GREEN BIM
DIGITAL SOLUTIONS FOR SUSTAINABILITY IN THE PRECAST INDUSTRY

Presentation by Ramon Steins
PERSONAL INTRODUCTION

RAMON STEINS

At ALLPLAN for over 9 years, I progressed from a Regional Sales Manager BeNeLux to the Director of Allplan Software in Singapore in 2022.

Currently, I'm the Sales Director for APAC, CEEMEA, BeNeLux, UK & the Nordics since January 2023.

Before ALLPLAN, I dedicated nearly 14 years as a BIM Specialist at Van der Werf en Nass BV in the Maastricht Area.
AGENDA

› About ALLPLAN and Nemetschek
› Sustainable Building Life Cycle with BIM
› Planning Sustainable Buildings
› Sustainable Building
› Research
› Key Takeaways
Our Vision
Help users shape the world.
In all dimensions.

#ShapeTheWorld
SHAPE THE WORLD

Intelligent software solutions for AEC/O and Media & Entertainment

PLANNING + DESIGN
BUILD + CONSTRUCT
OPERATE + MANAGE
MEDIA + ENTERTAINMENT
4 CUSTOMER SEGMENTS
13 STRONG BRANDS

GLOBALLY MORE THAN

7 MILLION USERS

>3,600 EMPLOYEES WORLDWIDE

801.8 MILLION EURO IN REVENUE
(Financial Year 2022)
PLANNING + DESIGN
Precise, innovative, and open planning and design workflows

BUILD + CONSTRUCT
Collaborative, efficient, and sustainable construction processes

OPERATE + MANAGE
Smart, intelligent and comprehensive building management

MEDIA + ENTERTAINMENT
Creative, intuitive and powerful 3D animation

NEMETSCHEK ENGINEERING
FRILØD | SCIA

DIGITAL TWIN BUSINESS UNIT
dRofus
DESIGN TO BUILD
DESIGN SOLUTIONS FOR A BETTER BUILT ENVIRONMENT
TOOLS & INFORMATION TO MAKE THE RIGHT DECISIONS

› Highly accurate quantity take off, to understand the costs or resource impact.
› Powerful modeling, cloud-based collaboration, reporting and visualization capabilities to make sure the right information is available.
› Enabling straight forward and transparent communication with other stakeholders, including fast iterations between the architects and engineers or owners.
LEVERAGING THE BIM MODEL ALL THROUGH CONSTRUCTION

› Enriching it over the time with lean construction methodologies and site construction assets, or safety considerations.
› Considering buildability of the structure or the infrastructure asset in the digital model - to a large extent - automatically added
› To avoid surprises on the construction site.
DIGITAL TOOLS NEED TO BE EXTENDED TO PRE-FABRICATION

 › It is essential to consider the **whole process chain** to make a real impact
 › With our precast and steel technology we help to **streamline the full fabrication process**
 › Supporting **multi-material buildings and infrastructure**
IT IS WORTHWHILE IN EARLY DESIGN PHASES TO MAKE THE RIGHT DECISIONS
A CONSIDERATION OF THE BUILDABILITY OF THE STRUCTURE BY SUPPLEMENTING THE DIGITAL MODEL
The Nemetschek Group is a leader in developing and promoting OPEN BIM solutions and workflows to enable seamless and free collaboration of the different disciplines along the complete building lifecycle, regardless of their choice of software.
WHAT IS OPEN BIM?

A PROGRESSIVE, DIGITAL, FUTURE-PROOF APPROACH TO IMPROVE AEC INDUSTRY COLLABORATION

› Connecting different stakeholders involved in a building or infrastructure project.
› Exchange project information through neutral, non-proprietary file formats.
› Open standards benefits everyone creating, processing, importing or exporting BIM data.
› Throughout all project phases.

› OPEN BIM creates a singular language, ensuring workflow transparency, longevity and accessibility of data for built assets – ideally in real-time, cloud-based and from one single “source of truth”.

