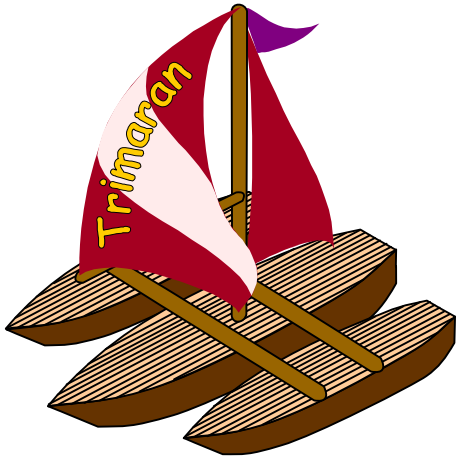


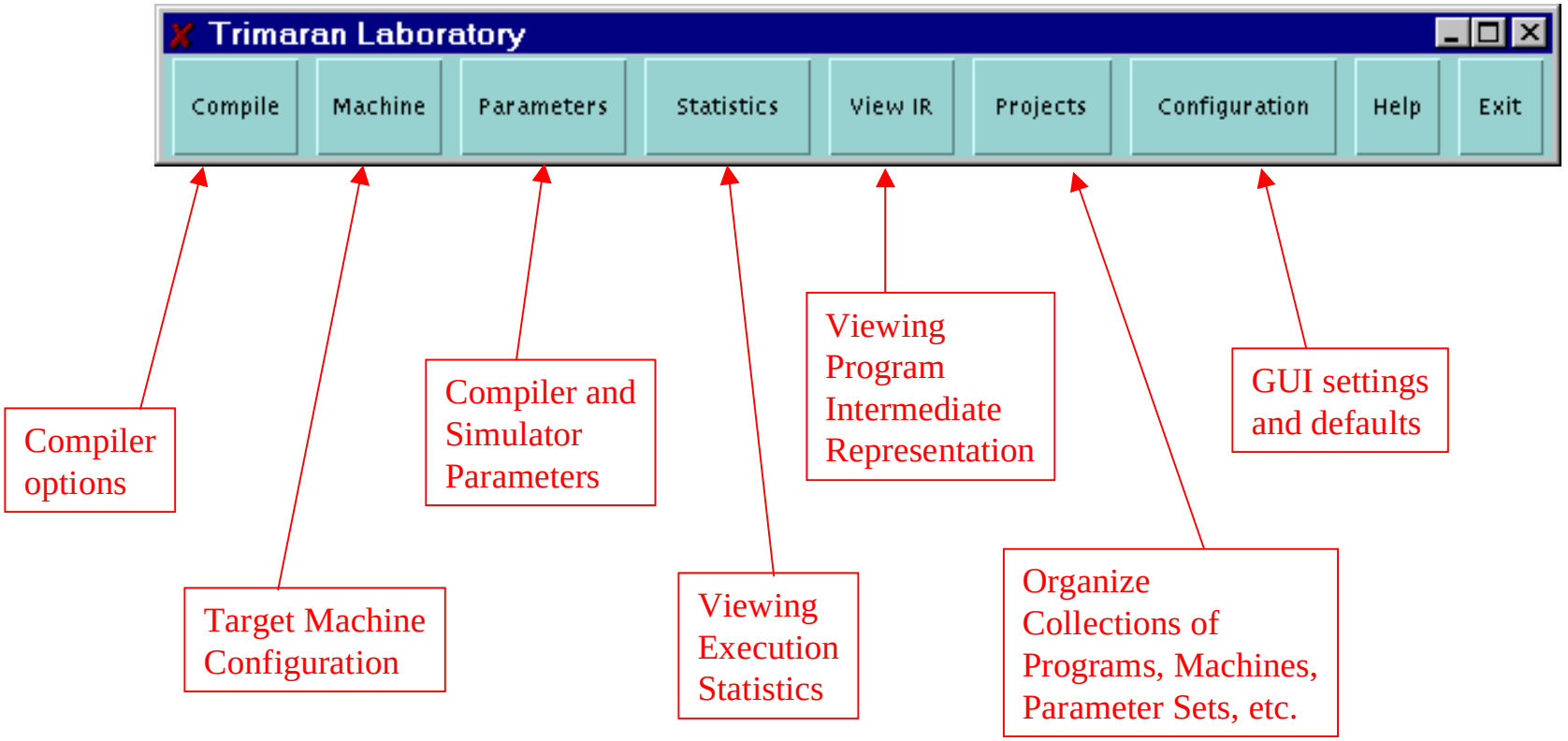
Customizing and Running the Trimaran System

The Trimaran GUI

- The Trimaran system is configured and run via a Graphical User Interface
  - choose program to compile
  - configure target machine
  - configure compilation stages
  - view graphical program representations at various stages of compilation
  - view execution statistics (graphs, pie charts, etc.)
  - view extensive on-line help and documentation.
- If desired, the system can also be run from the command line and be invoked from shell scripts.

