

PROJECT INTRODUCTION

Objectives

To develop a SessionManager to support E-Cell simulations over a range of computer platforms ranging from single-processor workstations, to computational Grid.

Project Investigator / Manager

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Period of Project

1 Aug 2002 – 31 Jul 2004

Website

<http://www.e-cell.org>

Abstract

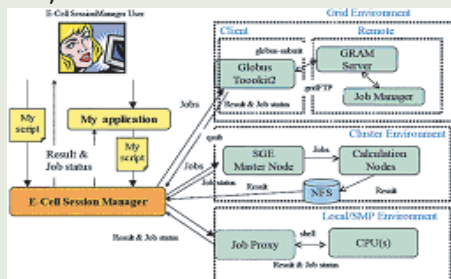
E-Cell Project is an international research project, developed by Keio University, aiming to model and reconstruct biological phenomena in silico. Our project aims to develop a SessionManager to automatically parallelize mathematical analysis sessions to run on a range of computer platforms from single CPU workstations, SMP servers, to clusters or computational Grid transparently.

PROJECT DETAILS

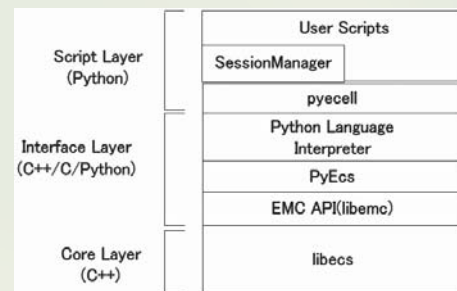
Description

The computational framework known as E-Cell SessionManager (ESM), was designed by Masahiro Sugimoto as a front-end GUI for users to interact with the E-Cell System. It was developed based on genetic algorithms (GA).

1. ESM User Interface: Users submit job scripts to Local, SMP, Cluster (SGE) or Grid environment using ESM, and access the results of executed jobs.



2. ESM Architecture: The bottom layer includes a class library for cell simulation (libecs) and its C++ API (libemc). The top layer represents python front-end utilities such as SessionManager, GUI, and analysis tools. The middle layer (PyEcs, python interpreter, and pyecell) is the interface connecting the bottom and top layers.



3. ESM Design: The SessionManager class provides an API for user scripting. SystemProxy is a proxy of the computing environment such as the cluster- or grid environment. SessionProxy corresponds to a process or a job. LocalSystemProxy and LocalSessionProxy are used both on SMP- and single-CPU PC environments. User can use flat APIs of SessionManager or program object-oriented style using APIs of all individual classes.