How Bayer is using BIM for a global CAPEX program

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Science For A Better Life

AUTODESK UNIVERSITY
About the speaker

Dirk Rodermund

Dirk has a long time experience at Bayer. He started as an electrical engineering technician and software developer, consultant and trainer for in-house CAD and CAE solutions.

Currently he is defining and supporting the BIM processes for a major facility upgrade program at Bayer.
Our Story

HOW WE STARTED
// Upgrade program’s first approach to BIM
// BIM fits into Bayer’s project approach

WHAT WE DID
// Program versus projects
// Step by Step

WHERE WE ARE
// Successful start
// But we are not at the end!
Our Purpose: “Science for a better life”

Bayer is a life science company and a global leader in health care and nutrition. Our innovative products support efforts to overcome the major challenges presented by a growing and aging global population. Guided by our corporate purpose “Bayer: Science for a better life,” we help to prevent, alleviate and treat diseases. We are also making an important contribution to providing a reliable supply of high-quality food and plant-based raw materials, while at the same time promoting the sustainable use of natural resources. Our business activities therefore support the achievement of the United Nations Sustainable Development Goals.
Our Business Areas

**Crop Science**
- Innovative chemical & biological crop protection, seeds & traits, digital technologies & services
- Animal Health

**Pharmaceuticals**
- Prescription products for cardiology, women’s health care, oncology, hematology, ophthalmology, radiology and other areas

**Consumer Health**
- Non-prescription medicines in the categories of dermatology, nutritional supplements, pain, cardiovascular risk prevention, digestive health, allergy, cough & cold and other areas
The Bayer Group is a global enterprise with companies in 90 countries.
Bayer Group Key Data

- **Full-year sales**: €39.6 billion
- **Employees**: 115,498
- **Investment in research & development**: €5.2 billion
- **Countries**: 90

As of December 31, 2018; employees as of June 30, 2019, in full-time equivalents
“BIM is rocket science”

Part 1 – How we started
Global Facility Upgrade Program
Myths about BIM – Building Information Modelling

- BIM is a software
- BIM is a 3D model
- BIM is new
- BIM saves time and money

BIM has the potential to achieve significant savings in time and money

BIM standardises mature and well-defined processes of project management

BIM uses a 3D model as a tool

BIM is a (client) centric process
BIM is a shift in mindset

FROM PAPER-BASED WORKFLOWS TO DATA CENTRIC WORKFLOWS
Avoid manual data re-entries
Spend less time finding documents by searching connected data
Move with the market

FROM SILOED WAY OF WORKING TO TEAMWORK
Expedite coordination
Avoid dysfunctional construction – it is too late once the asset is built
Improve design quality

FROM LACK OF ACCESS TO RELIABLE DATA
Spend less time finding documents by searching connected data
Avoid risk of distributing outdated data
Better decisions by inviting more people to data

SUPPORT LIFECYCLE PROCESS
Avoid manual data re-entries
Spend less time finding documents at handover
Construction Management
Expedite time to market
Think Big, start Small

Part 2 – What we did
The Upgrade Program is a Bayer initiative to align pharma production sites to current requirements.

CAE@Pharma supports the upgrade program by:

- Providing the program’s BIM document framework (EIR, BEP, …)
- Support the program management
- Providing a standardized collaboration environment (BIM 360 as CDE)
- Provisioning a trustable system environment
- Working with the site to get handover requirements
Two levels: Frameworks and Projects

**Defining BIM on Program Level**
- Strategy
- Organizational Change Management
  - Workshops & Roadshows
- Document Framework
  - Employer information Requirements (EIR)
  - BIM Execution Plan (BEP) template
  - BIM assessment form
- Template
  - CDE (BIM360) & Revit
  - (User-)guides

**Using BIM in projects**
- Project Execution
- Put the theory into practise
- Direct Feedback
- Continuous Improvement Process
Building Teams

- Upgrade Program
- Executive Sponsor (Steering Committee)
- Senior Executives
- Consulting
- EP Support
- Senior Executives
- BIM Consultancy
- BIM Champion

- IT
- Global BIM Champions
- Project BIM Managers
- BIM Consultancy
- Product Management

- BIM Consultancy
Meet & Communicate

- Weekly on-line meetings (Core Team)
- Bi-weekly Hyper-Care with project BIM manager
- Regular calls with Product Development Group
- Issues not only discussed, but tracked against due dates for resolution (e.g. Approval Workflow)
- Quarterly Face-to-face workshops
- Topic specific JF
  - Construction management
  - Approval workflow
Introducing BIM compliant Roles

Program Level
- Program Lead
- BIM Management Office
- Information Manager
- BIM IT Manager

Project Level - Owner
- Project Manager
- Project BIM Manager
- Project Team
- Site Representative
- Document Controller
- Project IT Support

Project Level - Supplier
All new documents

**EIR – EMPLOYER’S INFORMATION REQUIREMENTS**

**MPDT – MODEL PRODUCTION AND DELIVERY TABLE**

**BEP – BIM EXECUTION PLAN (TEMPLATE)**

**(END-) USER DOCUMENTATION**
REVIT Configuration

Assessment of existing environments
Basis requirements (Drawing Borders, clean room color schemes, ...)

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CDE – Common Data Environment

BIM 360 Docs – Data Repository and Collaboration Platform
BIM Awareness Workshops

What is BIM?
BIM Methodology in the Bayer environment
BIM Documents
BIM Tools – Introduction of Common Data Environment (CDE) : BIM360Docs
Hands-On Sessions
Continuos Improvement Sessions with the projects
Let’s party

Part 3 – Where we are
Two levels: Frameworks and Projects

First project
- Project Execution
- Put the theory into practise
- Direct Feedback
- Continuous Improvement Process

Second project
- Project Execution
- Put the theory into practise
- Direct Feedback
- Continuous Improvement Process

Further Project
- Project Execution
- Put the theory into practise
- Direct Feedback
- Continuous Improvement Process

Defining BIM on Program Level
- Strategy
- Organizational Change Management
  - Workshops & Roadshows
  - Document Framework
    - Employer information Requirements (EIR)
    - BIM Execution Plan (BEP) template
    - BIM assessment form
- Template
  - CDE (BIM360) & Revit
  - (User-)guides
Facts & Numbers

620 drawings derived from model in pilot project in the first month. Design Review only based on BIM 360.

Documents are not printed anymore.

5 projects under the umbrella of the program – Meanwhile 21 projects in total adapted BIM 360.

Users that are using BIM 360.
But, we are not at the end…

USE OF BIM360 FOR CONSTRUCTION MANAGEMENT

• Define Templates

• Rollout in Projects

• BIM 360 Modules like Asset Management still under development

LEVERAGE DATA DURING OPERATION

• Expedited handover using Asset Information Model

• Support data for reactive and predictive maintenance

• BIM360 Module still under development

NEW PROJECTS

• Use of achievements in upcoming projects

• Not only Upgrade Program projects

FROM UPGRADE PROGRAM TO BAYER

• Handover of achievements to Bayer (BIM@Bayer)

• Make environment (tools, documents, methodology) available to all Bayer projects
BIM for a global CAPEX program

BIM IS NOT ROCKET SCIENCE

THINK BIG, START SMALL

BUT START!