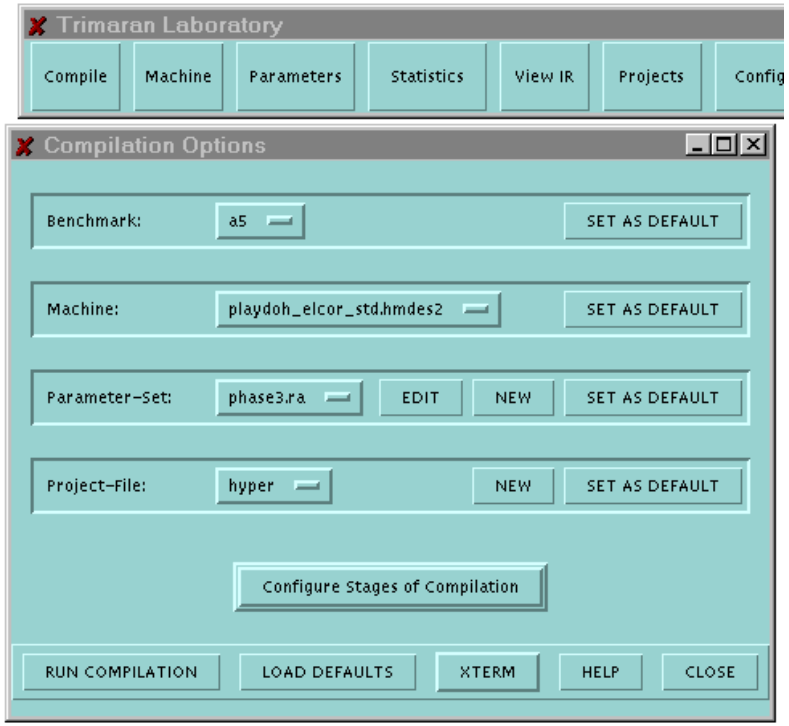
The control panel

- The GUI is operated from this main control panel.

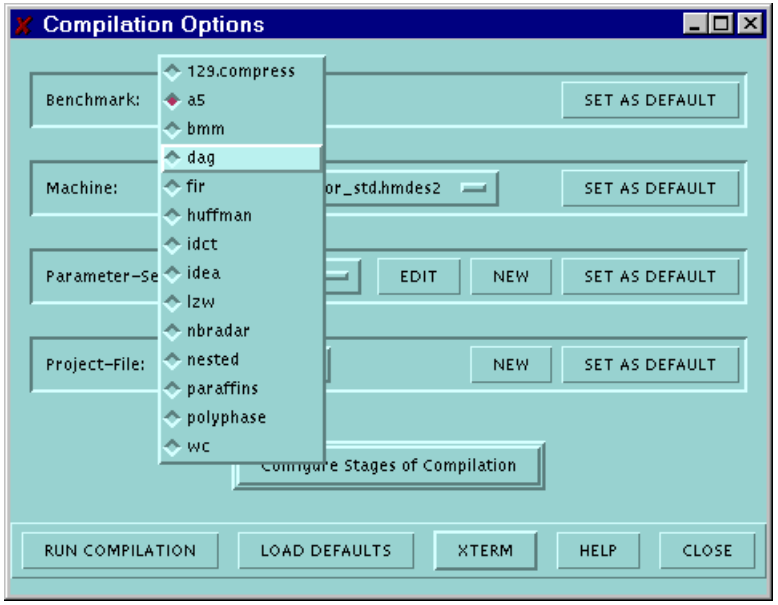


The Compiler Panel

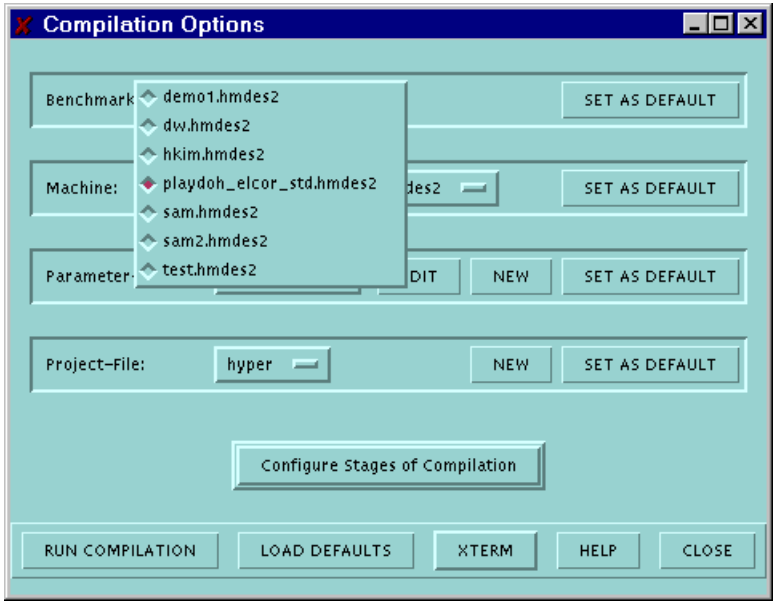
- The compiler panel allows you to choose a:
  - benchmark program to compile
    - you can add your own as well.
  - target machine configuration
  - parameter set (for the compiler and simulator)
  - project file
- It also allows you to easily configure the stages of the compiler and start the compilation process.



