

# Paradiseo

An Open Source Framework for Metaheuristics, Hybrid and Parallel Metaheuristics  
<http://paradiseo.gforge.inria.fr>

## DESIGN CONCEPTS

**MO** Single solution based metaheuristics

Hill climbing, simulated annealing, tabu search, iterated local search, VNS, TA...

Neighborhood  
Replacement  
Local optima

**EO** Population based metaheuristics

Evolutionary algorithms, particle swarm optimization, differential evolution algorithms, EDA...

Recombination  
Replacement  
Parents  
Offsprings

**MOEO** Multi-objective optimization

Fitness assignment schemes, diversity preservation mechanisms, elitism.  
 Performance metrics: hypervolume, epsilon...  
 Algorithms: **NSGA-II, IBEA, SPEA2**...

Convergence  
Diversification  
Pareto frontier

**PEO** Hybridization

Balancing between diversification and intensification.  
 Delivering better and robust solutions.

Genetic algorithms  
Tabu search

**PEO** Parallel and distributed environments

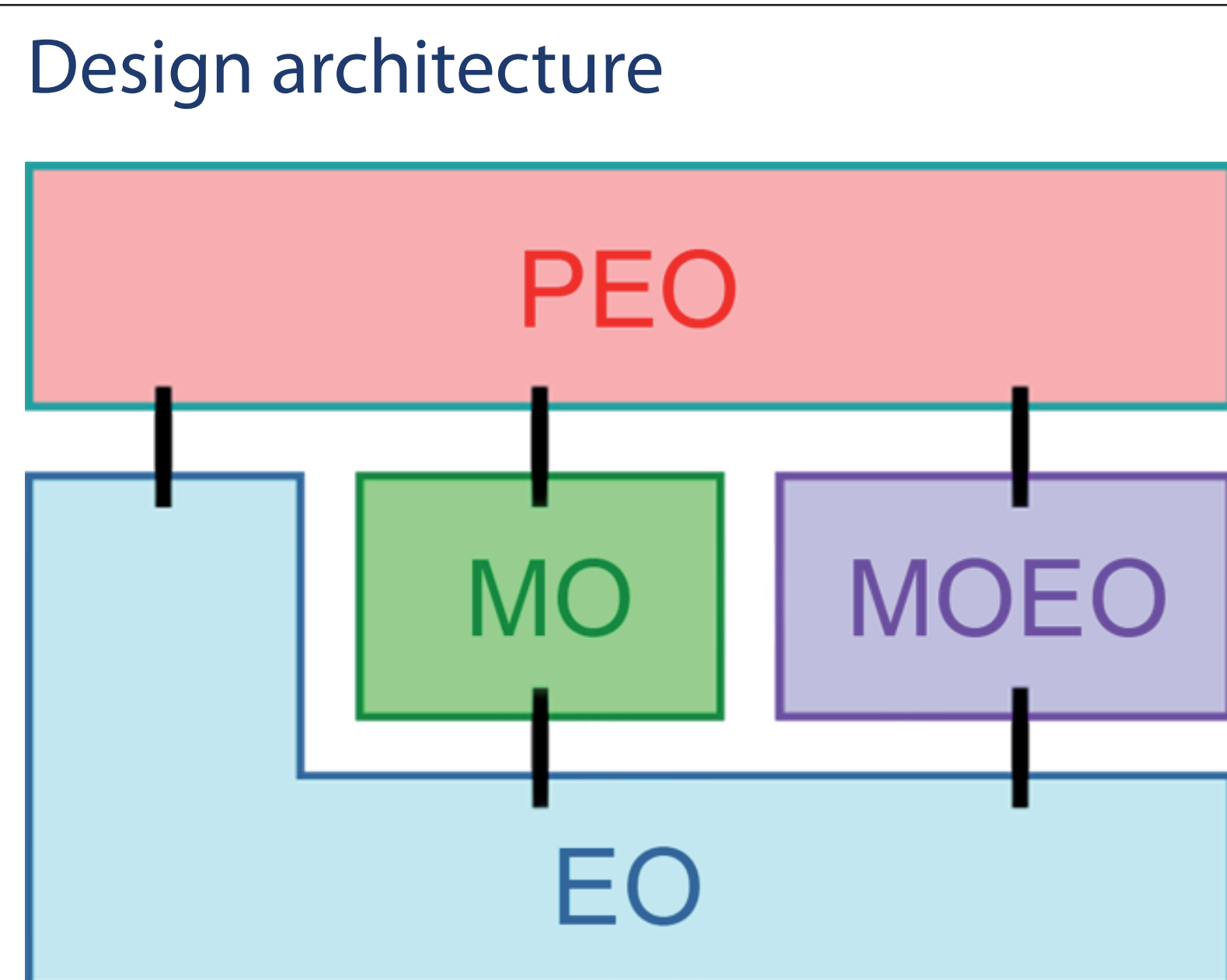
Speedups the search to solve large problems based on three hierarchical models.

