

V E R S I O N 8 . 1

# INTRODUCTION TO ODB++ VERSION 8.1

ODB++ SOLUTIONS ALLIANCE



[www.odb-sa.com](http://www.odb-sa.com)

## OVERVIEW

With the release of the v8.1 specification, the ODB++ format takes another evolutionary step forward. The additional content in the v8.1 specification has been included based on input received over recent years from the thousands of ODB++ users and solutions-development partners worldwide, either directly or via the technical support channels of EDA and Manufacturing tools vendors.

ODB++ v8.1 contains significant improvements over the current mainstream version, v8, intended to enable a smooth transition to higher levels of process integration and automation across the PCB design/fabrication/assembly/test flow. The goal of ODB++ is to enable software tools such as DFM analysis and CAM systems to perform their tasks with the minimum dependency on user input and the maximum level of automation based on the intelligence embedded in the PCB product model. Through a step-by-step approach to upgrading software tools to v8.1 compatibility, designers and manufacturing engineers in the ODB++ value chain will release additional time/cost/quality benefits while avoiding radical changes to business processes. The value of existing investments already made in software tools by the industry is preserved and, in many cases, actually enhanced.

In the following section there is a summary of the new items in v8.1, with suggestions for the benefits that can be created through implementation in PCB manufacturing software systems. Below, there are also implementation recommendations; such as to implement the new format in reverse-order across the flow, from manufacturing systems back to the design level, so as to enable a smooth and fast transition to the added value as soon as the v8 data starts to be generated.

The ODB++ Solutions Alliance wishes all ODB++ users success with this new version; we welcome all input to enable the further improvement of the format based on your needs.

## WHAT'S NEW IN ODB++ V8?

The format specification document (now available for download from <http://www.odb-sa.com/resources/>) lists the new aspects of ODB++, as follows:

1. Virtual Documentation:
  - a. The virtual documentation capability seamlessly translates all data files, drawings, and documents from PCB design through the manufacturing flow.
  - b. This open product model format eliminates the need to create and validate disparate documentation content, supporting all electronic design automation (EDA) tool flows. Users of the new ODB++ version will be able to share all the necessary manufacturing instructions as electronic data, making new product introduction (NPI) more efficient for all partners in the supply chain.
  - c. The idea behind virtual documentation content is to replace a set of drawings, documents and instructions with data elements that allow the recipient tool to automate the planning and execution of the manufacturing process preparation actions. An example would be to define the soldermask finish color within the ODB++ product model so that a PCB fabricator can automatically generate the process, material and routing instructions for that individual factory.
2. Intentional Shorts
  - a. The ODB++ product model also includes support for EDA-based design net connectivity shorts. In many designs, one or more nets are intentionally shorted into a single net.
  - b. The ODB++ product model now carries that net attribute so that all downstream processes can be streamlined and automated.
  - c. The lack of such net characterization has been a limitation of existing data formats, resulting in wasted efforts between design and manufacturing.
3. Build-up Zones
  - a. Content for rigid-flex buildup zones to define regions within the basic stack-up (either unique or within the same region) on the board can be carried forward into analysis and in the actual material-based stack-up definition.
  - b. This feature delivers accurate impedance calculations, using tools such as the Frontline InStack for this capability.
  - c. By accurately identifying the physical boundary of different stack-up areas for a rigid-flex circuit, the correct DFM rules can be applied automatically and rigid-flex circuit manufacturers can easily and accurately calculate the impedance values for the circuit using their choice of materials.

## GUIDELINES FOR IMPLEMENTATION

The recommended guidelines for implementing v8.1 ODB++ are:

1. Tools-providers are recommended to continue to support the reading of older formats (v8, v7, v6..) while also implementing the ability to read the latest version. This ensures that customers can continue to work with their archived data.
2. Support the output of v8.1 with the highest level of content implementation that is enabled by the source system. For example, if your CAD or CAM database contains an explicit definition for in-circuit test probes, make sure test-probe position and size is populated in the ODB++ when the output is made so your engineering partners in the flow can benefit!
3. Support the output of v7 ODB++ as an alternative to the default output of v8.1 ODB++. That will support the ODB++ flow for the maximum number of users, as the industry makes the transition between format versions.
4. Prioritize the format implementation for fabrication and assembly as the first priority, with design-level NPI operations as the second priority, and output from PCB CAD systems as the third priority. By such an approach, the maximum number of design/manufacturing supply chains will experience the benefits of v8.1 as a smooth transition from the current value of v8.

## NEXT STEPS

What happens next? Our recommendations are as follows, depending on whether you are a tools-user or a solutions-development partner:

- Tools-users (designers, manufacturers using CAD, NPI, DFM, CAM):-
  - Contact your tools providers and ask them for their roadmap for v8.1 implementation.
  - Begin to consider your current workflows and how you can increase efficiencies by making full use of ODB++ v8.1 and the additional automation offered by your tools vendors.
- Solutions-development partners:-
  - Download the full specification (from <http://www.odb-sa.com/resources/>) and begin considering options for delivering more value to your customers based on the new content.
  - Please contact the ODB++ Solutions Alliance for support with your planning; we will be glad to assist.
- All: look out for new utilities, viewers and v8.1-related resources, available to ODB++ Solutions Alliance members!

For the latest information, visit: [www.odb-sa.com](http://www.odb-sa.com)