Choosing a benchmark and machine



Choosing a benchmark



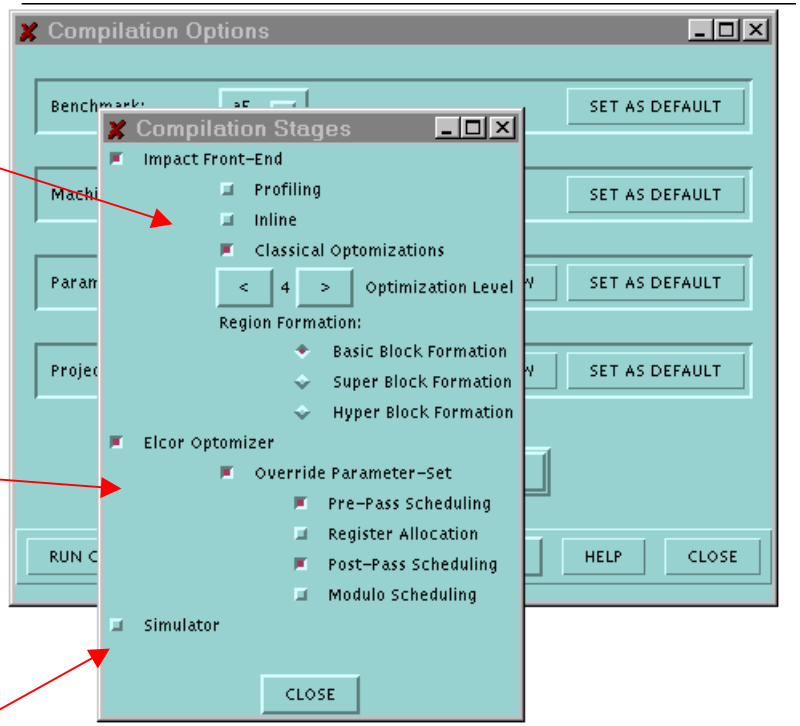
Choosing a machine

Configuring the compiler

Front end features

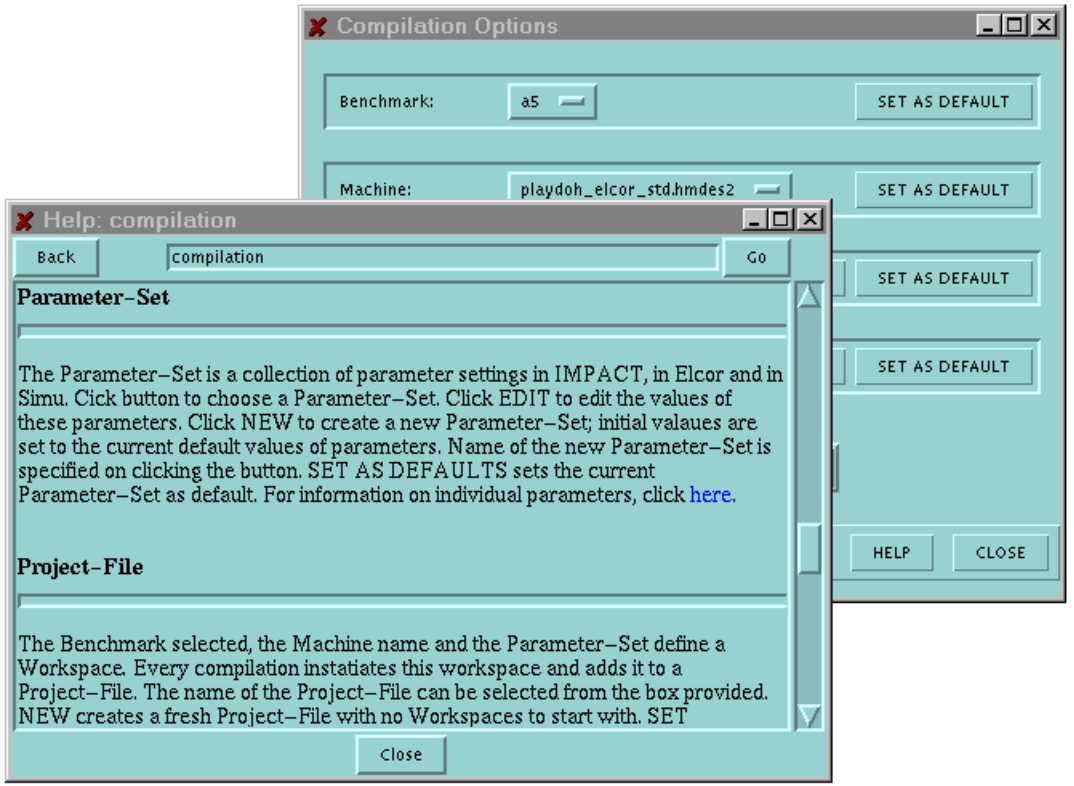
Back end features

Simulator on/off



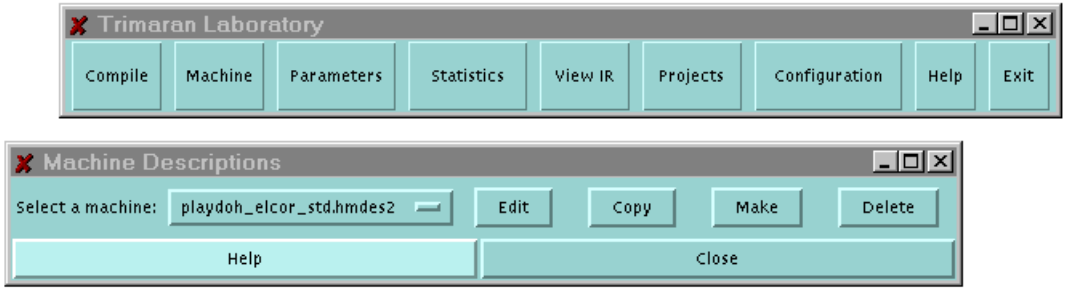
On-line Documentation