OPEN BIM™
OPEN BIM is based upon open standards such as IFC from buildingSMART. ALLPLAN and the Nemetschek Group fully support buildingSMART’s openBIM program. We are also fully dedicated to the high-quality standards defined by our OPEN BIM Charter and represented by our OPEN BIM logo.
SUSTAINABLE BUILDING LIFE CYCLE WITH BIM
Rapid global change requires new methods to ensure the resilience of our cities.
SUSTAINABLE BUILDING LIFE CYCLE WITH BIM

Operation & dismantling
- Monitor energy consumption
- Structural Health Monitoring
- Optimize utilization efficiency

Construction phase
- Modular construction
- Shortage and waste prevention through BIM on the construction site
- Paperless construction site through BIM

Reuse
- Building renovation
- Reuse of components
- Material recycling

Planning
- Life cycle assessment construction
- Building with renewable raw materials
- Reduction of the use of materials
- Life cycle assessment operation
SOFTWARE SOLUTIONS FOR A SUSTAINABLE CONSTRUCTION LIFE CYCLE
One Solution for all disciplines from design to build

Allplan is the multidisciplinary platform for AEC professionals that accompanies and integrates the design and construction process throughout all project phases.
ALLPLAN PRECAST

› ALLPLAN has 30 years expertise in Precast
› +600 Allplan Precast customers worldwide
› 150 Bill. sqm of precast concrete elements every year

› Key benefit of ALLPLAN’s software:
  More efficiency, precision and flexibility for precast design and detailing
Accelerate precast design and detailing processes with innovative software.

Manage 50% more work thanks to unique automated workflows

2D/3D always consistent automatically - with Allplan's unique Elementplan-Technology

Create shop drawings and reinforcement with a single click
PLANNING SUSTAINABLE BUILDINGS
MODULAR CONSTRUCTION
\ MATERIAL OPTIMIZATION

EFFICIENT MODELING
OF A LARGE NUMBER OF IDENTICAL OBJECTS
MATERIAL OPTIMIZATION

- SOLID SLAB
- HOLLOWCORE – PRESTRESSED
- BUBBLEDECK
- GIRDER SLAB
- BRICK SLAB
- BRICK SLAB WITH FILL
- SOLID BRICK SLAB
- BRICK SLAB
MATERIAL OPTIMIZATION – HOLLOW CORE

› 45 % less concrete
› 30 % less steel
BIM BASED LIFECYCLE ASSESSMENT

Design Assistance

Detailed documentation

National Material Data Base

Power BI

Advanced QTO

National LCA Tool

MEP

CO₂e emissions
End of life

CO₂e emissions
Use and replacement

CO₂e emissions
Raw materials Transportatio n Production

Absolute CO₂e emissions of the construction

GREEN BIM - DIGITAL SOLUTIONS FOR SUSTAINABILITY IN THE PRECAST INDUSTRY
SUSTAINABLE BUILDING
EFFICIENT PRODUCTION AND LOGISTICS

› 4D approach reduces the risk of errors and ultimately construction delays
› Process monitoring and visualization
› Process documentation
› Object identification with QR codes
› Construction progress documentation
BIM BASED REFURBISHMENT

Scan2BIM digital building reconstruction from point clouds

Raw data/E57

Optimized point clouds

Different geometries and information

SCALYPSEO

ALLPLAN
RESEARCH & VENTURE
RESEARCH@NEMETSCHEK

AICC

• Machine learning based characterization of the air void system in concrete
• Prediction of degradation and deterioration processes due to gas and moisture transport mechanisms

DeepMonitor

• The end result of this project will be a data-driven, robust, and computationally efficient system for detecting defects in building components
VENTURE@NEMETSCHEK

Imerso – ML based quality assurance and documentation
› Holistic documentation of the construction site
› As built-As planned comparison: automatically compare construction execution with models
› Detection of collisions before they happen

Preoptima – ML based LC Optimization
› Compare thousands of AI and generative design created design iterations
› Reliably and efficiently report full life cycle assessment (LCA)
› Track carbon through construction, use and demolition stages
Intensively greened facade with plant arches made of precast concrete elements

› Garden tower in Risch-Rotkreuz/Switzerland
› Office and residential building with 85 apartments
› 1,770 prefabricated parts planned and produced
› 824 layouts
› Precast project lead time (from commissioning to start of delivery): approx. 6 months
› Estimated time savings: 206 working hours

© Philipp Hodel, Zug Estates
A mixed-use development project combining housing, services, education and entertainment

- Total floor area: 50,000 sqm, 18 floors, 3 basements
- 3D BIM-modeling of structural and rebar design and BoQ for structural works to support the tendering process
- Allplan enabled engineers to rapidly produce an accurate 3D reinforcement model, revolutionizing standard industry processes.

THE LONG BIEN PROJECT EXEMPLIFIES MODERN DIGITAL WORKFLOW, LEVERAGING ALLPLAN BIMPLUS FOR ENHANCED DESIGN EFFICIENCY AND COMMUNICATION.
ALWAYS THERE FOR YOU

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