Objective function  
Solution  
Independent / cooperative walks

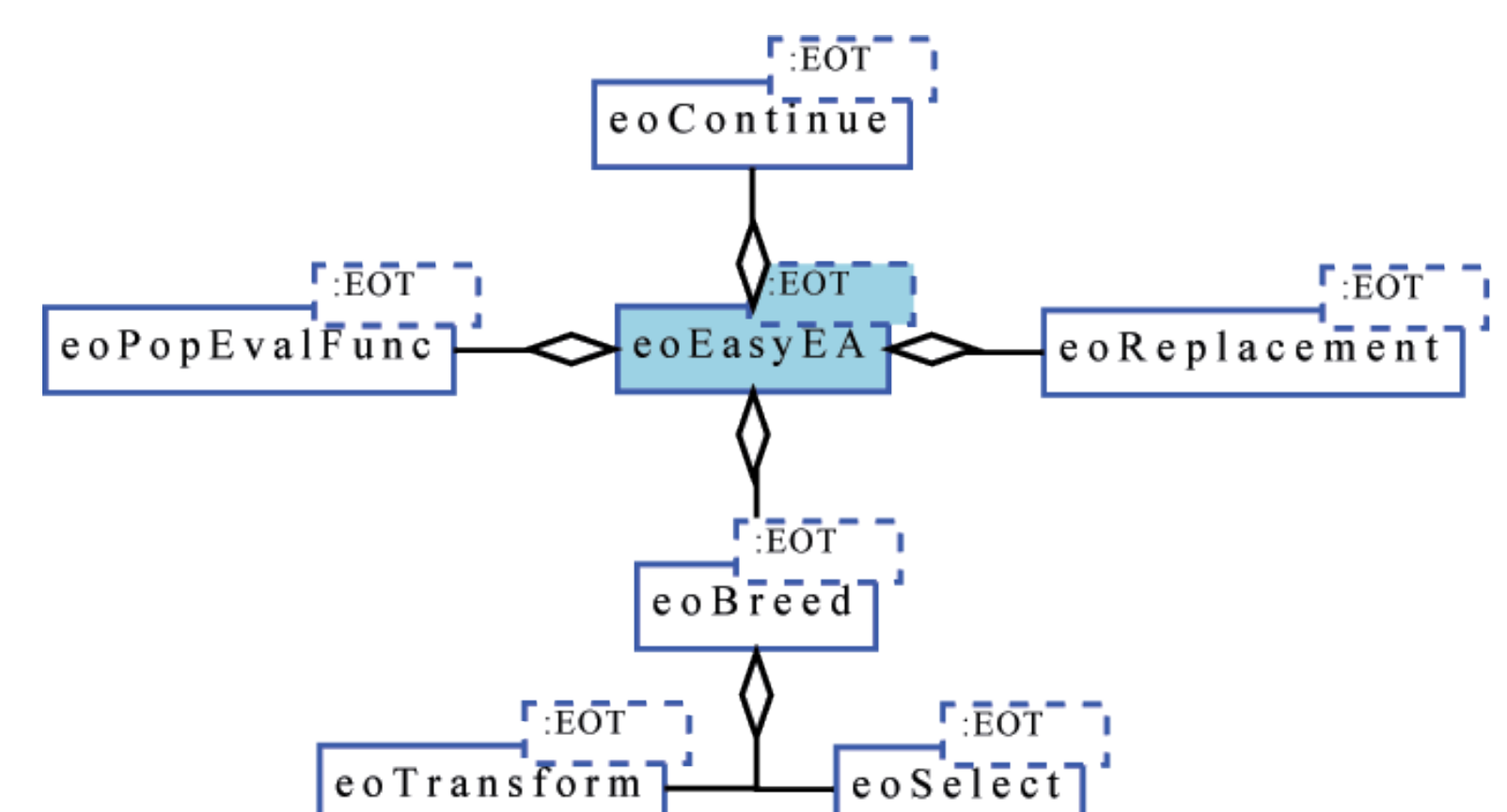
Many experiments lead on the modeling and the parallel resolution of real and hard problems from telecommunications, genomics, engineering design, transportation and logistics, physics and chemistry.

## FRAMEWORK

A C++ white-box object-oriented framework dedicated to the reusable design of metaheuristics



ParadisEO provides a set of ready to use components which can be extended to ensure a high flexibility degree and confer a maximum code and design reuse.



Execution architecture

**Portable on:** Windows, Unix and MacOS  
**Automatic install:** Script for Unix, Windows installer  
**Parallel and distributed architectures (MPI)**  
**Grids (Globus, Condor-G / MW)**

Support

**Tutorials**  
 More than 20 lessons to dive easily into ParadisEO.

**API doc**  
 Template tools, classes and functions are fully described.

Contact

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