- On-line documentation is available for each component of Trimaran
  - this is the on-line help for the compiler panel.

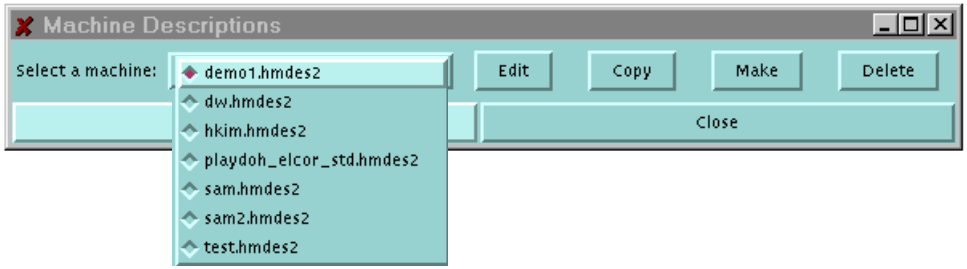


The Machine Panel

- The machine panel is used create new target machines and modify existing ones.

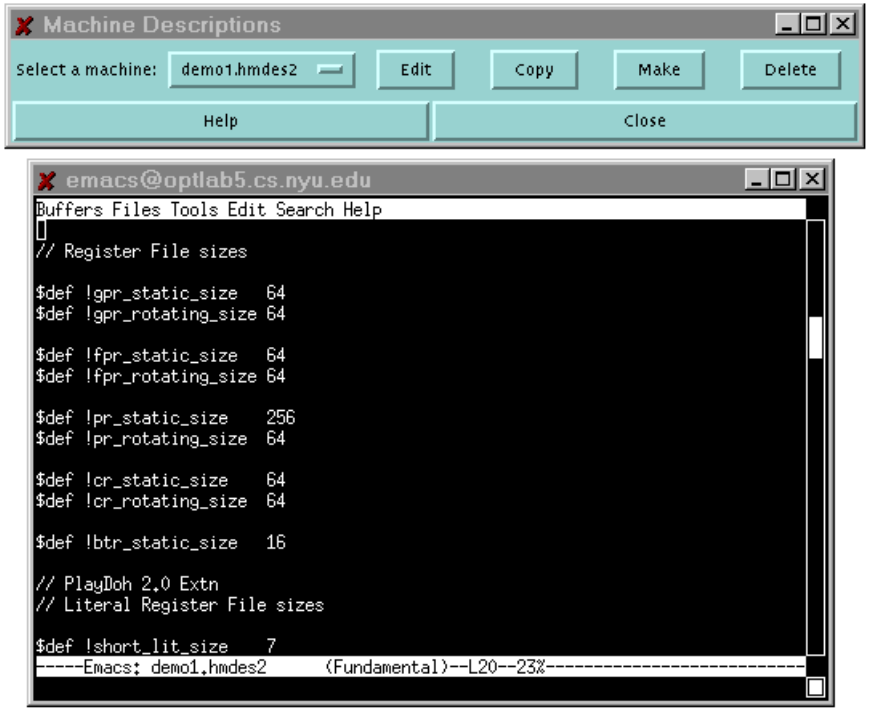


- Here, one selects an existing machine to copy or modify.



