

# Challenge ROADEF'2009

Société Française de Recherche Opérationnelle et d'Aide à la Décision

## *Disruption Management for Commercial Aviation* Schedule, evaluation, results

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Your technology partner



## Challenge schedule

- **February 2008** : challenge launched and instances from **base A** available  
*29 teams (13 seniors, 16 juniors, 14 countries)*
  
- **July 2008**: deadline for submitting the qualification programs  
*11 programs received*
  
- **September 2008**: qualification results and instances from **base B** available  
*11 qualified teams (7 seniors, 4 juniors, 6 countries)*
  
- **January 2009**: deadline for submitting the final programs. Tests on **X instances**  
*9 programs received (5 seniors, 4 juniors, 6 countries)*
  
- **February 2009**: Announcement of the results

## Evaluation

- All (commercial) solvers allowed
- Parallel processing forbidden
- CPU time allowed (on AMD 64, 2 GB RAM) :10 minutes

### → Evaluation rule:

$z(M,I)$  : objective function value for team method  $M$  and instance  $I$

Infeasible or no solution  $z(M,I) = 2 \max(z(M',I))$  for all  $M'$  feasible

$z_b(I) = \min(z(M,I))$  for all  $M$

$z_w(I) = \max(z(M,I))$  for all  $M$

$\text{Score}(M,I) = (z_w(I) - z(M,I)) / (z_w(I) - z_b(I))$

**Score(M) = average score over 10 B instances and 8 X instances**

## Qualified teams

Acuna-Agost, Michelon, Feillet, Gueye	Avignon	Senior
Bisaillon, Cordeau, Laporte, Pasin	Montréal	Senior
Darlay, Kronek, Schrenk, Zaourar	Grenoble	Junior
Demassey, Jussien, Lorca, Menana-Quillet, Richaud	Nantes	Senior
Dickson, Smith, Li	Melbourne	Junior
Eggenberg, Salani	Lauzanne	Junior
Eggermont, Firat, Hurkens, Modelski	Eindhoven	Junior
Estellon, Gardi, Nouioua	Marseille	Senior
Hanafi, Wilbaut, Mansi , Clautiaux	Valenciennes	Senior
Jozefowicz, Mancel, Mora-Camino	Toulouse	Senior
Peekstok, Kuipers	Hollande	Senior

## Qualification results

Team	Category	Global Rank (Category Rank)	Average score
Bisaillon, Cordeau, Laporte, Pasin	Senior	1 (1S)	98,53
Hanafi, Wilbaut, Mansi, Clautiaux	Senior	2 (2S)	94,87
Acuna-Agost, Michelin, Feillet, Gueye	Senior	3 (3S)	85,52
Darlay, Kronek, Schrenk, Zaouar	Junior	4 (1J)	82,12
Jozefowicz, Mancel, Mora-Camino	Senior	5 (4S)	75,29
Eggermont, Firat, Hurkens, Modelski	Junior	6 (2J)	61,80
Demassej, Jussien, Lorca, Menana-Quillet, Richaud	Senior	7 (5S)	53,58
Dickson, Smith, Li	Junior	8 (3J)	47,82
Estellon, Gardi, Nouioua	Senior	9 (6S)	47,05
Eggenberg, Salani	Junior	10 (4J)	2,93
Peekstok, Kuipers	Senior	11 (7S)	5 unfeasible solutions

## From qualified to finalist teams

Acuna-Agost, Michelin, Feillet, Gueye	Avignon	Senior
Bisaillon, Cordeau, Laporte, Pasin	Montréal	Senior
Darlay, Kronek, Schrenk, Zaourar	Grenoble	Junior
Demasse, Jussien, Lorca, Menana-Quillet, Richaud	Nantes	Senior
Dickson, Smith, Li	Melbourne	Junior
Eggenberg, Salani	Lauzanne	Junior
Eggermont, Firat, Hurkens, Modelski	Eindhoven	Junior
Estellon, Gardi, Nouioua	Marseille	Senior
Hanafi, Wilbaut, Mansi, Clautiaux	Valenciennes	Senior
Jozefowicz, Mancel, Mora-Camino	Toulouse	Senior
Peekstok, Kuipers	Hollande	Senior

## Methods overview

Team	Category	méthode	
Acuna-Agost, Michelin, Feillet, Gueye	Senior	MILP+statistical analysis of disruptions	multi-commodity flow
Bisaillon, Cordeau, Laporte, Pasin	Senior	Large neighborhood search, multistart	PCC for passenger reaccomodation
Darlay, Kronek, Schrenk, Zaouar	Junior	Constructive 2 phases	Multiflot pour les deux phases (avions, passagers)
Dickson, Smith, Li	Junior	MILP+variable fixing+local improvements	multi-commodity flow For passnger reaccomodation
Eggenberg, Salani	Junior	Column generation	Pricing problem : RCESPP
Eggermont, Firat, Hurkens, Modelski	Junior	decomposition Greedy+MIP	Mincost flows for passenger reaccomodation
Hanafi, Wilbaut, Mansi, Clautiaux	Senior	MIP+oscillations	Integrated resolution
Jozefowicz, Mancel, Mora-Camino	Senior	Recherche locale	PCC pour réparation des rotations d'un avion
Peekstok, Kuipers	Senior	Simulated annealing	Penlization of constraint violation

**and the winners are...**

See you at the Gala Dinner !



# Many thanks to the partners

