

Combinatorial Optimization and Decision Support

BIOSINT

- Project number: 101082863-BIOSINT-ERASMUS-EDU-2022-CBHE



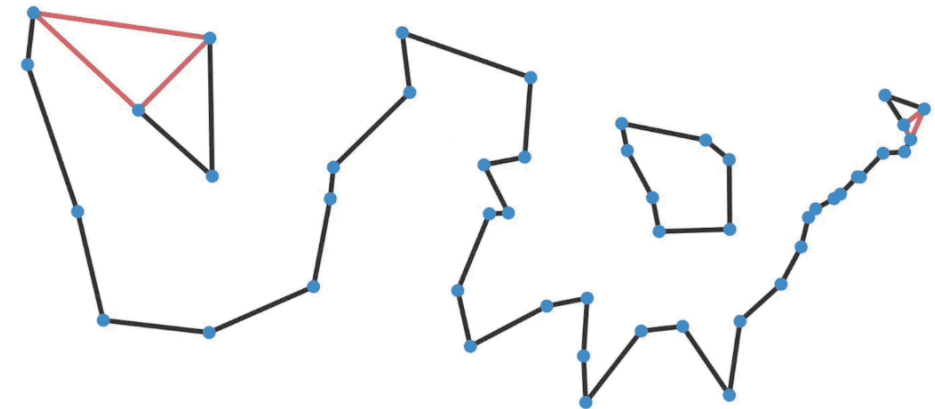
Co-funded by
the European Union

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"This project has been funded with support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein"

Combinatorial Optimisation and Decision Support (CODeS) research group

- Science & Technology group
 - Department of Computer Science
 - Numerical Analysis and Applied Mathematics (NUMA) research unit
 - **Combinatorial Optimisation and Decision Support (CODeS)**
- Design, analysis and application of algorithms for a wide range of combinatorial optimisation problems



