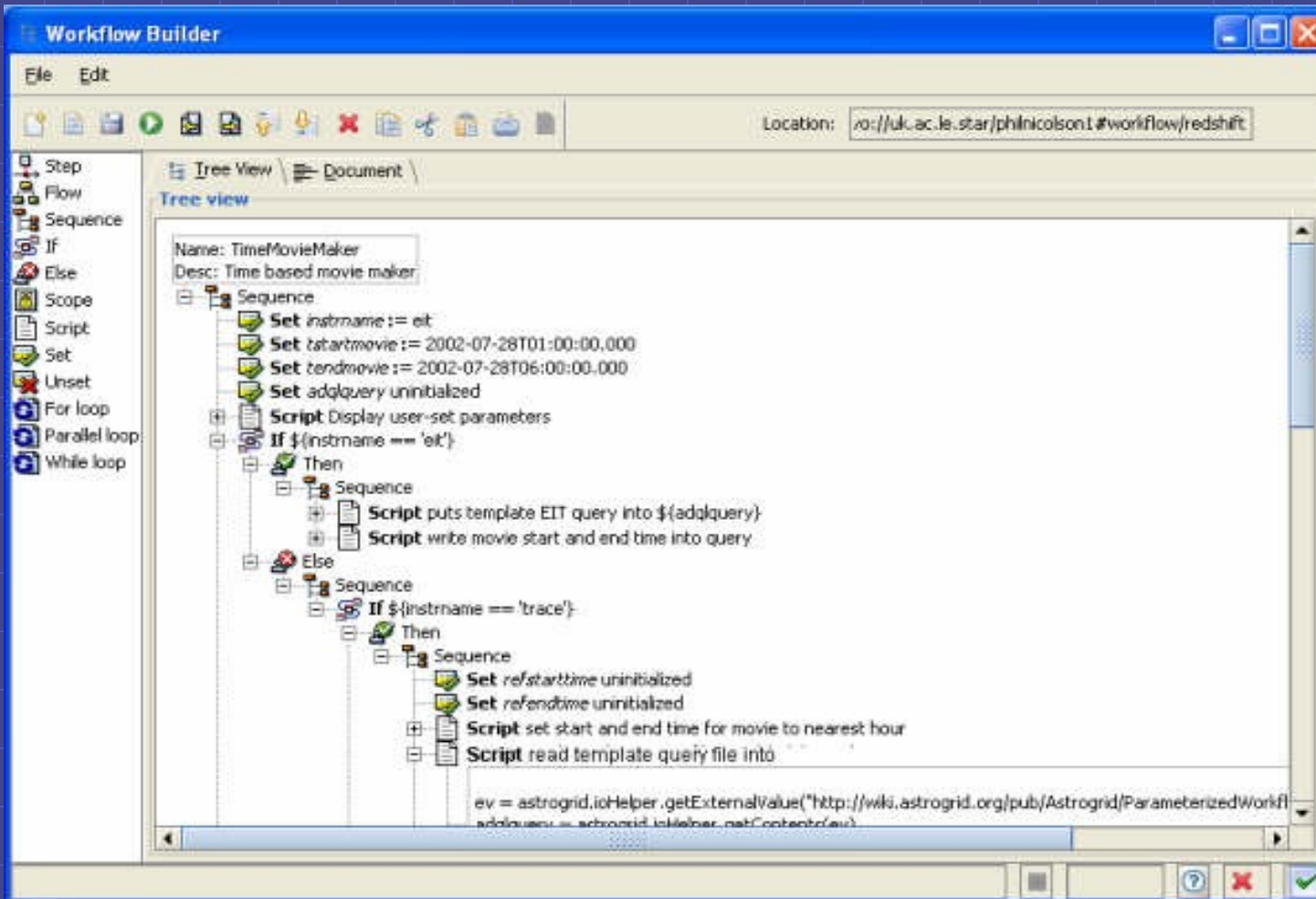
- Poor usability
- Page-request model
- Recent development of web technologies such as AJAX may make a browser interface feasible again

