

ORTEC

Research areas

Gerrit Timmer

BRICKS

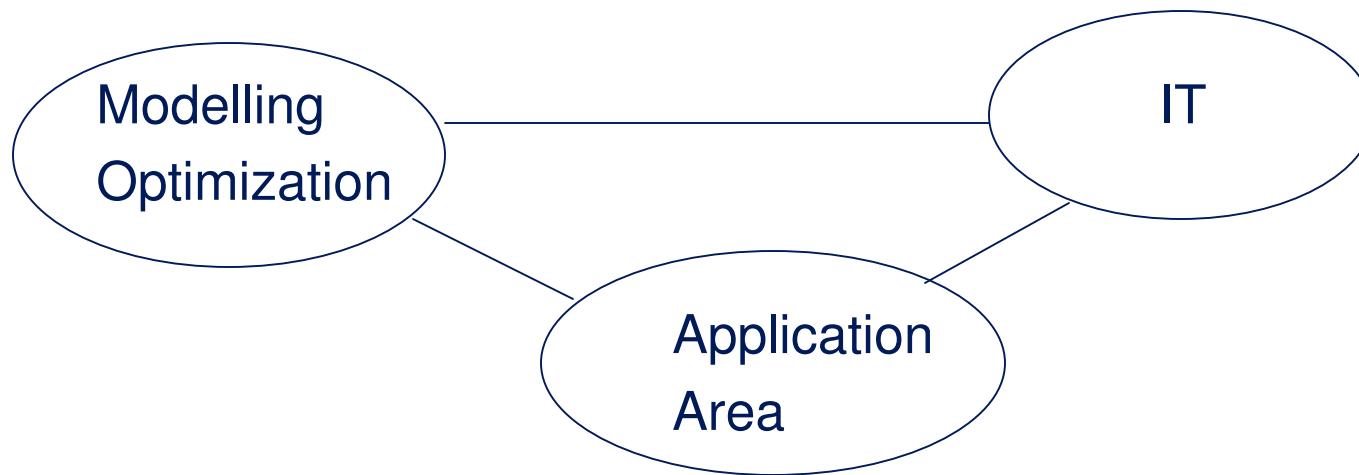
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ORTEC bv
P.O. Box 490
2800 AL Gouda
Groningenweg 6-33
The Netherlands
Tel. +31 (0)182 540 500
info@ortec.nl
www.ortec.com

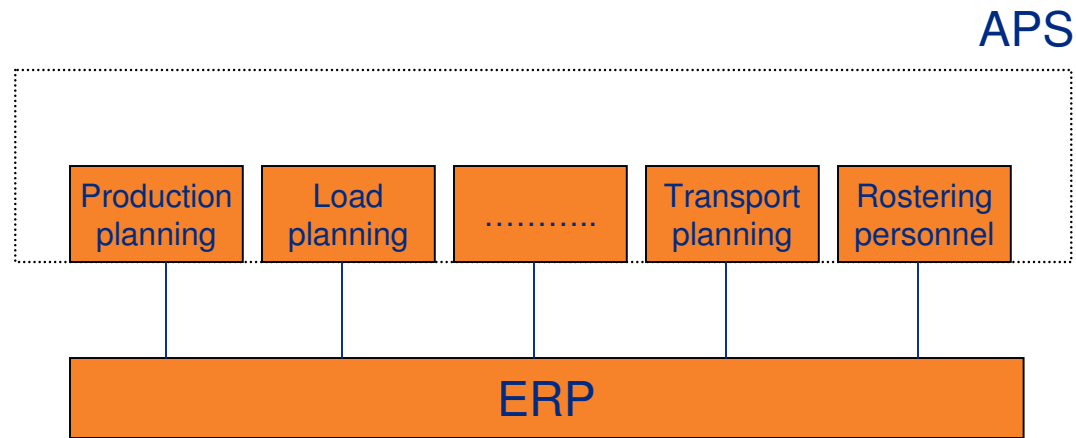
- What is ORTEC
- Activities of ORTEC
- Models and Techniques
- Observations for Research

- Business Description: ORTEC is a privately held company that provides optimization-based decision support software and professional services to business and government
- Founded: April 1981 by 4 PhD students (EUR); two Board Members still hold professor positions at Universities
- Products/Services: Custom Software Applications, “Off-the-shelf” Software Products, Professional Consulting Services
- Clients: SHELL, BP Amoco, Exxon, KLM, Airbus, NS, Yellow Freight, Coca-Cola Enterprises, TNT, DHL, BASF, Danzas, Maersk, Philips, World Bank, ABN-AMRO, ING, HSBC

