

- 1 Introduction
- 2 Building Information Modelling
  - 2.1 Basic principles of BIM
    - 2.1.1 Five dimensions
    - 2.1.2 Data levels of detail
    - 2.1.3 Legal challenges in Germany
  - 2.2 Management of BIM projects
    - 2.2.1 Employer's Information Requirements (EIRs)
    - 2.2.2 Common Data Environment (CDE)
    - 2.2.3 BIM Execution Plan (BEP)
    - 2.2.4 Collaborative working
    - 2.2.5 Allocation of roles in BIM projects
- 3 BIM in track construction
  - 3.1 Specific nature of track construction
    - 3.1.1 The track
    - 3.1.2 Logistics
  - 3.2 Work scheduling in track construction
  - 3.3 Calculation in track construction
  - 3.4 Creating a 5D BIM model for track construction
    - 3.4.1 Target data generation
    - 3.4.2 Recording actual data
- 4 Potential of BIM for maintenance activities
  - 4.1 Automated quantity determination
  - 4.2 Semi-automated construction scheduling
    - 4.2.1 Standard performance parameters for track maintenance
    - 4.2.2 Planning the fourth dimension
  - 4.3 Semi-automated calculations
    - 4.3.1 Tender and work calculation
    - 4.3.2 Work completion and follow-up calculation
  - 4.4 Creating a digital twin
  - 4.5 Outlook – preventive maintenance and operation
- 5 Conclusion