Machine Descriptions

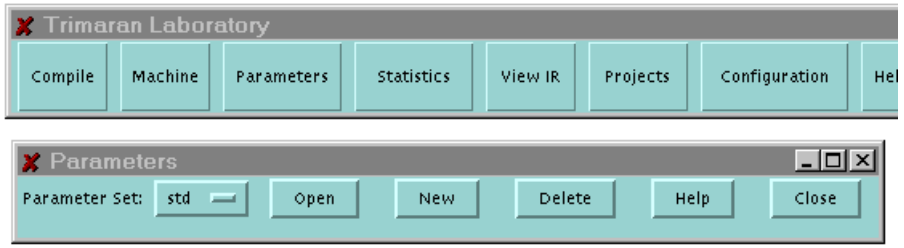
- To edit a machine description, the GUI opens an editor window.

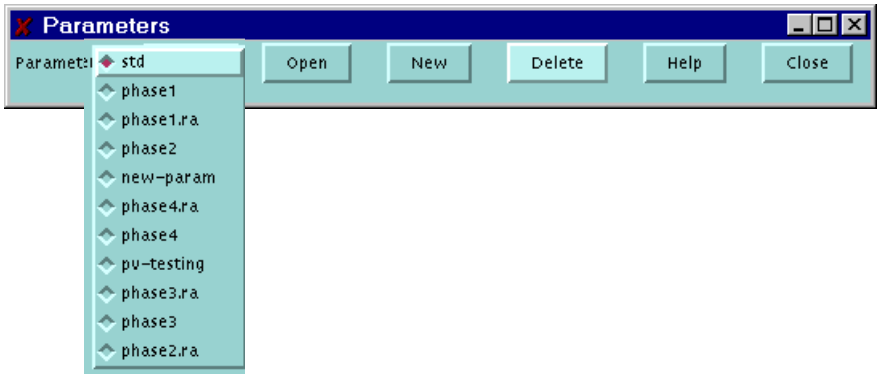


- Trimaran includes a very powerful machine description facility.
  - It is the subject of an entire section of this tutorial.
  - The GUI interface simplifies the process of machine description.

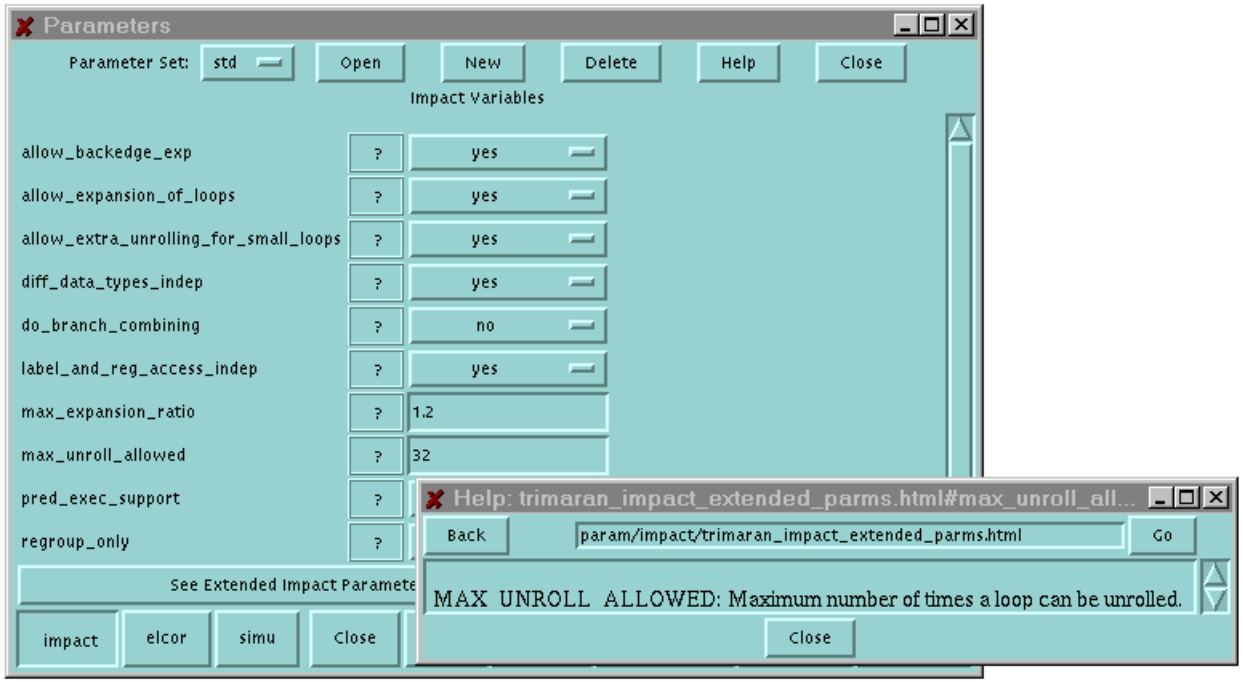
The Parameters Panel

- The parameters panel allows you to modify a large number of parameters used by the front end, the back end, and the simulator.
  - Generally, the default settings will be used.
- Once a new parameter set has been configured, the set can be named and saved for subsequent use.





