

From Model to Maintenance: Building a Context-Aware Production System



Dirac @ Automatica 2025

Model-Based Manufacturing Enables Smart Maintenance

A shared model connects design, production, and service—so every change flows through the entire lifecycle.

- **Plan to Build, Build to Maintain**

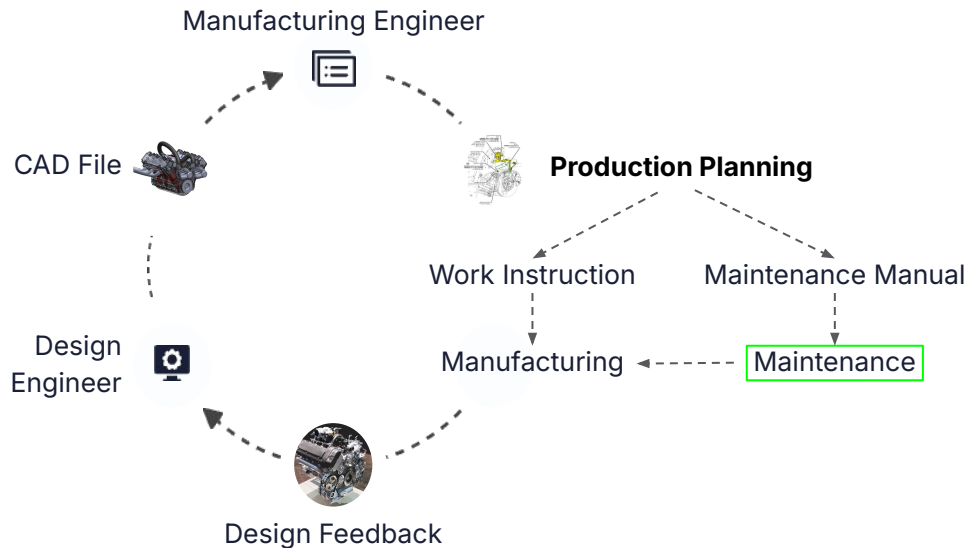
A single planning model drives both production and sustainment—so everything stays aligned.

- **Feedback Returns to the Model**

Input from the floor or the field routes back through the model, so fixes stick and improvements compound.

- **Traceability from First Build to Final Fix**

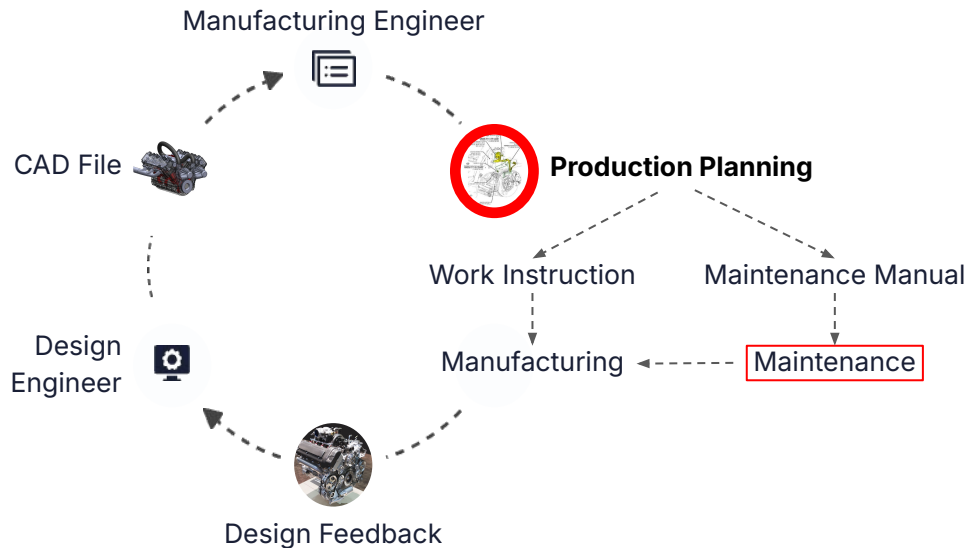
Every decision, deviation, and step is recorded against the model—making audits, analysis, and improvements easier.



Detached Production Planning Breaks the Cycle

When production planning happens outside the CAD model, everything downstream fragments.

