

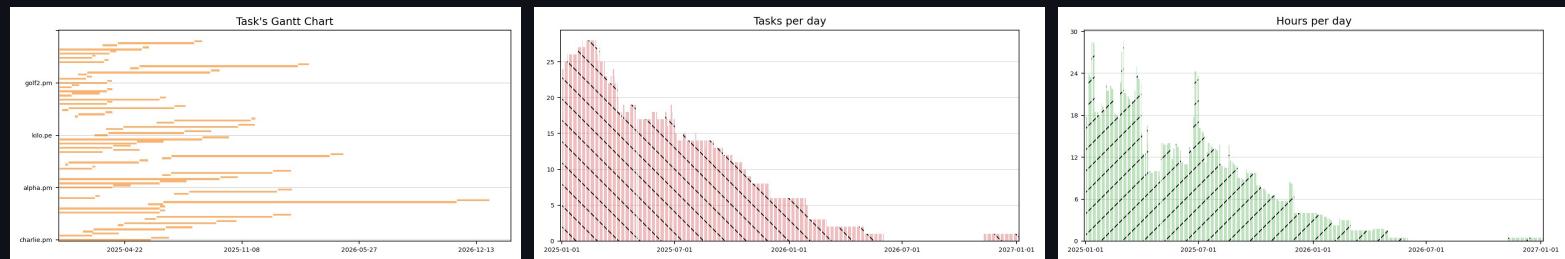
# Yumbo. Scheduling, Planning and Resource Allocation

Zbigniew Romanowski, Paweł Koczyk

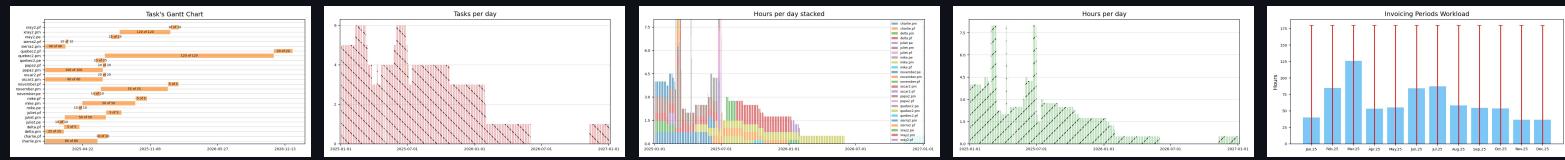
Source code, documentation and sample Excel input files can be found on [Yumbo's GitHub repository](#).

