Year of CfP: 2008

Project No 0803-017

Project title: OpenAlea: Open software for plant modelling at different scales

Units managing the project: AGAP (Genetic improvement and Plant adaptation) (CIRAD, INRA, Montpellier SupAgro) and LEPSE (Ecophysiology of Plants of Environmental Stresses) (INRA, Montpellier SupAgro)

Project leaders: Christophe Gaudin, DAP, EPI VIRTUAL PLANT INRIA (christophe.gaudin(a)inria.fr), Christophe Pradal, DAP, (christophe.pradal(a)inria.fr), Christian Fournier, LEPSE (christian.fournier(a)supagro.inra.fr)

Countries involved in the project: Canada, Germany, The Netherlands, USA

Research units from the Foundation's scientific network involved: PSH

Sub-thematic axes: IPB-1 (Integrative Plant Biology 1: *Genetics and genomics, plant breeding, ecophysiology*), IPB-2 (Integrative Plant Biology 2: *Plant pests and diseases, integrated crop protection, population ecology*)

Objectives:

Functional-structural plant models aim at simulating understanding the biological processes involved in the functioning and development of plants. This requires efficiently using and combining models or computational methods from different scientific fields in order to analyze, simulate and understand complex plant processes at different scales. Due to the different constraints and background of the teams, these models are developed using different programming languages, with different degree of modularity and inter-operability. In order to increase the interaction between these models, their reusability, the possibility to compare them on identical datasets, efficient and flexible computational frameworks are required.

The objective of the open source project *OpenAlea* is to provide an easy-to-use environment for plant modellers through a visual programming interface to efficiently using and combining models or computational methods from different scientific fields in order to represent, analyze and simulate complex plant systems at different scales, from meristems to plant canopy; and to understand processes occurring within such systems or between plants and their environment. Data and tools for the analysis, modelling and simulation of plants will thus be made available to plant scientists through an integrated software platform. Such a software environment is targeted not only for developers and computer scientists but also for biologists, which may be able to assemble models while minimizing the programming effort.

Total Agropolis Fondation funding: € 198,002 (salary for an engineer, computers, workshops)

Funding categorie(s): Agropolis Fondation grants for scientific platform

Project duration: 1 January 2009 – 31 July 2012

Keywords: platform – plant modelling – simulation – plant development