DAC Migration DSS

Digital Automatic Coupling Migration – Decision Support System

Supporting DAC migration from strategic planning to field monitoring

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Why this matters for the DAC Migration DSS

The Challenge

500,000+ Wagons

Old & new couplers incompatible.

One-shot execution

No learning curve. No second attempt during migration.

Blind decision risk

Without simulation, the sector lacks evidence for safe migration.

Source: The Gurdian (2008)

Airline industry

Passengers fume in the chaos of Terminal 5's first day

Flights cancelled and baggage system collapses at BA's £4.3bn showpiece

From a hackathon spark to a sector-ready MVP

The Journey

Born grassroots

Started at a trinational hackathon – first proof that DAC migration can be simulated.

Powered forward

Advanced in DB Systel's innovation program – a cross-functional team takes the idea forward.

Built fast

Developed in three month – an open-source MVP with first analytics backed by ORA.

Ready to scale

Presented today – the first step in bringing PopUpSim to the European rail sector.

DAC Migration DSS

PopUpSim

Why simulation changes the game

The Solution

Microscopic View

Detailed analysis of workshops, wagons, sidings and processes

- Determining the layout and capacity of e.g. workshops
- Looking at capacity of tracks, workshops and other resources
- Modelling movement of wagons
- Time is measured in minutes and seconds

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PopUpSim

Connecting micro reality to macro decisions

- Deep dive into crucial elements
- Quantitative performance metrics
- Early detection of bottlenecks
- Scenario testing before committing
- Stronger strategic decisions

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Macroscopic View

Bird's-eye planning of Europe-wide migration

- Overall migration framework e.g. component production capacity and demand balancing
- Workshop capacity and demand on e.g. number of workshops on regional level
- Time periods might be a year
- High-level migration strategy

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What PopUpSim delivers today

The Solution

Screenshot PopUpSim Apache 2.0

Current MVP Scope

- Simulates wagon flows through pop-up workshops
  - Implements basic operational logic
  - Provides an expert-level CSV/JSON workflow
  - Calculates core operational metrics displayed in basic dashboard

PopUpSim - Simulation Dashboard

Total Wagons	Retrofitted	Completion Rate	Duration
224	209	93.3%	27360.0 min

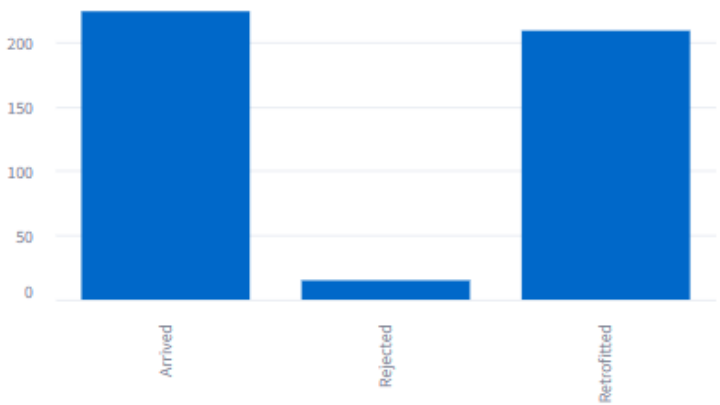
Overview | Wagon Flow | Workshop | Locomotive | Track Capacity | Rejected Wagons | Event Log | Process Log

Overview Dashboard

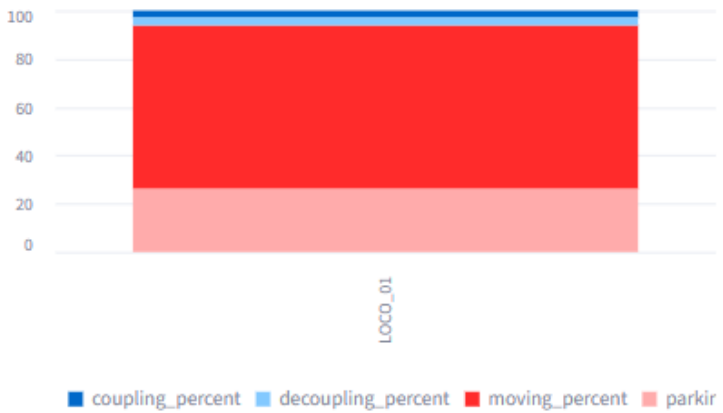
Trains / Wagons	Retrofitted	Rejected	Workshop Util.	Duration
10 / 224	209 (93.3%)	15	34.4%	27360 min