28 January 2025, 16:23:36 PM

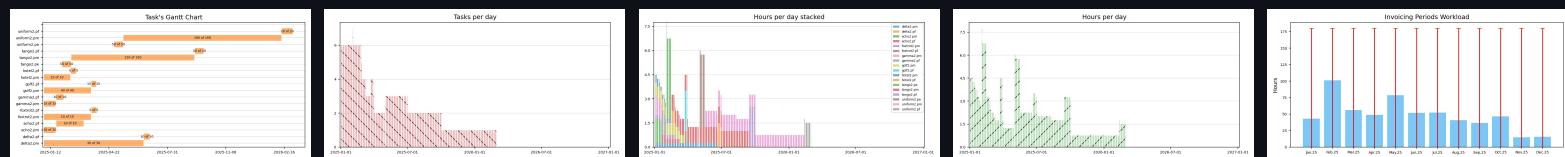
## Experts overview



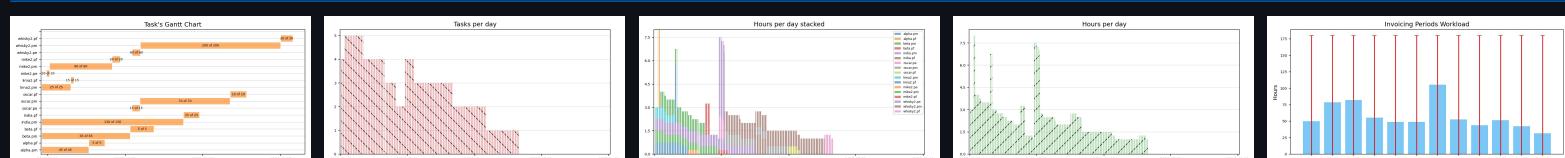
## PM.Angel the 1st unit



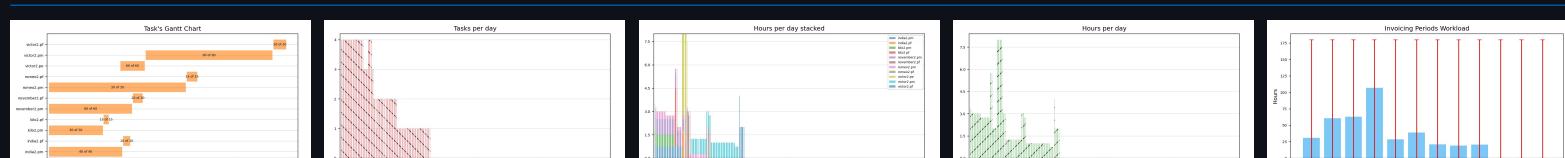
## PM.Anthony the 2nd unit



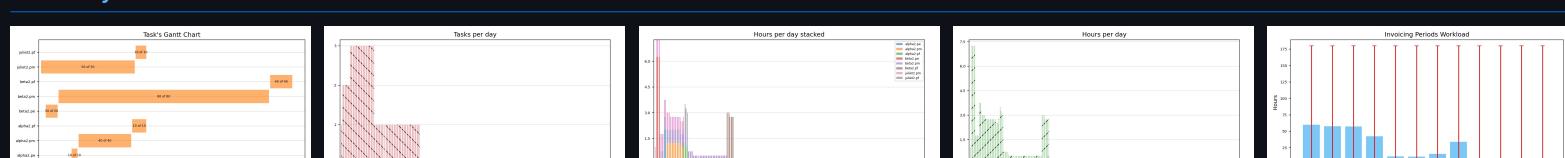
## PM.Daniel the 2nd unit



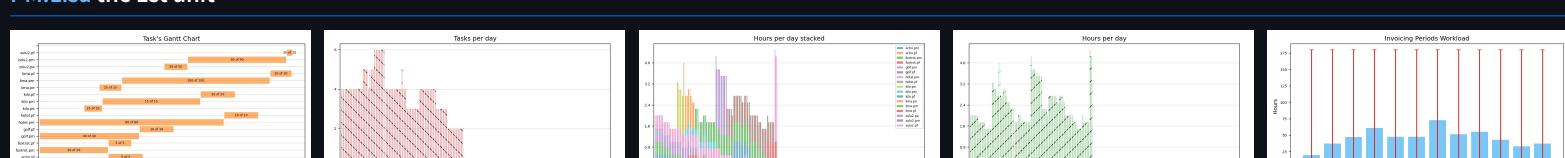
## PM.Fabian the 2nd unit



## PM.Henry the 2nd unit



## PM.Lisa the 1st unit



## Solver output at 28 January 2025, 16:23:39 PM

```
HiGHS 1.8.1: tech.outlev = 1
Running HiGHS 1.8.1 (git hash: 4a7f24a); Copyright (c) 2024 HiGHS under MIT licence terms
Coefficient ranges:
Matrix [1e+00, 3e+01]
Cost [1e+00, 1e+00]
Bound [1e+00, 3e+03]
RHS [1e+01, 8e+02]
Presolving model
50699 rows, 54117 cols, 106508 nonzeros 0s
1189 rows, 29361 cols, 7505 nonzeros 0s
1188 rows, 4953 cols, 7371 nonzeros 0s
1186 rows, 4880 cols, 7290 nonzeros 0s
```

Solving MIP model with:  
 1186 rows  
 4880 cols (1237 binary, 3643 integer, 0 implied int., 0 continuous)  
 7290 nonzeros

MIP-Timing: 0.25 - starting analytic centre calculation

Src: B => Branching; C => Central rounding; F => Feasibility pump; H => Heuristic; L => Sub-MIP;  
 P => Empty MIP; R => Randomized rounding; S => Solve LP; T => Evaluate node; U => Unbounded;  
 z => Trivial zero; l => Trivial lower; u => Trivial upper; p => Trivial point

Src	Proc.	Nodes InQueue	B&B Tree			Objective Bounds			Dynamic Constraints			Work	
			Leaves	Expl.	BestBound	BestSol	Gap	Cuts	InLp	Confl.	LpIters	Time	
R	0	0	0	0.00%	37429.752508	inf	inf	0	0	0	0	0.3s	
	1	0	1	100.00%	48023.100566	48023.100566	0.00%	0	0	0	391	0.3s	
					48023.100566	48023.100566	0.00%	0	0	0	412	0.3s	

#### Solving report

Status Optimal  
 Primal bound 48023.1005659  
 Dual bound 48023.1005659  
 Gap 0% (tolerance: 0.01%)  
 P-D integral 0  
 Solution status feasible  
 48023.1005659 (objective)  
 0 (bound viol.)  
 0 (int. viol.)  
 0 (row viol.)  
 Timing 0.28 (total)  
 0.00 (presolve)  
 0.00 (solve)  
 0.00 (postsolve)

Max sub-MIP depth 0

Nodes 1  
 Repair LPs 0 (0 feasible; 0 iterations)  
 LP iterations 412 (total)  
 0 (strong br.)  
 0 (separation)  
 0 (heuristics)

HiGHS 1.8.1: optimal solution; objective 48023.10057

412 simplex iterations

1 branching nodes

absmipgap=7.27596e-12, relmipgap=0

"option abs\_boundtol 7.105427357601002e-15;"  
 or "option rel\_boundtol 1.5786024397762919e-16;"  
 will change deduced dual values.

## Elapsed time for chart creation

Chart title	Chart short name	Number of calls	Elapsed time [s]	Average time per chart [s]
Hours per day stacked	simg	6	37.911	6.319
Tasks per day	ting	6	3.686	0.614
Hours per day	himg	6	3.252	0.542
Invoicing Periods Workload	wimg	6	1.338	0.223
Task's Gantt Chart	ging	6	0.889	0.148
Plot task with its constraints	bimg	0	0.000	0.000