

# 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**

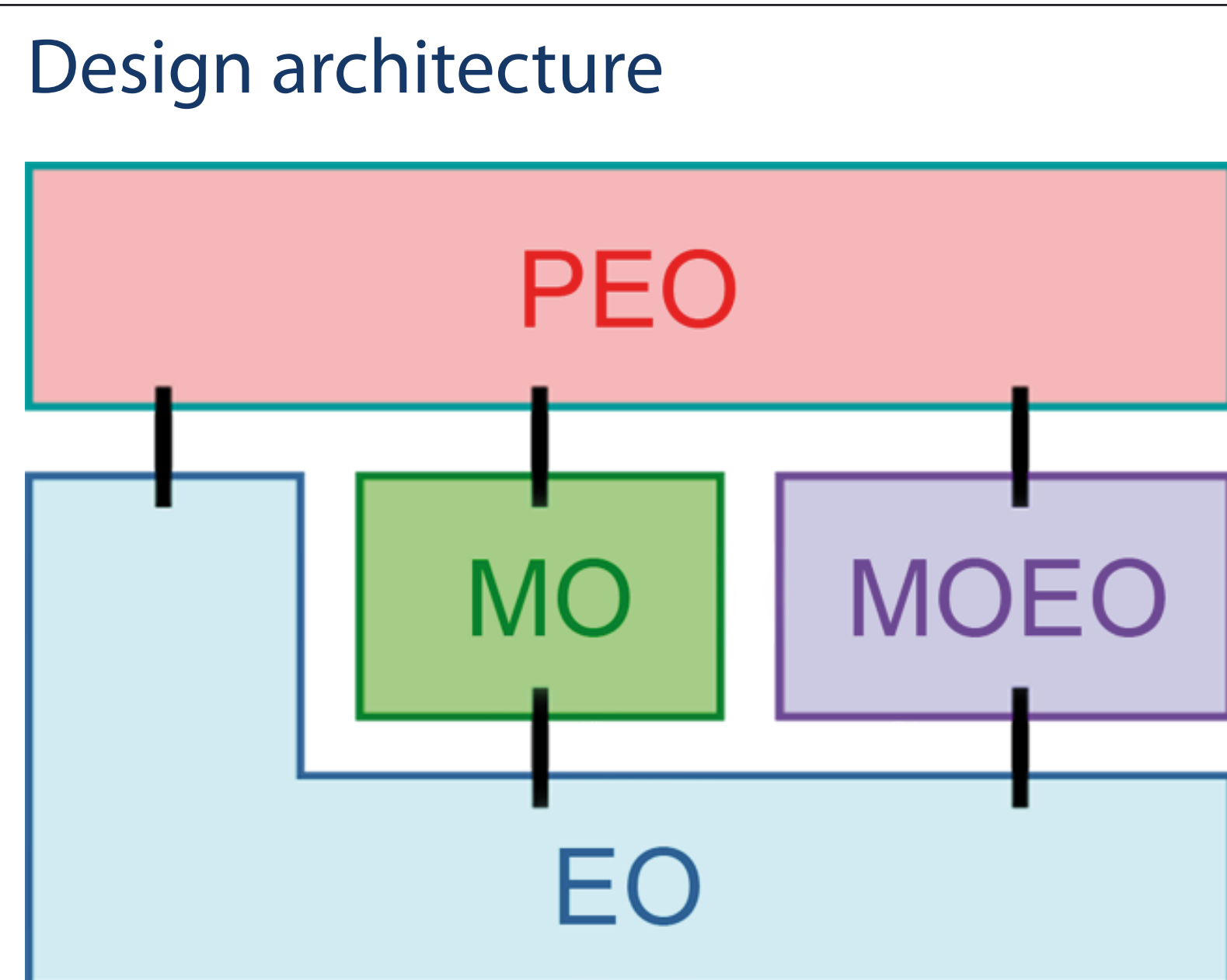
**Solution**

**Independent / cooperative walks**

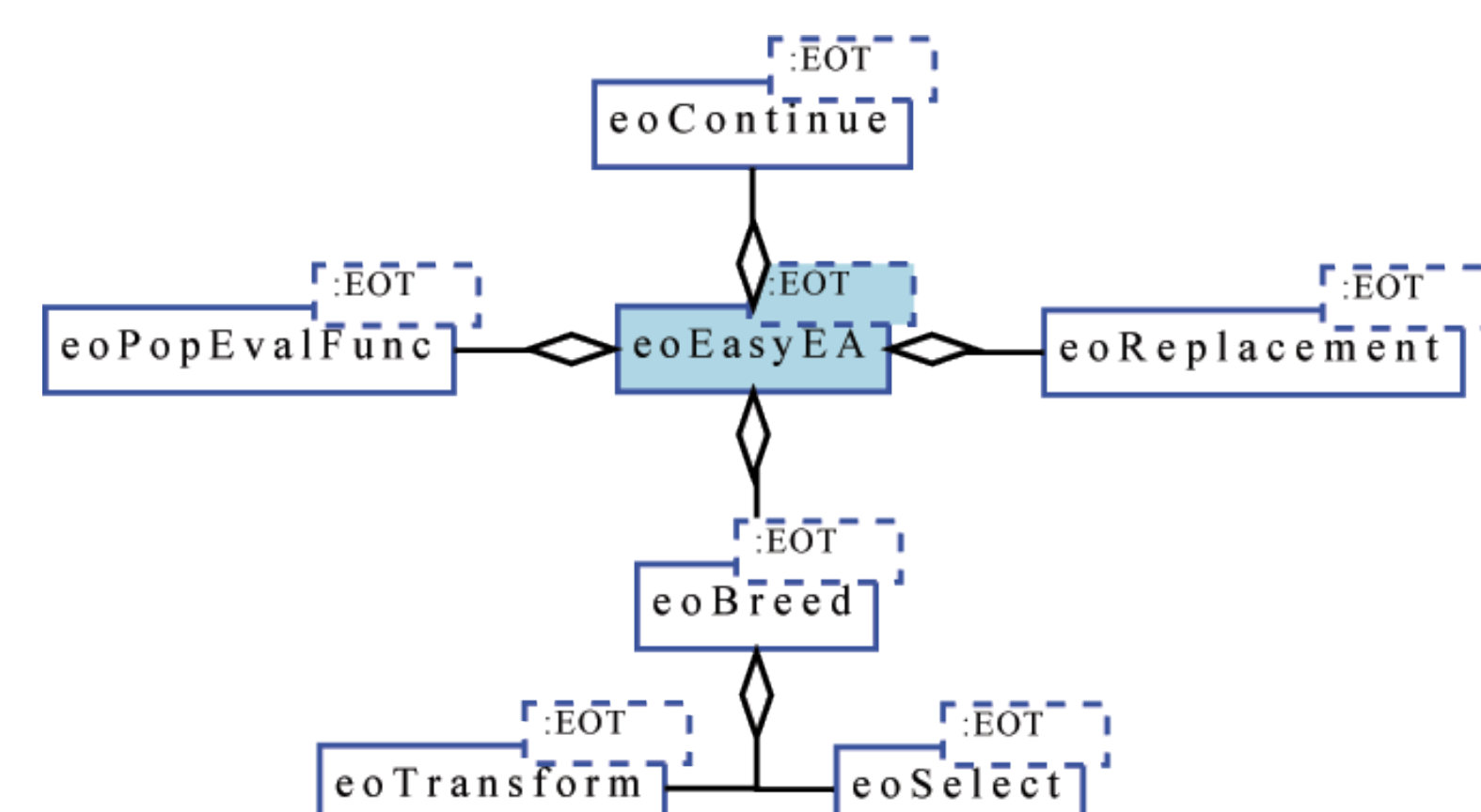
Many experiments lead on the modeling and the parallel resolution of real and hard problems from telecommunications, genomics, engineering design, transportation and logistics, physics and chemistry.

## 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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