

CRS

Carmen Rail Solution

Deutsche Bahn

Optimization of shifts and rosters for crew

Challenge

- Increase the efficiency of operations for 30 000 crew
- Reduce time required to plan crew yet increase flexibility
- Deployment of solution covering world's largest passenger railway system

Approach

- Studies, benchmarks, and simulations giving case for business improvement
- Implementation of Carmen Rail Solution (CRS) Shifts and Rosters
- Deployment of long-haul solution followed by regional roll-outs.

Results

- 3-7% increase in crew efficiency, giving annual savings of EUR 8 million for long-haul alone.
- Significant decreases in crew planning cycle
- Simulation and decision support capabilities allowing increased business flexibility

Deutsche Bahn (DB) operate long-haul and commuter passenger traffic as a railway and road freight operation throughout Germany. The passenger operation is supported by ca. 7 500 locomotives and motorised units and approximately 30 000 crew. The DB requirement was for a crew scheduling system that would significantly increase crew efficiency, reduce planning overheads, yet provide a highly-adaptive system to allow simulation of different business scenarios.

Carmen Systems were awarded the contract to implement the Carmen Rail Solution (CRS) for shifts and rosters in October 2001. This followed extensive benchmarking work that confirmed the feasibility of the proposed solution.

The delivery consisted of:

- Complete modelling of all crew staffing rules, following all company and union regulations.

- Modelling of all processes associated with commencement and termination of crew shifts
- Customisation of the CRS software for Deutsche Bahn's operation
- Training of planners, instructors, and technical staff centrally and in regions.
- Post-implementation benchmarking to confirm validity and profitability of solution as delivered.

This delivery demonstrates Carmen's ability to address a planning problem requiring the scheduling of a very large number of crew, in the DB case, mainly for long-and mid-term planning. In addition, the client's requirement was that the planning work be distributed among central and regional planners.

About Deutsche Bahn

Deutsche Bahn are the world's largest passenger railway, producing over 1 600 million journeys, corresponding to nearly 70 000 million passenger-kilometres per year. DB employ ca. 100 000 staff, of which 30 000 are train crew.

The DB operation consists of a national long-haul network plus 26 regional commuter networks.

About Carmen

Carmen Systems are resource optimization specialists. Founded in 1994, the Swedish based software and consultancy company lead the global market in rail and airline crew management. Carmen's suite of products is:

- PlanOp
Postal and logistics network planning
- IPTIS
Public transport journey planning
- Carmen Rail Solution
Rail crew management
- Rolling Stock Distribution
- Carmen Crew Management
Airline crew management
- OR Services
Operations research consulting

"The Carmen product plays a vital role in improving our productivity to be best in our class in Europe. Moreover, the simulation possibilities are extremely useful to enable well-informed decisions influencing our future".

Robert Etmans

Director of Personnel

DB Fernverkehr



www.carmensystems.com

Carmen Systems AB Odinsgatan 9, SE-411 03 Göteborg, Sweden,

Phone +46 31 720 81 00, Fax +46 31 720 81 20, e-mail: carmen@carmensystems.com.