- **The Model Gets Lost at the Start**
Most planning begins in Word, PowerPoint, or Excel—nowhere near the design file.
- **Feedback Has Nowhere to Land**
Operator and service insight can't loop back cleanly to design—so it doesn't.
- **Disconnected Teams & Outputs**
Work instructions and maintenance docs are generated separately, with no shared structure or context.



BuildOS Connects the Design-to-Maintain Lifecycle

A model-based platform for production planning, execution, and continuous feedback.

- **The Model Is the Plan**

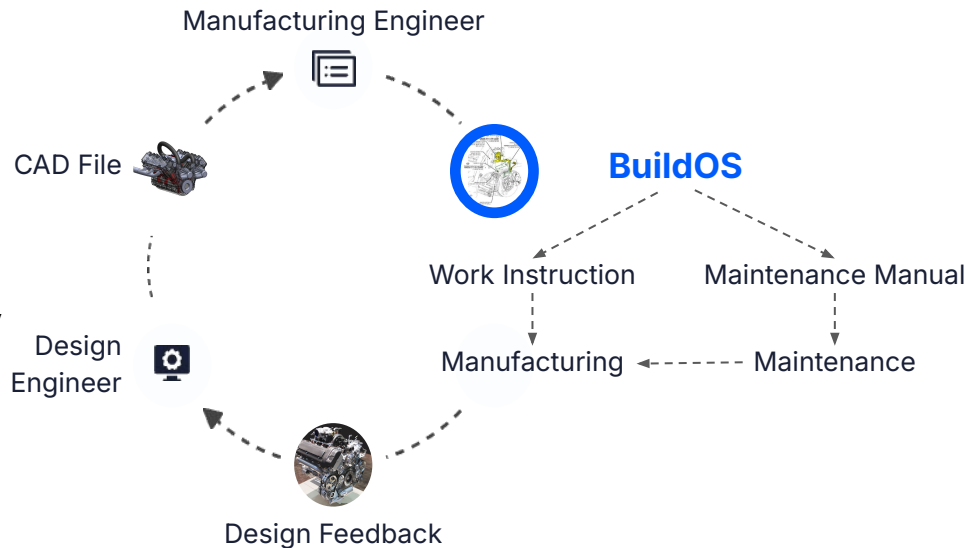
BuildOS uses the CAD assembly structure as the foundation for everything that follows—no translation layer, no drift.

- **Planning Becomes Structured**

Tasks, sequences, and dependencies are generated directly from geometry. It's trees and tables all the way down.

- **The Loop Closes by Default**

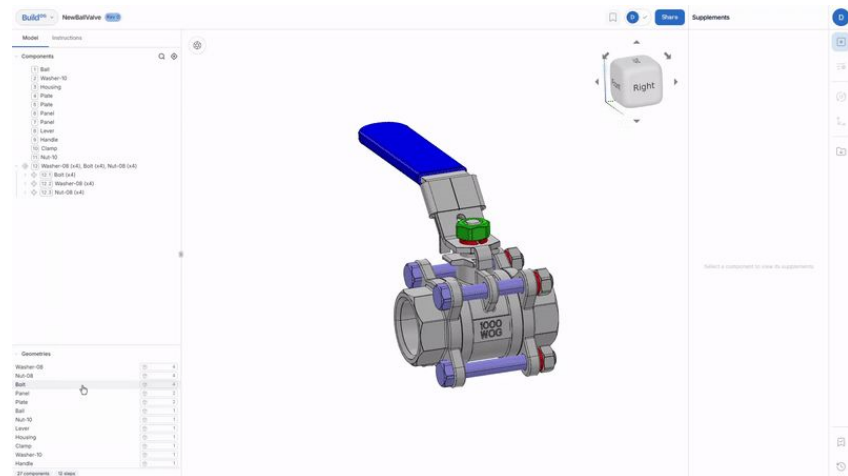
Operator feedback and build outcomes map cleanly back to the source, enabling iteration, learning, and Smart Maintenance.



Introduction to BuildOS Work Instructions

Automating Work Instructions, Elevating Knowledge Sharing

- **80% Automated, Simulation-Driven**
Generate assembly sequences, paths, and 3D animations directly from CAD files
- **20% Manual, User-Driven**
Input tacit knowledge once—BuildOS associates it with components for future reuse, elevating consistency and expertise.
- **Interactive 3D Visualizations**
Dynamic, explorable 3D models make assembly steps clearer, reducing errors and improving efficiency.
- **Real-Time Feedback Loops**
Flag issues, triggering immediate updates to work instructions—ensuring continuous, real-time improvement.