## ◆ Workbench

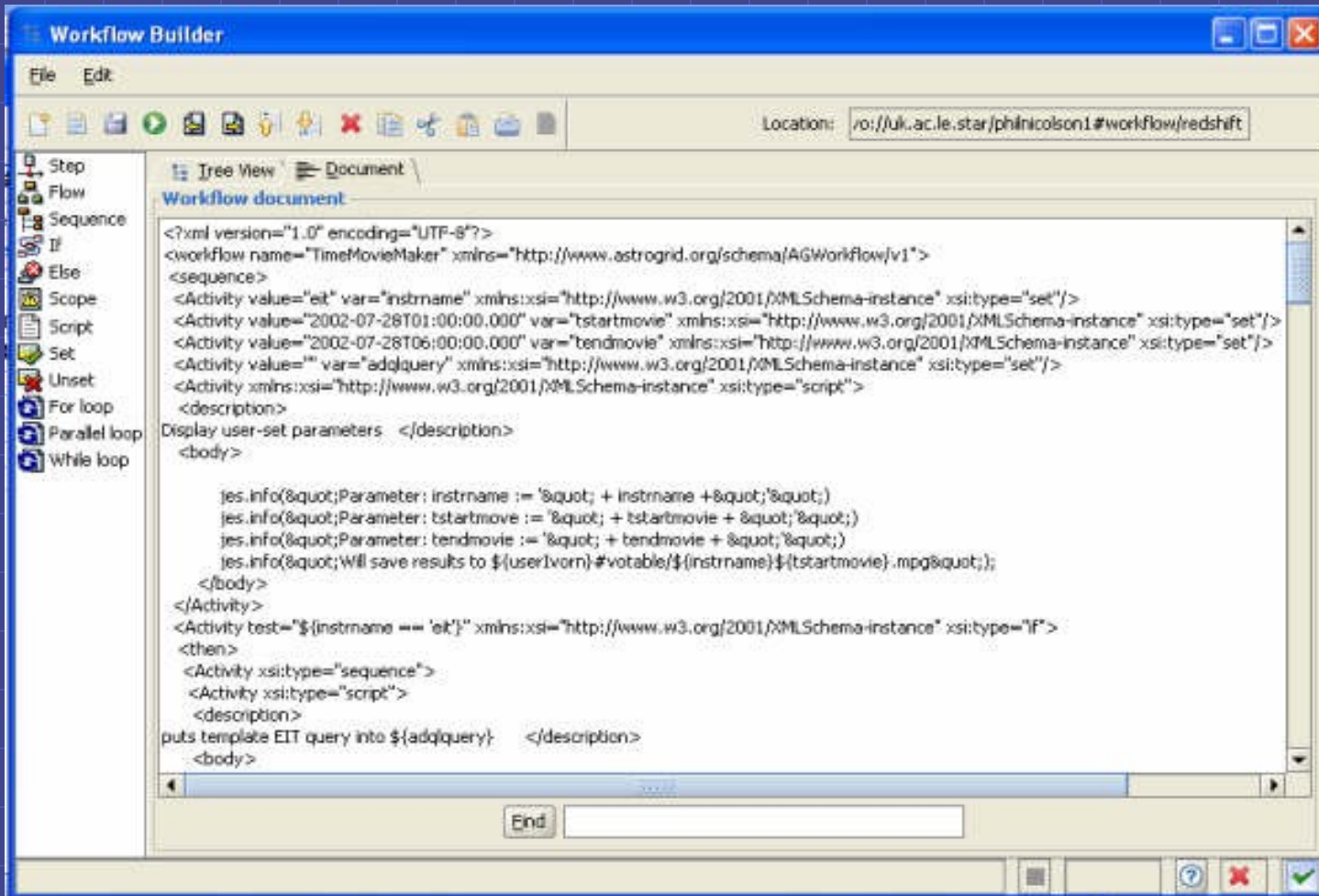
- Graphical desktop application
- Swing - Drag and Drop, pop up dialogues
- Much more usable



