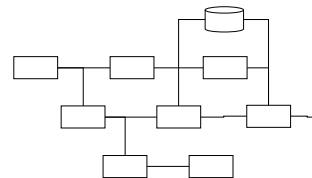


Giuliano Armano ¹, Luciano Milanese ², Alessandro Orro ^{1,2}, Eloisa Vargiu ¹
 {armano,orro,vargiu}@diee.unica.it - iasc.diee.unica.it
 luciano.milanese@itb.cnr.it - www.itba.mi.cnr.it

(1) DIEE - Dept. of Electrical and Electronic Engineering, University of Cagliari Piazza d'Armi, I-09123 Cagliari, Italy
 (2) ITB-CNR, Via Fratelli Cervi 93, I-20090 Segrate (Milano), Italy

Introduction

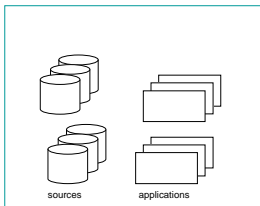
Current workflow strategies deal with a network of nodes in which each node represent a particular application. This is an application-oriented view, in which the user is required to know details of each application in order to choose the best parameters and to configure the pipeline. These problems become relevant especially in workflows with a large number of applications.



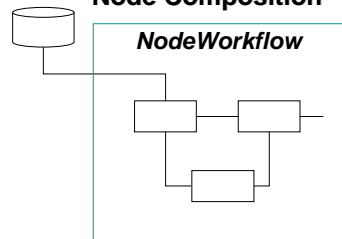
High connected
 Hard to understand
 Hard to configure

Architecture

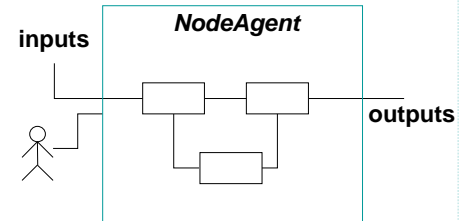
Resources



Node Composition



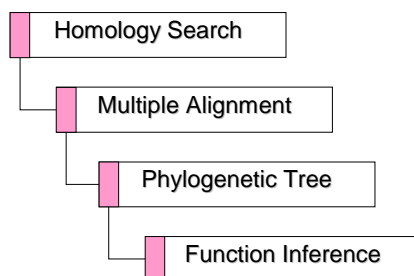
Workflow Composition



We propose a task-oriented view of a bioinformatics process in which nodes are associated with a particular task, each task being assigned to an agent. In this context an agent (*TaskAgent*) is a software entity that plays the role of a node in a workflow and exports the behavior of the underlying application. Nevertheless, the agent has some additional features:

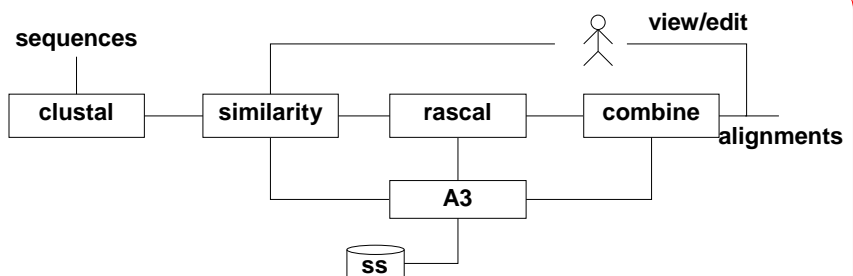
1. it makes use of knowledge domain information to select a suitable connection of resources for the related task,
2. it exposes only a set of high-level parameters that are more intuitive for the user,
3. it is able to interact with the user at execution time to permit the monitoring of the overall process.

Case Study and Future Work



Inference of protein molecular function

The complete workflow is composed by four *TaskAgents* devised to accomplish four tasks: (1) homology search, (2) computing multiple alignment, (3) inferring the phylogenetic tree, (4) predicting the protein function.



Future Work

- Full compatibility with the Taverna software
- Web oriented interface
- Template Library of workflows