Introduction to BuildOS Operator+

Paperless execution, real-time feedback, and structured traceability—all tied to the model.

- **Paperless execution**

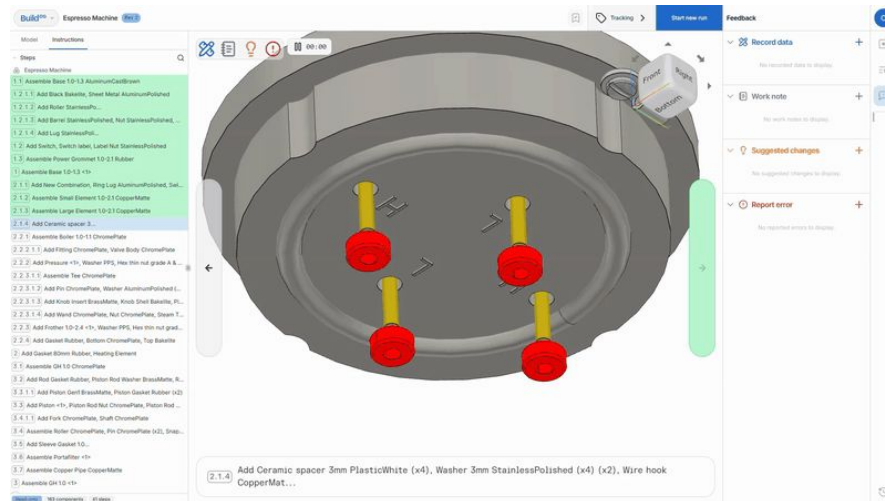
Operators complete BuildOS instructions directly on the shop floor—fully model-connected.

- **Performance and feedback, captured**

Cycle times, issues, and improvement suggestions are logged in real time.

- **Traceable by default**

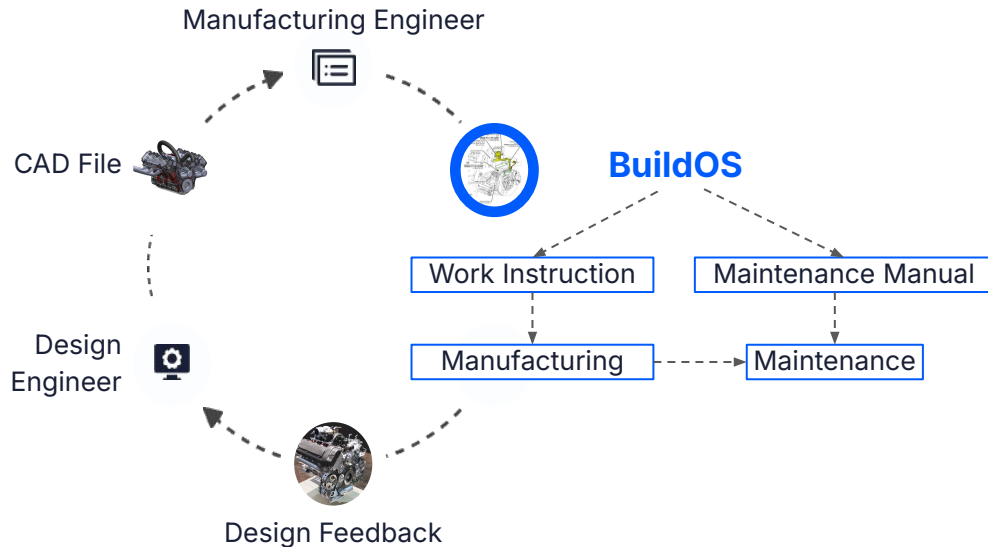
Every run is linked to serials, orders, and revision history—ready for audit, root cause, or iteration.



Work Instructions and MRO are Structural Inverses

Manufacturing and maintenance instructions are structural inverses—BuildOS connects both to the model.