Research at CODeS

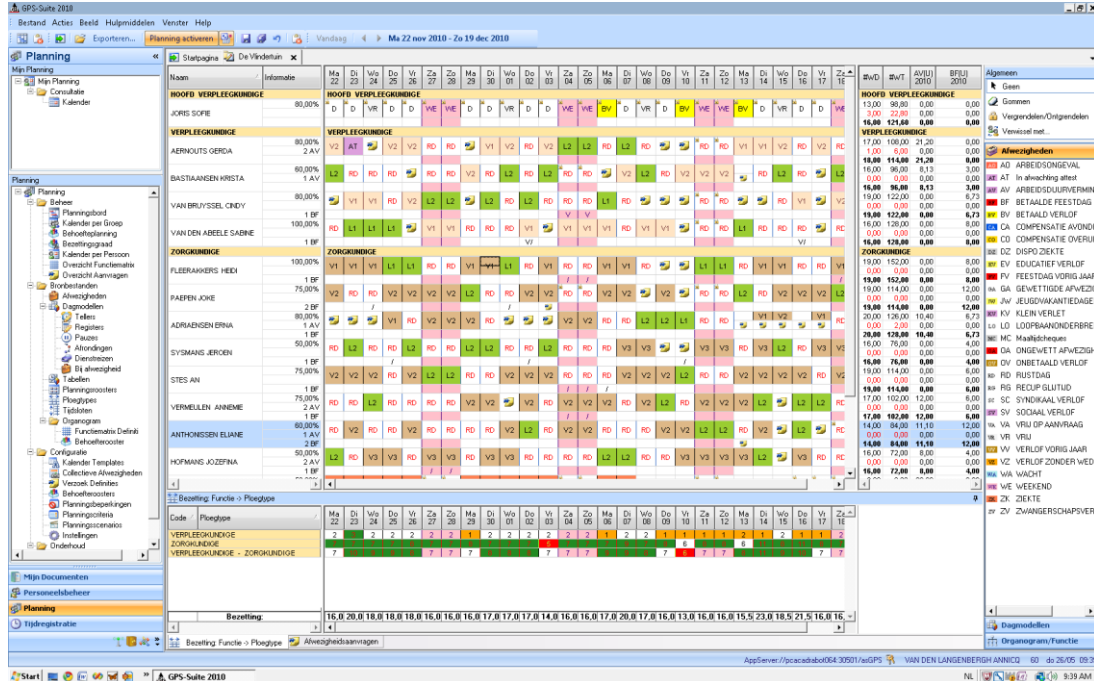


Cutting & packing
Scheduling
Timetabling
Vehicle routing



Health care – Manufacturing – (Internal) Logistics

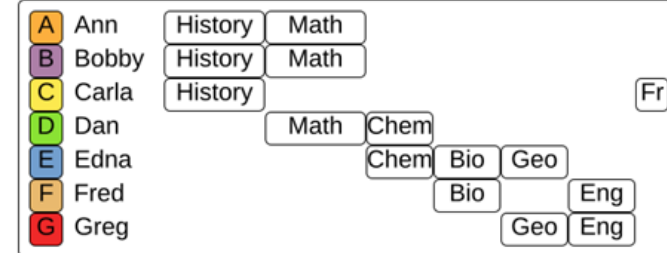
Timetabling



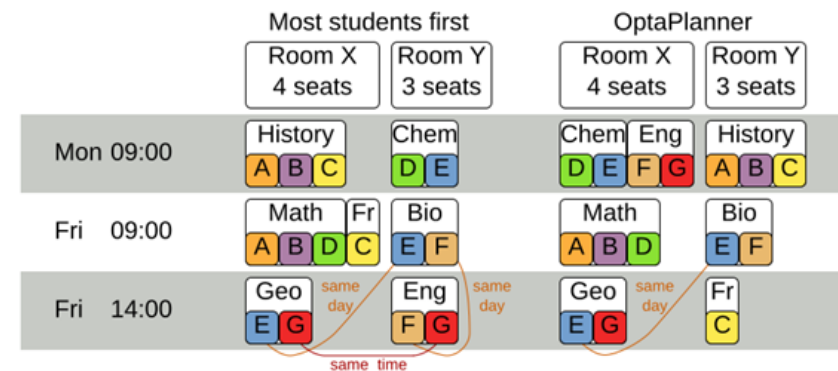
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Nurse 1	N			D	D	D			N	N	N	N			D	D	D			N	N	N			D	D	D	
Nurse 2			D	D	D			N	N	N	N			D	D	D			N	N	N	N			D	D	D	D
Nurse 3	D			N	N	N					D	D			N	N	N			D	D			D	D	N		
Nurse 4		N	N	N				D	D	D			N	N	N			D	D	D	D			N	N	N	N	N
Nurse 5	N	N	N				D	D	D	D			N	N			D	D	D			N	N	N			N	
Nurse 6		D	D	D				N	N	N			D	D	D	D			N	N	N			D	D	D	D	
Nurse 7			N	N	N			D	D	D			N	N	N			D	D	D			N	N	N			D
Nurse 8	D	D	D				N	N	N			D	D	D	D			N	N			D	D	D	N			
Nurse 9	N	N			D	D	D			N	N	N			N	N	N	N			D	D	D			N	N	
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Examination timetabling

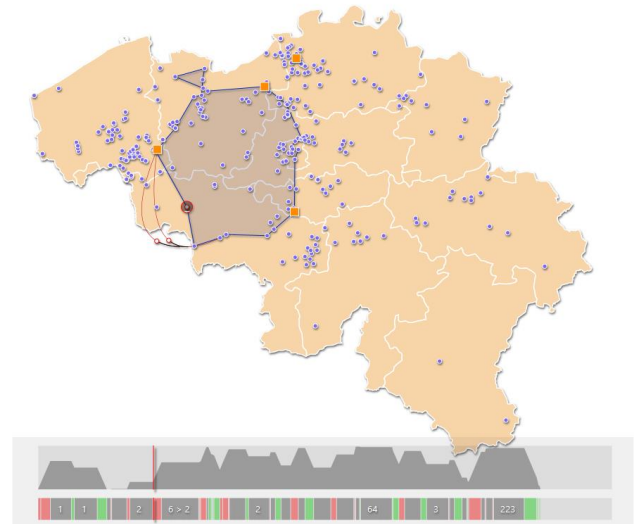
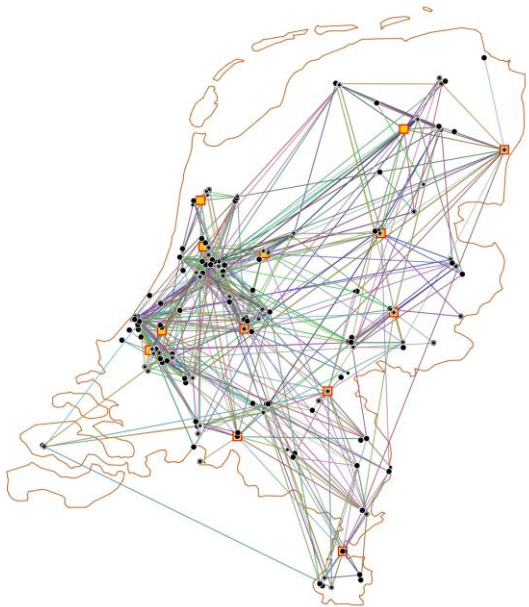
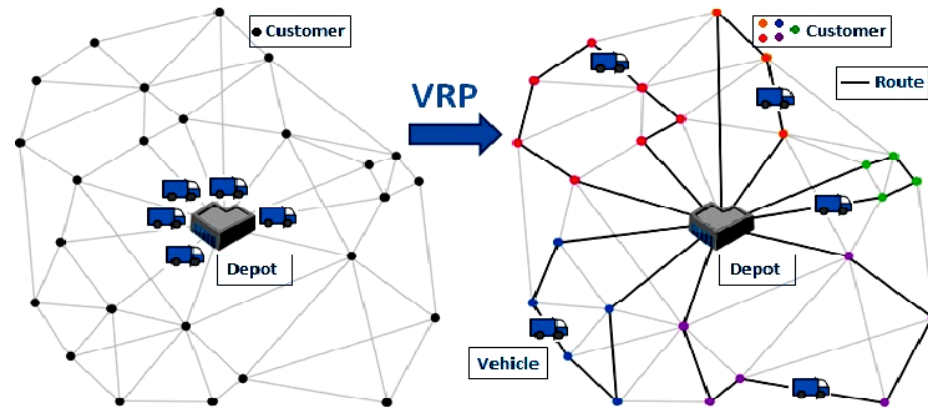
Assign each exam a period and a room.