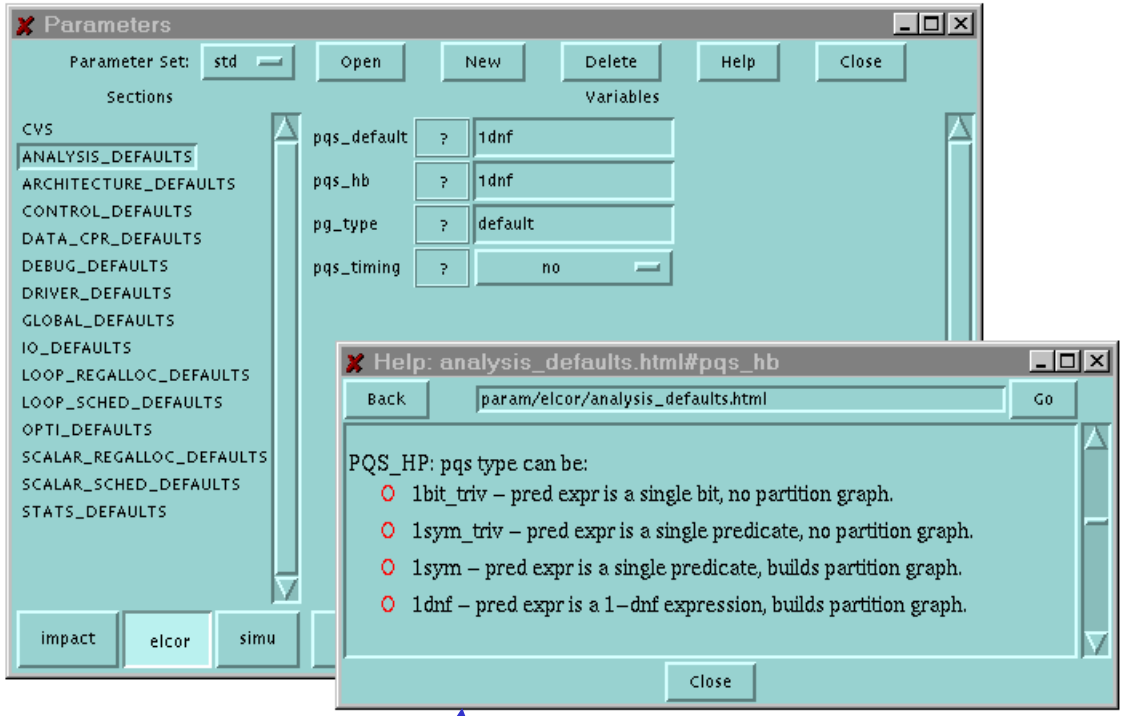
Modifying Parameters



- Upon clicking ‘open’, the parameters are displayed.
  - Here, the compiler front end parameters are displayed, along with their current values.
  - Clicking a ‘?’ button opens a help window for that parameter.
- Parameters can also be modified by editing text files, if desired.

Parameters for the Back End

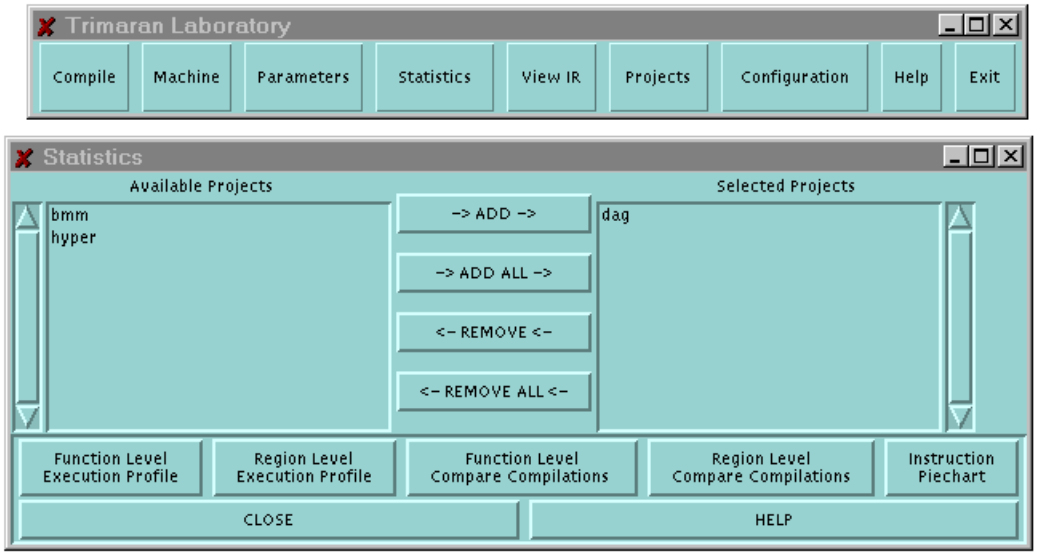
- The compiler back end has the largest number of parameters.
- The parameters are organized into groups according to their use.
  - Analysis
  - Optimizations
  - Register Allocation
  - Etc.