- **Forward to Build, Backward to Service**
Work instructions move down the BOM; MRO instructions trace it in reverse.
- **Shared Model, Shared Context**
Design, production, and maintenance all stay connected—enabling traceability and smart feedback loops by default.
- **Coming Soon to BuildOS**
MRO instruction generation is in early pilots—built on the same model-based foundation.



BuildOS is Integrated, Secure, and Versatile

Built to fit seamlessly into your workflows.

Supported File Types

- **CAD Inputs:** .stp/.step, .sldasm, .jt
- **Outputs:** 3D animations, PDF, DOCX, PPTX, GIFs

Cloud-Based & Secure

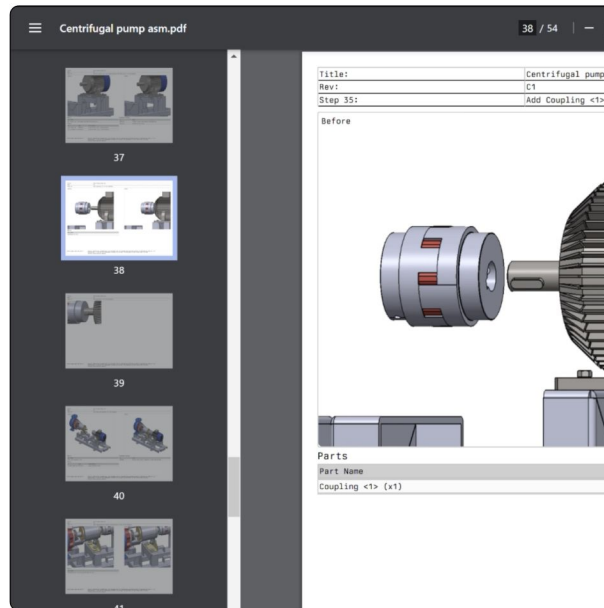
- **Cloud Hosting:** AWS, AWS GovCloud (ITAR-compliant)
- **Compliance:** SOC2 Type 2, ISO 27001, NIST 800-171

Seamless Integrations

- **PLM Compatibility:** Siemens Teamcenter, PTC Windchill
- **MES Support:** Custom solutions tailored to your workflows

Cross-Platform Access

- Accessible on desktop, tablet, and mobile for design and assembly teams.

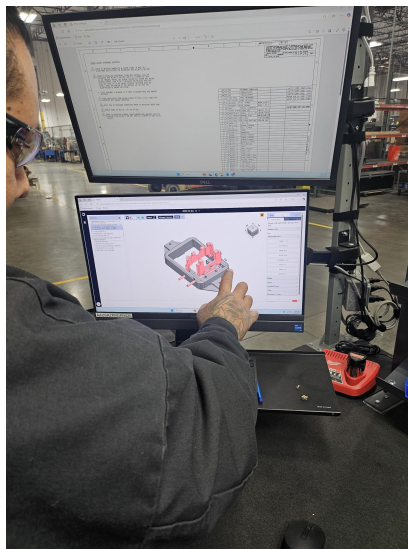


Benchmark Success with BuildOS:



Ancra Aircraft, a leading Tier 1 aerospace supplier, adopted Dirac's BuildOS to streamline and optimize their assembly process by replacing text-based work instructions with digitally animated, model-based, visual instructions. [[Link to Case Study](#)]

- **Time Savings in Work Instruction Creation**
"A work instruction that used to take 3 to 4 days to generate using traditional methods now takes me 1 to 2 hours."
- **Standardized Processes & Reduced Errors**
"It just gives a clear view of how to build this assembly, not only for one but also to repeat that process for 20 or 100 units."
- **Enhanced Communication Between Design & Assembly**
"Before, the best method of communicating issues or challenges was by use of a screenshot or stationary picture, but this [BuildOS] helps so much more."



Upcoming Success Stories

SPUDNIK

TESMEC

The Dirac Vision

**Context-aware production planning
driving design decision-making.**

Let's talk!

We're offering:

- **Free trials**

Get your team hands-on experience with BuildOS, and run the evaluation process with our support.

- **Staged implementations**

Designed for enterprise needs with hosting options (GovCloud) and seamless integrations.

To get started, reach out to us at:

✉ trevor@diracinc.com

The DIRAC logo is displayed in a dark blue, bold, sans-serif font. The letters are closely spaced, and the 'I' and 'R' have a unique, slightly stylized appearance.