**Final Project Proposal: PSim and web2py (application named ‘psim2web2py’)**

**Motivation:** It has been over a year since I last used web2py (as well as Python for any meaningful programming) and - as a member of the Google group - I know there have been many exciting feature enhancements. I would like to use this opportunity to learn more about PSim, web2py, and Python.

**Objective:** To provide a web interface that gives the user the ability to setup some basic parameters for PSim, run some PSim processes, persist the results to a database, and report the results to the user in the UI. I will write a wrapper around PSim in python that will be called via shell command from web2py.

Initially, I would like to include these basic features:

* Define the problem/algorithm to be parallelized (select from a pre-defined list at first)
* Define the data input (which may depend on the selected algorithm; ex, if user selects merge-sort, they must input a list of sortable data elements); this will probably be pre-defined at first
* Define the number of processing nodes (pre-defined at first)
* Select the topology type (probably start with SWITCH at first)
* View the output of the log file in DEBUG or INFO mode
* View a plot of the run-times for the serial algorithm and 5 parallel runs
* View historical logs and plots, restricted by owner
* Queue the simulation tasks (probably with subprocess) and have web2py Scheduler manage their execution

web2py **MODEL**:

* Algorithm
  + Name
  + Description
* Input Data
  + Type
  + Double Value
  + List Value
* Log (restricted by owner)
  + Date
  + Simulation  reference Simulation
  + Content (JSON)
  + Owner  reference User
* Plot (restricted by owner)
  + Date
  + Simulation  reference Simulation
  + Plot (uploaded png)
  + Owner  reference User
* Simulation (restricted by Owner)
  + Date
  + Process List
  + Algorithm  reference Algorithm
  + Input Data  reference Input Data
  + Owner  reference User
* Command (restricted to Admins)
  + Date
  + Simulation  reference Simulation
  + Initated By  reference User
  + Value (shell command)
* Scheduler

web2py **VIEWS**:

* Anonymous User (not logged-in)
  + View About
    - What is psim2web2py?
    - Take a Tour
    - Getting Started Guide
  + View Features
  + View Resources
    - User Guide
    - Knowledge Base
    - Blog
    - Customer Stories
    - Community Forums
  + View Developers
    - Communicating with the web services API’s
  + View Contact Us
* Authenticated User (logged-in)
  + Run Simulation
  + My Plots
  + My Logs
  + My Simulations