ROADEF/EURO Challenge 2010
http://challenge.roadef.org

*A large-scale energy management problem
with varied constraints proposed by EDF*

Christian Artigues
LAAS-CNRS, Université de Toulouse, France
Eric Bourreau
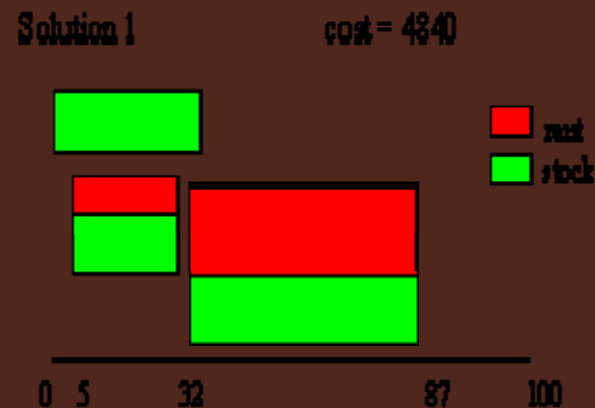LIRMM, Université de Montpellier 2, France

ROADEF

- French Operations Research and Decision Aid Society
- Created in 1998, 380 members in 2009
- Objective : promote OR in France
  - Research
  - Industry
  - Education
- 1 Annual conference, 2 international journal s (4OR, RAIRO-OR), working groups, the Robert Faure prize
- … and the CHALLENGE, organized jointly with EURO in 2010

What is the ROADEF/EURO challenge ?

- International OR contest
- Organized jointly with a company which proposes an optimization problem and (close to) real-life data
- Objective for the participants : Design a method and implement it to obtain the best results on the proposed problem instances
- Open to (almost) everybody, 3 categories
  - Senior : no restriction on team but single-thread
  - Junior : only students (no PhD), single-thread
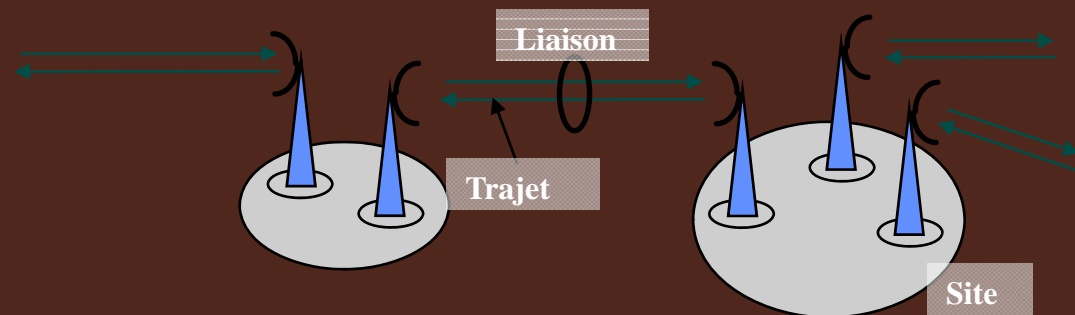 - Multi-Thread : no restriction on team, multi-thread allowed

10 years of challenges

- 1999

  - Company: Bouygues
  - Problem: Inventory management problem
  - Winner: IMAG, Grenoble Institute of Technology
  - Method: Linear programming and iterative improvement

10 years of challenges

- 2001

  - Company: CELAR (Electronic Armament Center)
  - Problem: Frequency Allocation with polarization
  - Winner: Ecole des Mines d'Ales
  - Method : Tabu search and consistent neighborhood

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10 years of challenges

- 2003

  - Company: ONERA et CNES
  - Problem: photographs scheduling of an agile earth-observing satellite
  - Winner: TNO Physics and Electronics Laboratory (Netherlands)
  - Method : Simulated annealing

10 years of challenges

- 2005

  - Company: Renault
  - Problem: Car sequencing
  - Winner : LIF - University of Marseille (junior team !)
  - Method: Very fast local search

