

P R O D U C T O V E R V I E W



Z u k e n - T h e P a r t n e r f o r S u c c e s s

DS-E3: Next-Generation Design Data Management for E³.series



zukunft.com/ds-e3

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DS-E3 is Zuken's next-generation data management system for electrical design data. It provides electrical design and manufacturing engineers with current, validated libraries, design data and BOM information.

With this information, they can manage tasks and workflows for change and approval processes, and support intelligent design configuration and reuse through module and variant management.

DS-E3's powerful design data management functionality is directly integrated into the familiar user interface of Zuken's E³.series suite. It can be configured individually to reflect the specific requirements of different roles, such as schematic designer, panel layout designer, librarian, or manufacturing engineer.

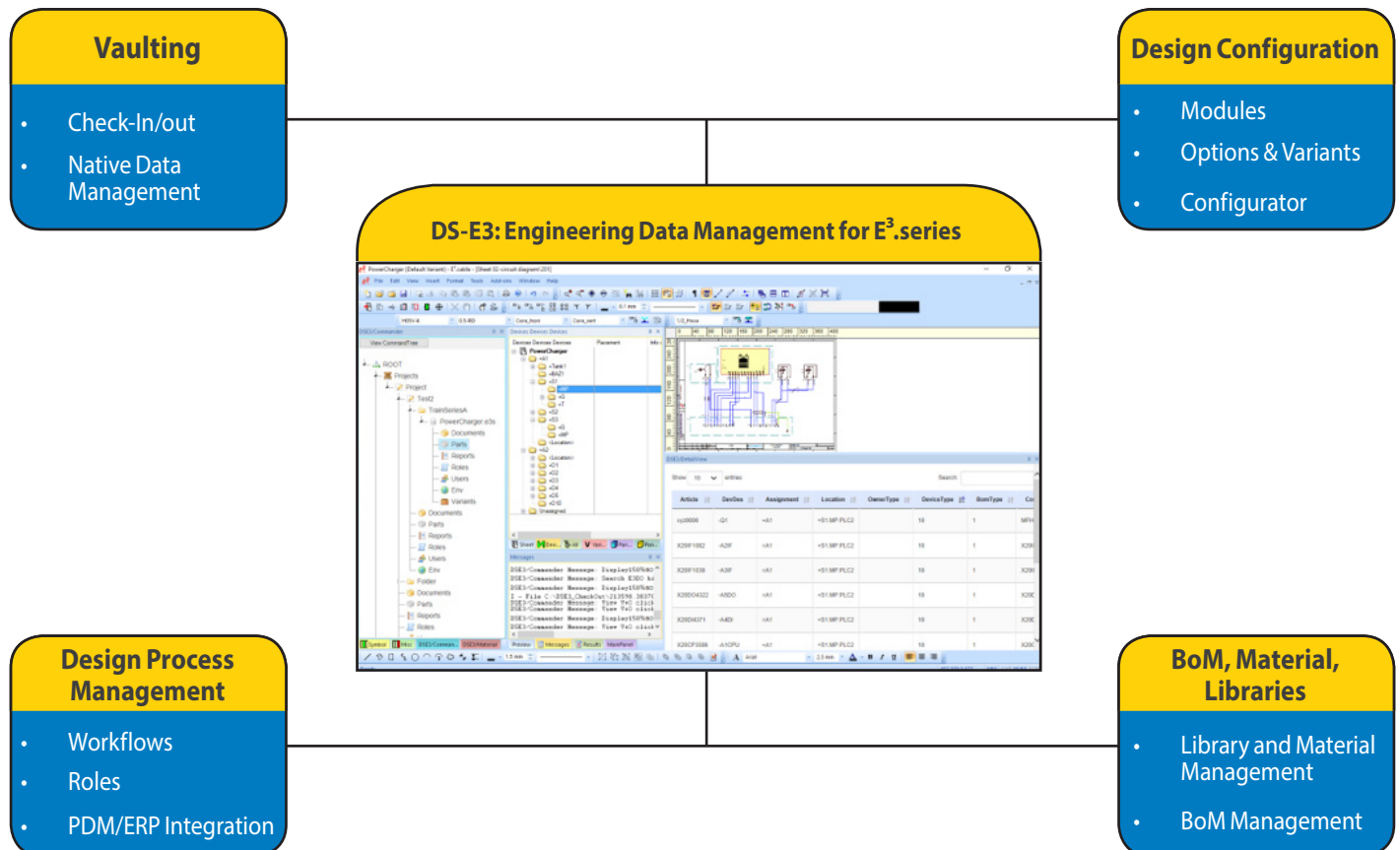
Built on industry standard object-oriented architecture, DS-E3 is fully equipped to integrate into existing PDM/PLM and ERP environments, providing a true electro-mechanical data model with full visibility of electrical designs down to component level.