Operational Dashboard

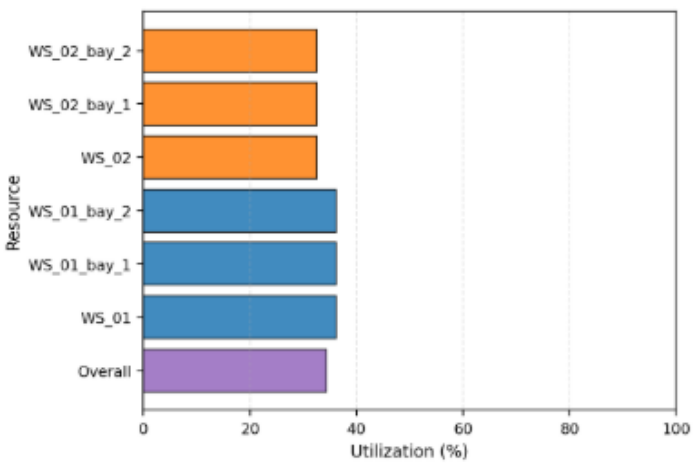
Wagon Flow



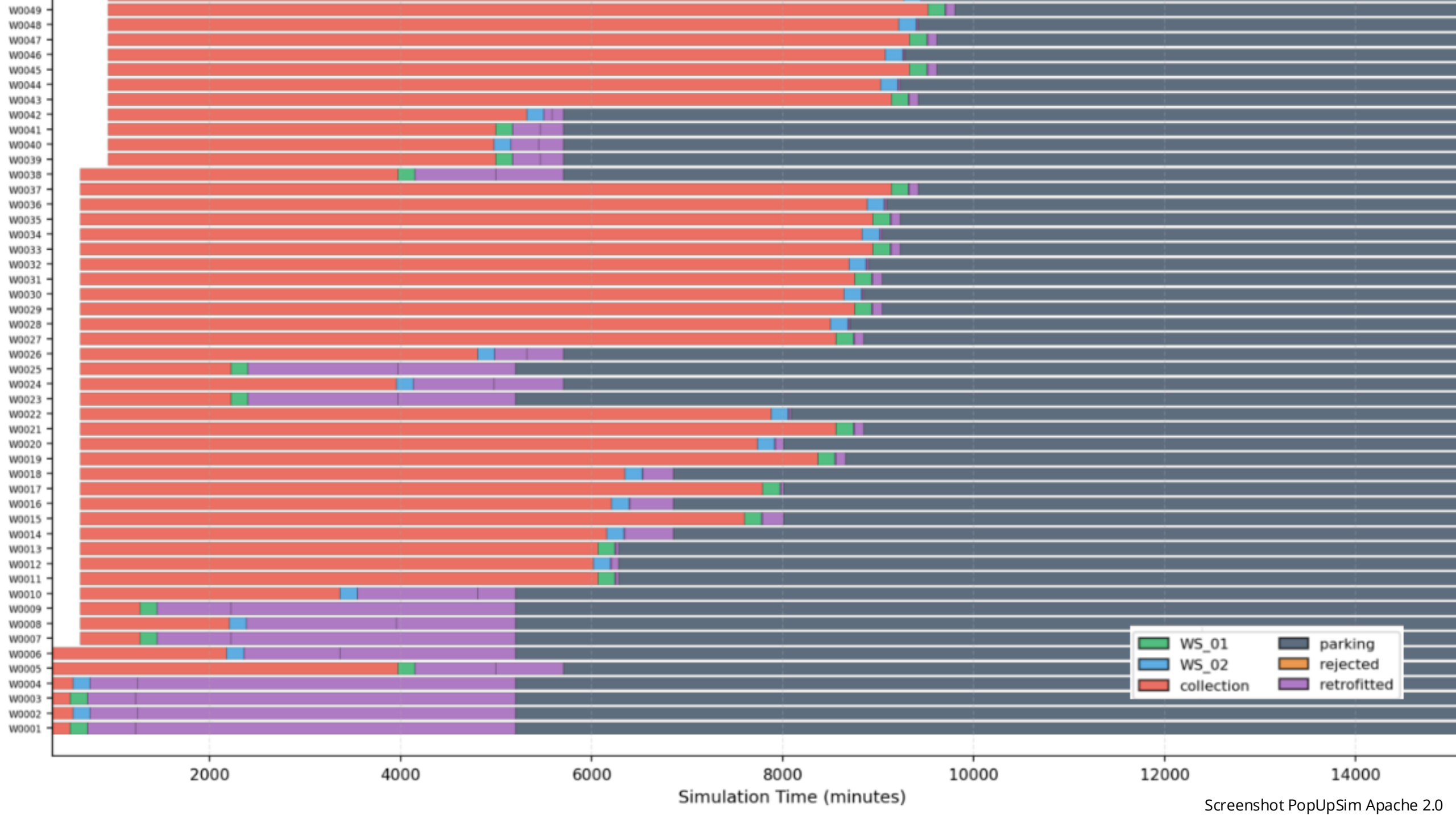
Locomotive Activity Breakdown



Workshop Bay Utilization



Screenshot PopUpSim Apache 2.0



Screenshot PopUpSim Apache 2.0

What PopUpSim delivers for the sector

The Impact

Accelerates decision-making

Simulation turns assumptions into evidence – giving decision-makers a shared picture of feasibility, constraints, and timing and accelerating their strategic decisions.

Reduces investment and operational risks

PopUpSim stress-tests workshop layouts and capacity choices under real operational conditions – reducing the two most costly risks of building too much or too little infrastructure.

A grassroots innovation – ready to become a sector solution

The Invitation

personal photos

A shared investment in sector innovation

Turning PopUpSim from MVP to European Capability

PopUpSim proves that DAC migration can be simulated — transparently, openly, and with sector-wide benefit. To scale this capability beyond today's MVP, we need partners who share the vision: a non-discriminatory, open-source simulation core combined with professional services from DB Systel that support every operator across Europe.

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Merci.