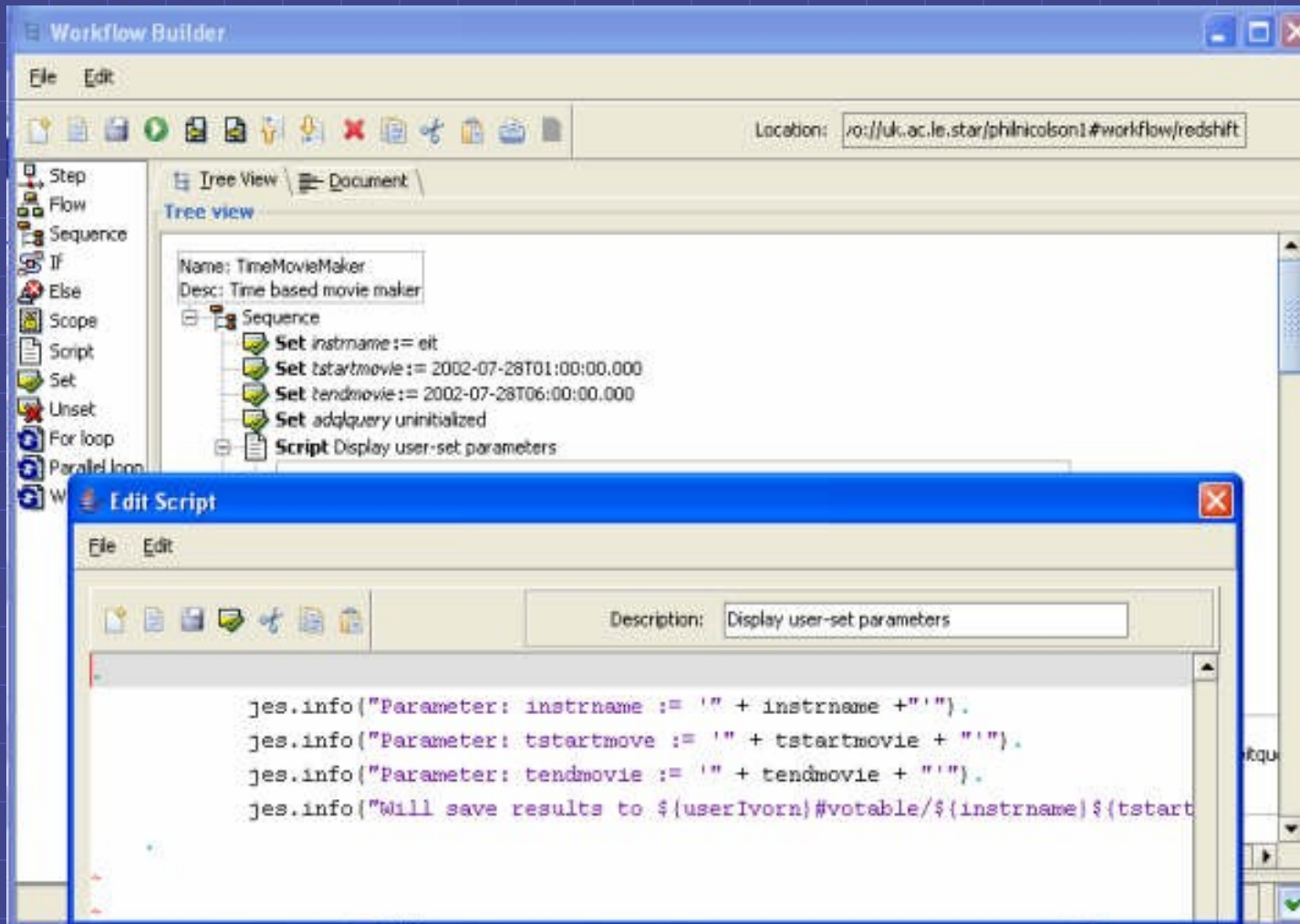
# Workflow builder



# Document view



# Dialogues



# Transcript viewer

The screenshot shows a window titled "Transcript Viewer" with a menu bar (File, Edit) and a toolbar. The main area displays a tree view of a job transcript for "TimeMovieMaker".

**Name:** TimeMovieMaker  
**Desc:** Time based movie maker

**JobURN:** jes:galahad.star.le.ac.uk/143.210.36.238/phirnicolson1@uk.ac.le.star/4792

**Status:** COMPLETED **Start:** Fri Apr 28 13:37:15 BST 2006 **Finish:** Fri Apr 28 13:39:28 BST 2006

- Phase:** RUNNING..... **Time:** Fri Apr 28 13:37:18 BST 2006 **Message:** Parameter: instrname := 'eit'
- Phase:** RUNNING..... **Time:** Fri Apr 28 13:37:18 BST 2006 **Message:** Parameter: tstartmovie := '2002-07-28T01:00:00.000'
- Phase:** RUNNING..... **Time:** Fri Apr 28 13:37:18 BST 2006 **Message:** Parameter: tendmovie := '2002-07-28T06:00:00.000'
- Phase:** RUNNING..... **Time:** Fri Apr 28 13:37:18 BST 2006 **Message:** Will save results to ivo://uk.ac.le.star/phirnicolson1#votable/eit2002-07-28T01:00:00.000
- Phase:** RUNNING..... **Time:** Fri Apr 28 13:37:21 BST 2006 **Message:** ?xml version="1.0"?>?qb-sq-source SELECT FitsLocation FROM eitdata AS T
- Phase:** RUNNING..... **Time:** Fri Apr 28 13:37:30 BST 2006 **Message:** [http://sohodata.nascom.nasa.gov/archive/4/private/data/processed/eit/tz/...

**Sequence**

- Set** instrname := eit
- Set** tstartmovie := 2002-07-28T01:00:00.000
- Set** tendmovie := 2002-07-28T06:00:00.000
- Set** adqquery uninitialized
- Script** Display user-set parameters
  - jes.info("Parameter: instrname := " + instrname + "")
  - jes.info("Parameter: tstartmovie := " + tstartmovie + "")
  - jes.info("Parameter: tendmovie := " + tendmovie + "")
  - jes.info("Will save results to \${userIvorn}#votable/\${instrname}/\${tstartmovie}.mpg");
- Status:** COMPLETED **Start:** Fri Apr 28 13:37:18 BST 2006 **Finish:** Fri Apr 28 13:37:18 BST 2006
- Phase:** RUNNING..... **Time:** Fri Apr 28 13:37:18 BST 2006
- Phase:** RUNNING..... **Time:** Fri Apr 28 13:37:18 BST 2006
- If** \${instrname == 'eit'}

Transcript Viewer - transcripts are not editable