DS-E3 consists of five functional modules:

- **Library Data Master:** ECAD Library Management
- **Material Supplier Master:** Material Master Data Management
- **Design Data Master:** Design Data and Product Variant Management
- **BoM Data Master:** Bill of Material (BoM) Management
- **PDM Connector:** Integration into 3rd Party PDM/PLM and ERP environments

All DS-E3 modules are supported by powerful change management and tracking functionality which enables the implementation of controlled release, change and revision management processes for libraries, library classes, design data between and BOM variants.

DS-E3 also supports the synchronization of geographically distributed teams. To support individual characteristics and requirements of different production locations, specific version of BOMs can be created that maintain full connectivity with the master BOM.



Library Data Master – ECAD Library Management

Library Data Master is the DS-E3 module that manages library information and specifications required for the electrical design process from schematic, fluid and cable plan entry, right up to manufacturing documentation:

- Component types
- Schematic and fluid symbols
- Panel and wire harness layout symbols
- Terminals
- Connectors
- Accessories

Library Data Master can be accessed directly from the E³.series authoring environment with no need to switch between environments. The direct access to validated and approved libraries eliminates time-consuming and error-prone manual search practices. The result is a significant increase of engineering productivity.

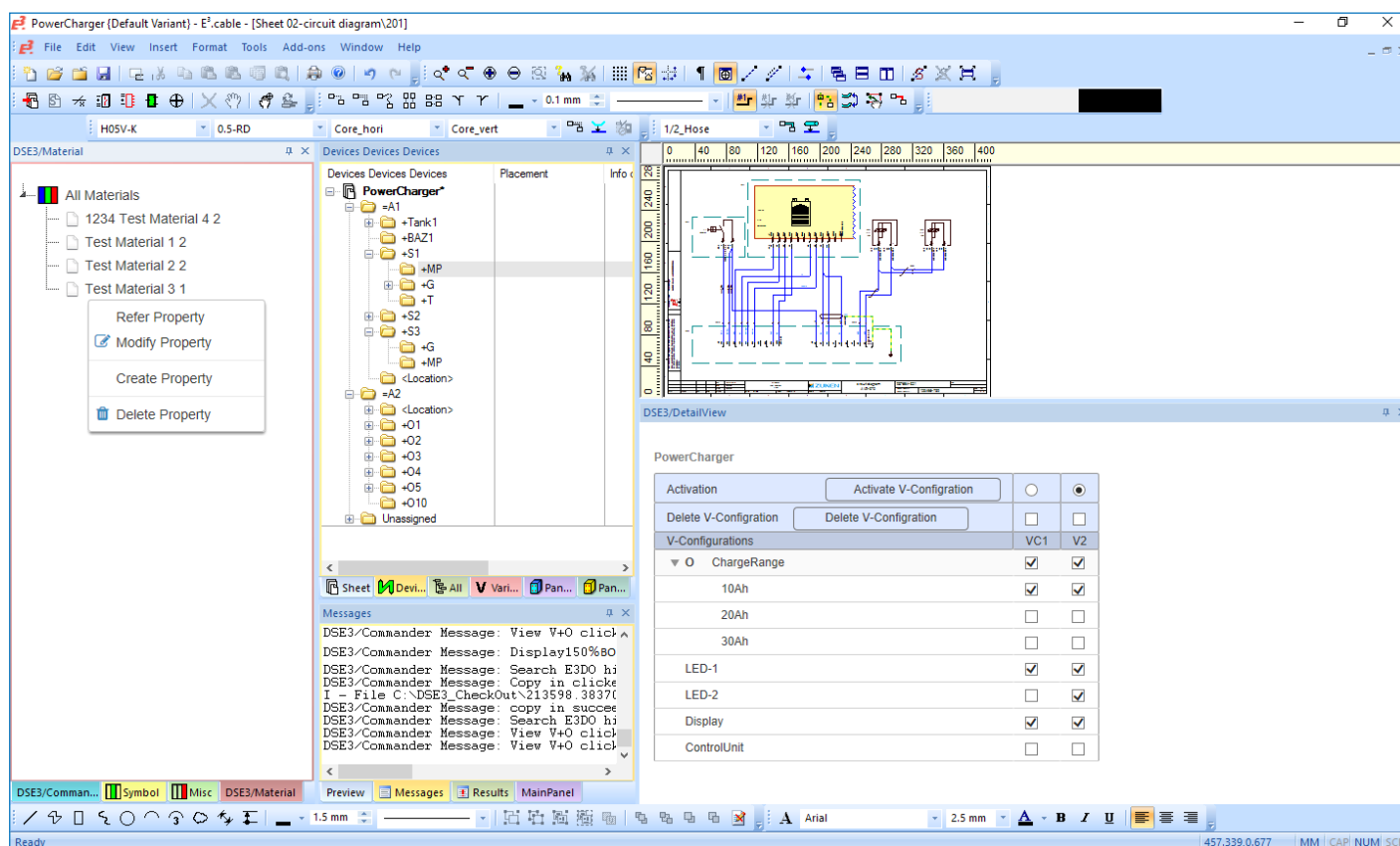
Material Supplier Master – Material Master Data Management