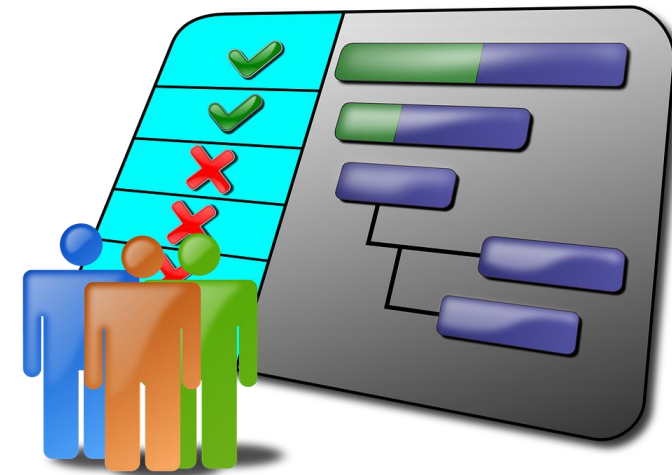
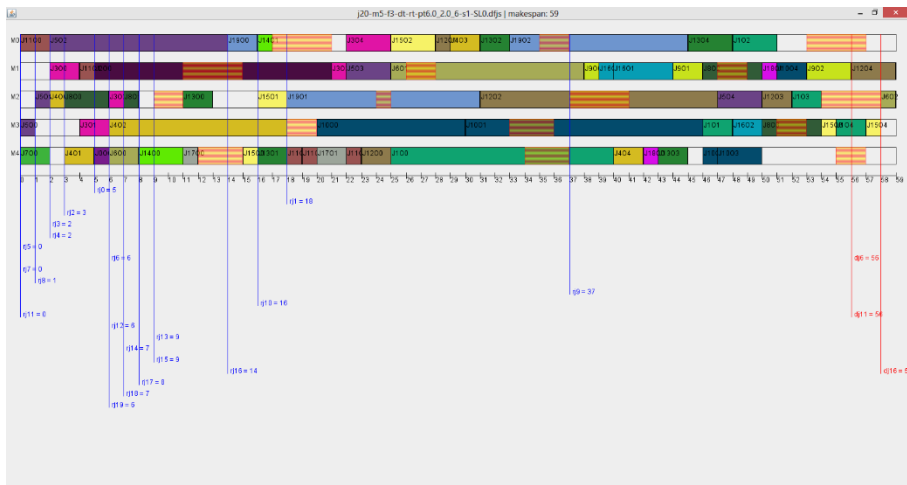
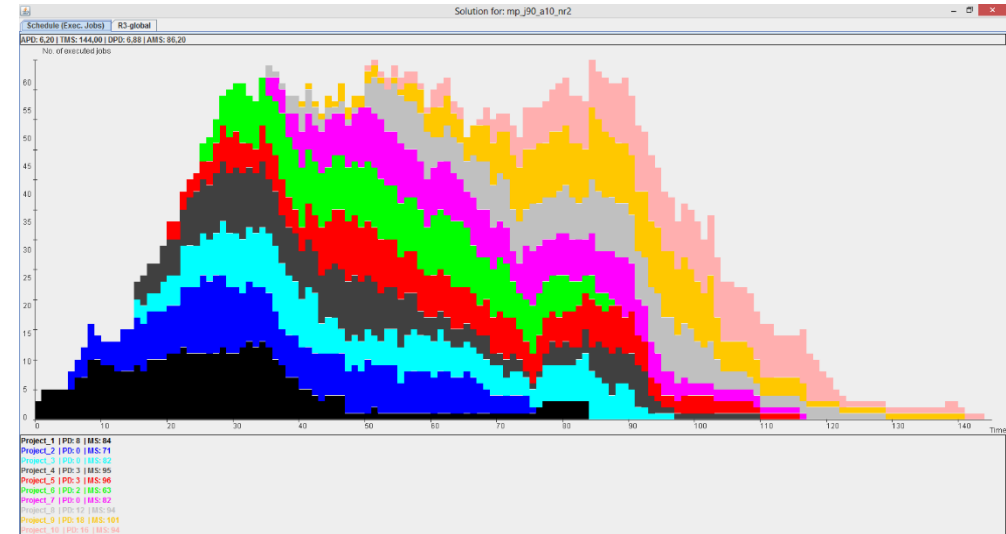
- Personnel scheduling
- Sports timetabling
- Educational timetabling



Vehicle routing



Scheduling



Cutting & packing

- 1D, 2D, 3D
- Containers
- Pallets
- Cutting Stock
- Irregular shapes
- Real-world constraints