Help window

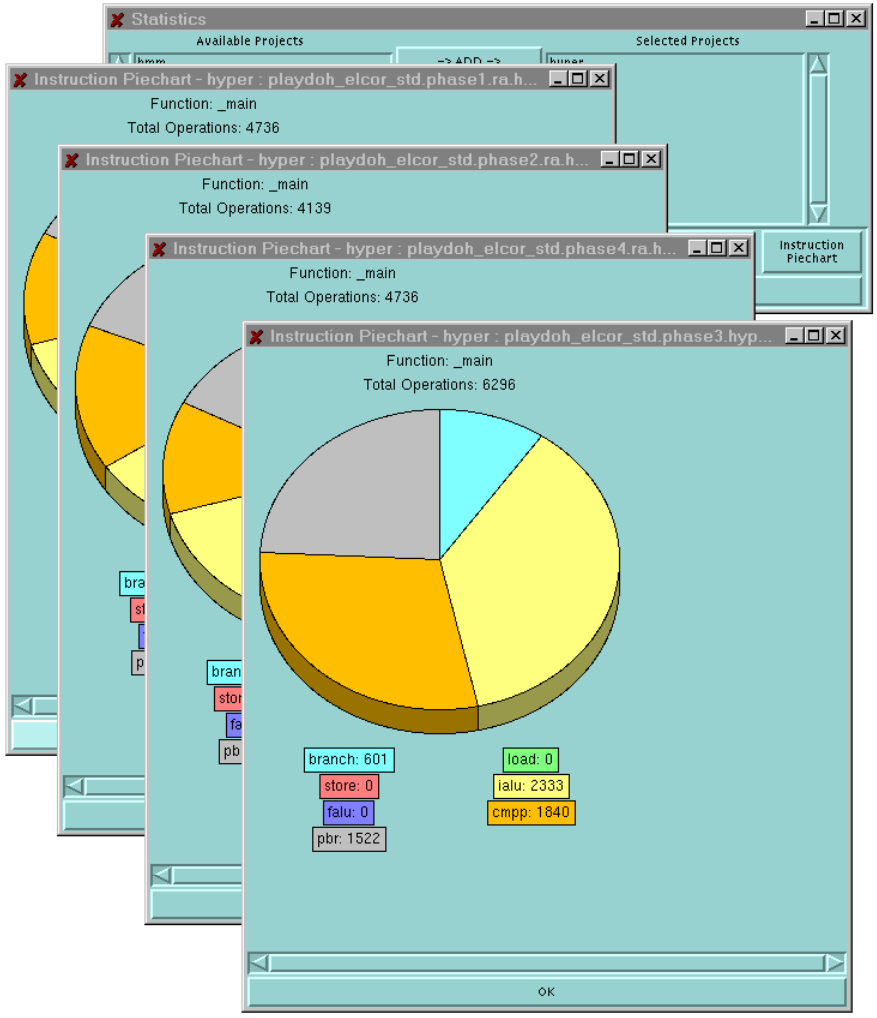
The Statistics Panel

- The statistics panel allows you to choose what statistics are displayed for the programs in one's project file.
  - Function level execution profile
  - Region level profile
  - Instruction usage
  - Etc.



Viewing Statistics

- For each program in your project file, a separate graph is displayed.
  - Here, pie charts show the dynamic instruction distribution.



The View IR Panel

- The IR viewer provides five kinds of views of a program.