Material Supplier Master contains all component and material information required during the engineering process.

Component Master consolidates material master data such as cost, availability, alternative components and related information such as datasheets, specifications etc., that are typically managed in enterprise IT environments, i.e. outside the engineering domain.

- Specifications
- Standard/preferred flag
- EOL information
- Cost information
- Alternative information
- Datasheets
- Related documents

With these capabilities, Material Supplier Master enables a significant increase of engineering productivity through a controlled and automated material management process.



DS-E3 Variant Management Capabilities.

Design Data Master – Design Data and Product Variant Management

Design Data Master manages E³.series project data, including options and variants, in a controlled environment with comprehensive access control, revision management and analysis functionality. In addition to design data, information managed includes simulation data and parts lists, as well as assembly instructions, outputs for automated wire processing and NC data for drilling and machining.

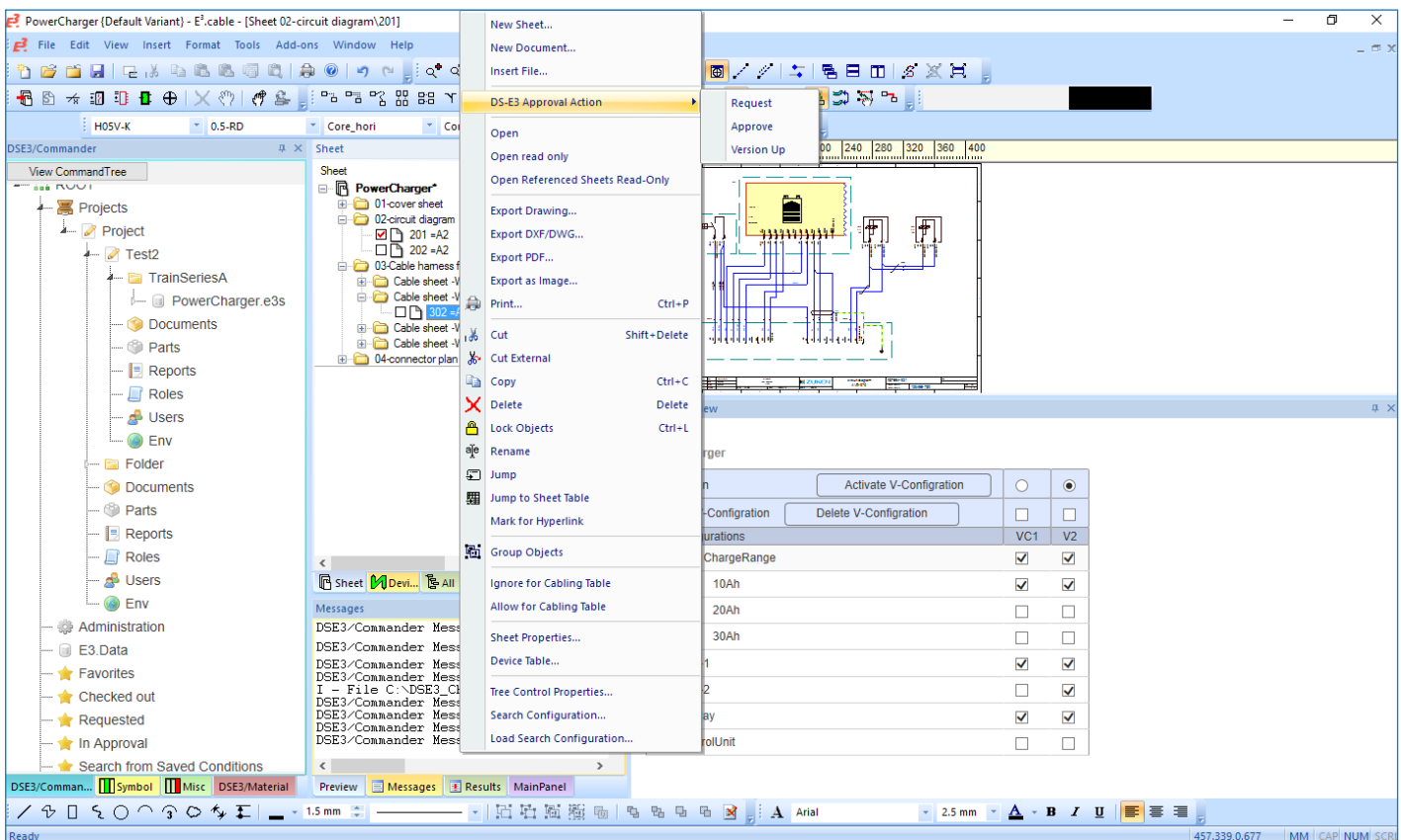
Design Data Master consolidates and synchronizes comprehensive revision histories of:

