

Digital BIM Coordination Reporting with Navisworks and Power BI

Target Audience

This course is designed for professionals involved in BIM coordination, clash detection, construction planning, and project reporting who want to leverage Navisworks and Power BI for data-driven decision-making. It is ideal for:

- BIM Coordinators and BIM Managers
- VDC (Virtual Design & Construction) Engineers
- MEP Coordinators and Design Engineers
- Construction Managers and Project Managers
- BIM/VDC Consultants
- Digital Construction Professionals
- Project Controls and Planning Engineers
- Design Coordination Teams
- BIM Analysts and Data Visualization Specialists

Course Objectives

Upon completion of this course, participants will be able to:

- Understand the role of clash analytics and data visualization in BIM coordination and project delivery.
- Configure and manage Navisworks Clash Detective workflows for accurate clash detection and tracking.
- Organize clash data effectively using industry best practices for coordination and reporting.
- Identify and extract critical clash properties and model information required for meaningful analytics.
- Understand Navisworks API fundamentals and how clash data can be exported for reporting purposes.
- Develop structured workflows for automated clash data collection and management.
- Import, clean, transform, and model clash data using Microsoft Power BI.
- Create interactive dashboards and visual reports to communicate coordination progress and project insights.
- Analyze clash trends, discipline performance, and spatial clash distribution to support informed decision-making.
- Implement data-driven BIM coordination strategies that improve collaboration and project outcomes.

Course Outcomes

After successfully completing this training, participants will be able to:

- Configure Navisworks models and clash tests to support advanced coordination reporting.
- Apply clash management best practices to improve data accuracy and coordination efficiency.
- Classify, organize, and maintain clash data for reporting and performance measurement.
- Extract and prepare clash data for integration with external analytics platforms.
- Utilize Navisworks API concepts to understand and extend clash data extraction workflows.
- Build automated reporting pipelines from Navisworks to Microsoft Power BI.
- Create dynamic dashboards that track clash resolution progress, discipline performance, and project coordination status.
- Develop clash heat maps and spatial analytics to identify high-risk coordination areas.
- Generate real-time coordination reports for project stakeholders and leadership teams.
- Establish scalable BIM analytics workflows that support continuous improvement and data-driven project delivery

Course Outline

Duration: 16 Hours

The course comprises **16 hours** of instructor-led theory and hands-on labs and is divided into **8 modules**. Each module is followed by practical exercises to reinforce concepts and improve productivity in real-world engineering projects.

Table of Contents

Module 1: Introduction to BIM Coordination Analytics & Clash Reporting

- BIM Coordination Process Overview
- Role of Clash Detection in Construction Projects
- Challenges with Traditional Clash Reports
- Understanding Clash Metrics and KPIs
- Stakeholder Requirements for Coordination Reporting
- Clash Data Lifecycle
- Workflow Overview: Navisworks → Excel/API → Power BI
- Data-Driven BIM Coordination Strategies

Module 2: Navisworks Manage Setup for Clash Analytics

- Preparing Coordination Models
- Model Federation Best Practices
- Model Naming Standards and Discipline Coding
- Focus Zones and Work Packaging Strategies
- Grid Systems and Spatial Coordination
- Clash Detective Environment Setup
- Model Organization for Reporting
- Preparing Data for Downstream Analytics

Module 3: Advanced Clash Detective Configuration

- Clash Detective Interface Overview
- Clash Test Creation and Management
- Selection Sets and Search Sets
- Clash Rules and False Positive Reduction
- Clash Grouping Techniques
- Clash Status Workflow Management
- Managing Active, Reviewed, Approved, and Resolved Clashes
- Clash Coordination Best Practices

Module 4: Clash Data Organization & Coordination Management

- Clash Data Structuring Standards
- Discipline-Based Clash Categorization
- Managing Open vs Closed Clashes
- Coordination Progress Tracking
- Clash Prioritization Strategies
- Focus Zone-Based Reporting
- Clash Resolution Metrics
- Preparing Clash Data for Export

Module 5: Navisworks API Fundamentals for Clash Data Extraction

- Introduction to Navisworks API
- Understanding API Architecture
- Key Assemblies and Libraries
- ClashTest, ClashResult and ClashResultGroup Classes
- ModelItem and GridSystem Classes
- Accessing Clash Properties Programmatically
- Understanding Data Structures for Reporting

Module 6: Clash Data Export & Repository Management

- Clash Data Export Workflow
- Clash Test Data Export Process
- Object Count by Discipline Export
- Focus Zone Mapping
- Discipline Code Mapping
- Excel Repository Structure
- Shared Data Repositories
- Automating Clash Data Collection

Module 7: Power BI Data Modeling & Transformation

- Introduction to Microsoft Power BI
- Connecting Navisworks Export Data
- Data Cleaning with Power Query
- Data Transformation Techniques
- Creating Data Relationships
- Developing Clash Metrics
- Calculated Columns and Measures (DAX Basics)
- Refresh and Automation Workflows

Module 8: Building Interactive Clash Metrics Dashboards

- Project Summary Dashboard
- Project Overall Status Dashboard
- Discipline Clash Analytics
- Clash Heat Maps
- Dashboard Publishing & Collaboration