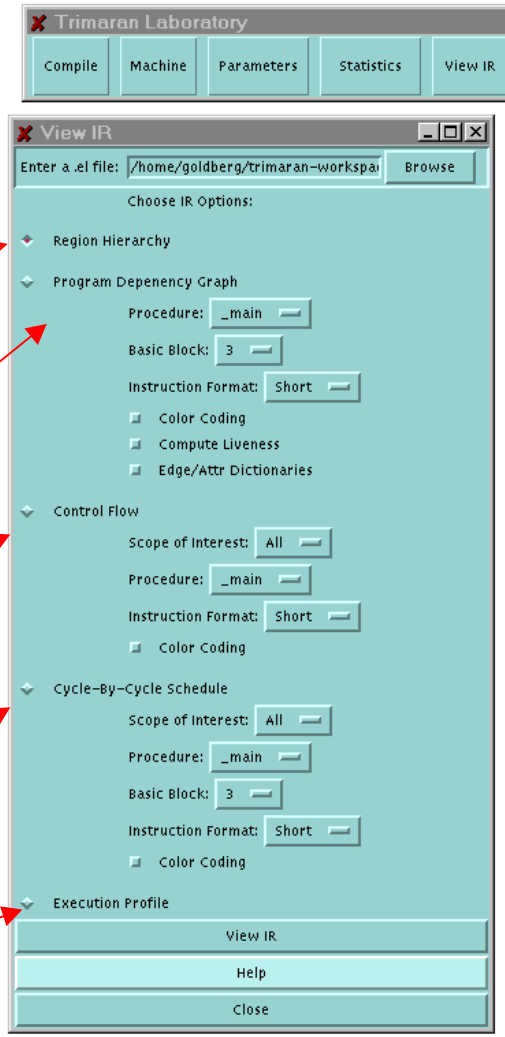
The program regions (hyperblocks, loops, etc.)

Dependence Graph

Control Flow Graph (CFG)

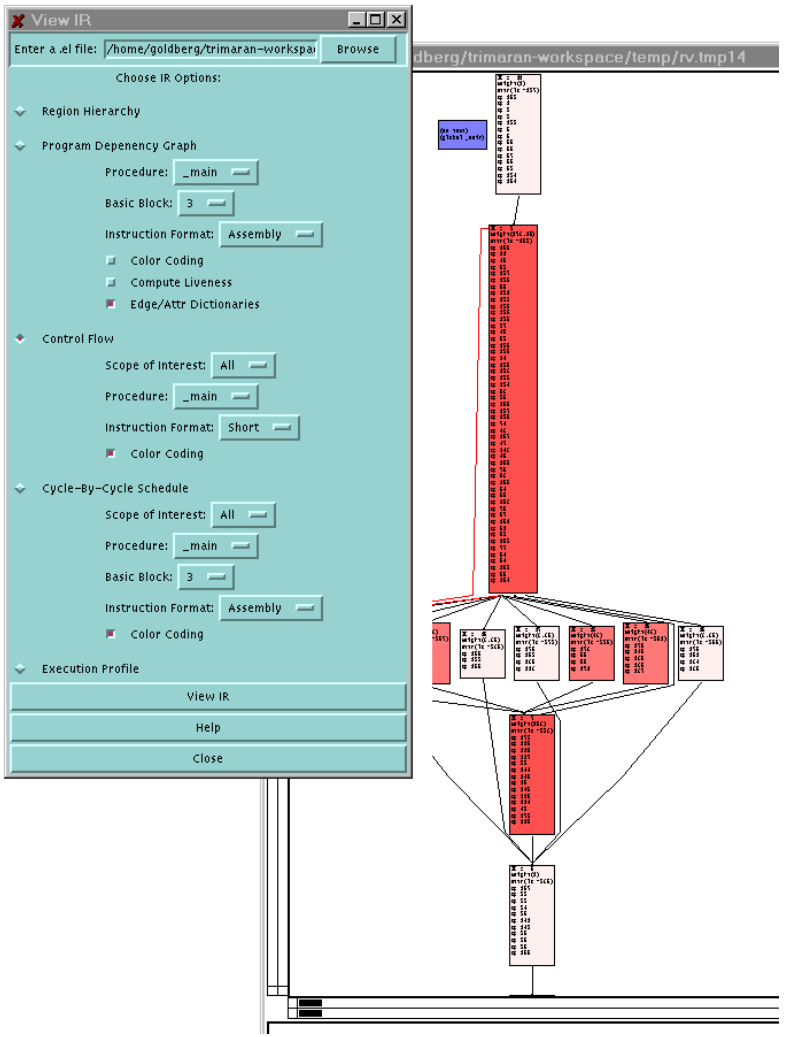
ILP Instruction Schedule

Profile Information



Control Flow View

- Here is a portion of the control flow graph for a program.
- The user can specify a portion of the program to display.
- The viewer has zoom in, zoom out, scroll, etc.
  - other IR views are presented elsewhere in this tutorial.



Summary

- The Trimaran GUI provides a natural interface for configuring and running the Trimaran system.
  - Lowers barrier to entry for new user
    - no learning makefiles, searching parameter files, etc.
  - Provide interface to powerful visualization tools
    - IR viewer, execution statistics