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10 years of challenges

- 2007

  - Company: France Télécom
  - Problem: Technician intervention scheduling
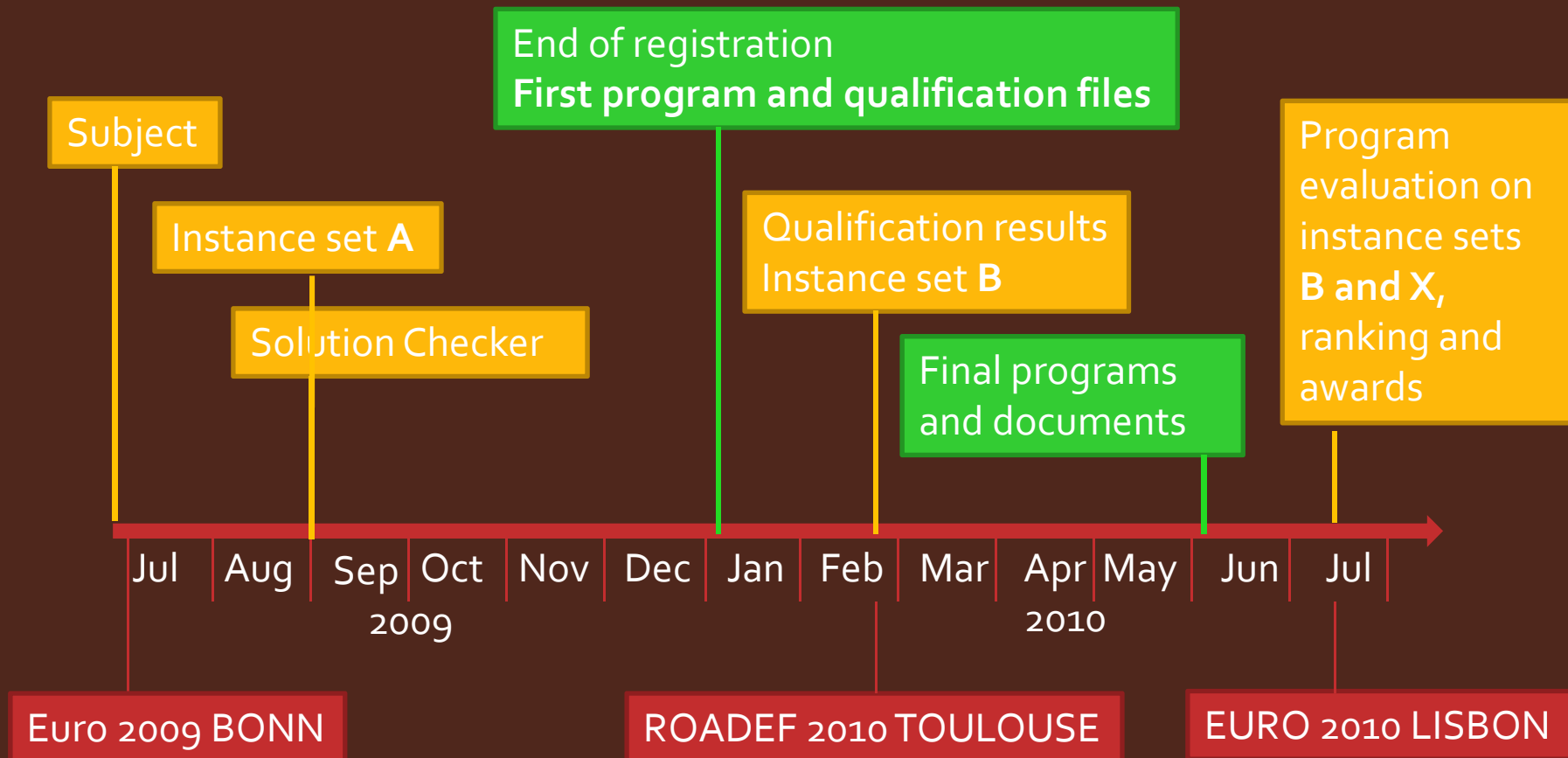 - Winner: Eindhoven, University of Technology
  - Method : MILP

10 years of challenges

- 2009

  - Company: Amadeus
  - Problem: Disruption management for commercial aviation
  - Winner: HEC Montreal and CIRRELT (Canada)
  - Method: Large neighborhood search

Schedule of the ROADEF/EURO challenge 2010

End of registration
First program and qualification files

Subject

Instance set **A**

Solution Checker

Qualification results
Instance set **B**

Final programs
and documents

Program evaluation on instance sets **B and X**, ranking and awards

| Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul |

2009   2010

Euro 2009 BONN

ROADEF 2010 TOULOUSE

EURO 2010 LISBON

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07/07/2009

Prizes

- **Senior Category**

  4000 € for the winner team

- **Junior Category**

  4000 € distributed among the three first finalist teams

- **Multi-thread category**:

  2000€ for the winner team

More prizes are expected from sponsors .

Register now !

- E-mail to challenge@roadef.org

- Information available on http://challenge.roadef.org

- Register (preferably) before November 1st 2009

- Registration refused after January 5 2010 (deadline for qualification program delivery)

Challenge organization team
- **Christian Artigues** (LAAS-CNRS, Université de Toulouse, France)
- **Eric Bourreau** (LIRMM, Université de Montpellier 2, France)
- **Murat Afsar** (LOSI, UTT, Troyes, France)
- … ?

Program evaluation

- Bi-processor Intel Xeon 5420 2.5Mhz quad core
- Qualification stage: 30 minutes per instances, evaluation on instance set **A**.

$$scoreQualicationPhase = \sum_{i \in A} \frac{objective(i) - objective^*(i)}{objective^*(i)}$$

- Final stage: 60 minutes per instances, evaluation on instance sets **B and X**.

$$scoreFinalPhase = \sum_{i \in B \cup X} \frac{objective(i) - objective^*(i)}{objective^*(i)}$$