Combination of knowledge of



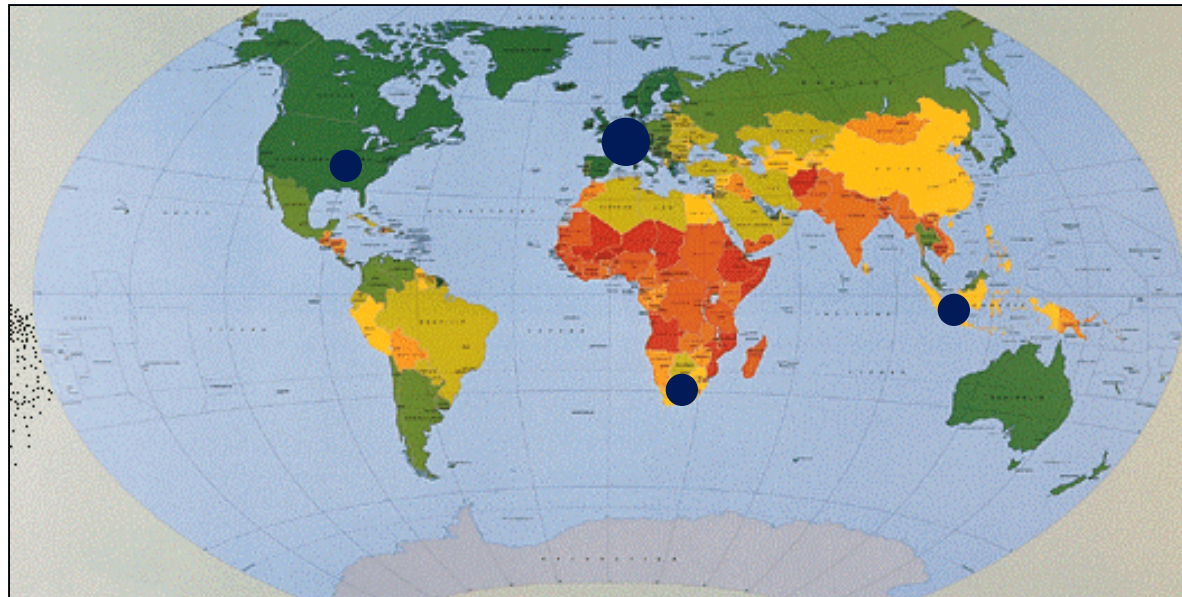
Lead to Advanced Planning Systems that really work!



ORTEC?



ORTEC has 10 offices in Europe, United States, Asia and Africa.



Logistics

- Transportation & Distribution
- Human Resource Management
- Production planning
- Packing and Loading
- Aviation, Public Transport

Risk Management

- Asset Liability Management (ALM)
- Performance Management

Generally

- huge number of restrictions and preferences
- client specific
- no feasible solution

As a result

- Optimization techniques must be very flexible.
- User interface frequently more important than algorithms.

The user interface must enable the user to manipulate the process to come to a 'feasible' solution that 'optimizes' the ill defined objectives.

Wide variety of models & techniques

‘Sophisticated’ techniques

- Set partitioning & column generation for crew scheduling

Simulation

- Economic scenario's for Asset Liability management

■ Heuristics

- Constructive heuristics and improvement techniques for routing
- Genetic Algorithms and local improvement techniques for rostering

Observation 1

Business processes originated in an evolutionary way

- Nobody really knows how the system works
- Still it performs reasonably well
- Change is difficult. It is unknown in how far related processes will suffer.
- Changes in small steps
- Leads to 'strange' restrictions (solution must look like previous solutions)

Observation 2

Data get less reliable if they relate to time intervals in the more distant future

- Generally a planning horizon is chosen in which the data are supposed to be correct.
- In how far does this lead to incorrect results.
- Greedy approaches might be underestimated

Observation 3

Acceptability is often more important than ‘optimality’

- It must be possible to explain the ‘logic’ of the solution.
- How do you visualize that a solution is logical given the preferences formulated

Observation 4

Generally algorithms solving a simple model (near) to optimality is less useful than a moderate algorithm for a more general model.

- In packing and loading a sophisticated algorithm for a three dimensional bin packing problem that can only handle (rectangular) boxes is of little use.
- Algorithms for pick up and delivery type of routing problems are of little use if they can not deal with restrictions on the order in which the articles can be loaded and unloaded from the truck.
- Etc.