- Component libraries
- Schematics and fluid plans (flat, hierarchical and modular)

- Modules, options and variants
- Panel and formboard layout data
- Outputs for automated wire processing (cutting, labelling, printing)
- CAM data (NC drilling and machining)
- Bills of material

With its sophisticated configuration management and tracking capabilities, Design Data Master helps to grow a pool of validated functional building blocks from which an engineer can draw from for new projects.

By building or configuring new development projects from a set of approved modules, companies can efficiently reduce errors, decrease complexity and increase design quality.



DS-E3 approval process integrated in E³.series GUI.

BoM Data Master

BoM Data Master generates and maintains accurate component lists that consolidate all associated schematic, wiring and panel layout/wire harness data, component information, documents and assembly drawings within a single environment.

BoM Data Master supports comprehensive design data search, query and change management capabilities:

- Component data is accessed directly from ECAD files
- Different component variants are unified within a single BOM
- Different component lists or earlier versions can be compared automatically
- Alternative components can be identified on the basis of Component Master settings
- All required documents for engineering change notes, requests and order are collected and produced automatically

- Where-used searches and documentation can be performed
- Component lists can be filtered according to user-defined conditions (environment, price, production status, etc.)
- Component lists can be imported and exported in a CSV format

With these capabilities, BoM Data Master provides a solid foundation for a comprehensive choice of use cases – ranging from the synchronization of data sets (schematic, wiring, parts list and library data) before manufacturing release, to parts standardization through where-used analysis and the implementation of modular product architectures. DE-E3 can also manage variant BoMs from which specific instances can be extracted by filtering.

The screenshot displays the PowerCharger software interface. The top menu bar includes File, Edit, View, Insert, Format, Tools, Add-ons, Window, and Help. The main workspace is divided into several panes:

- View CommandTree:** Shows a hierarchical tree structure starting from ROOT, branching into Projects, Project, Test2, TrainSeriesA, and PowerCharger.e3s. Sub-items include Documents, Parts, Reports, Roles, Users, Env, and Variants.
- Devices Devices Devices:** A table listing components like +A1, +Tank1, +BAZ1, +S1, +MP, +G, +T, +S2, +S3, +G, +MP, <Location>, +A2, <Location>, +O1, +O2, +O3, +O4, +O5, +O10, and Unassigned.
- Placement:** A table for component placement details.
- Info:** A table for component information.
- DSE3/DetailView:** A table showing a list of components with columns: Article, DevDes, Assignment, Location, OwnerType, DeviceType, BomType, and Co.
- Messages:** A log of system messages, including "DSE3/Commander Message: Display150%BO ^", "DSE3/Commander Message: Search E3DO hi", "DSE3/Commander Message: Display150%BO", "I - File C:\DSE3_CheckOut\213598.3837", "DSE3/Commander Message: View V+O click", "DSE3/Commander Message: View V+O click", and "DSE3/Commander Message: Display150%BO".

The bottom status bar shows "Ready" and "457.339.0.677 MM | CAP NUM SCR".

DS-E3 BOM management inside E³.series.

PDM Connector

DS-E3 can integrate with all major PLM and ERP systems and provides SOA-based "plug & play" connectors; in addition, generic integration APIs are available for other third party systems.

The integration between DS-E3 and third party PLM environments is bi-directional and includes the synchronization of material data, the bill-of-materials information and related documents. Variant flows to generate 100% BoM and documentation from a 150% BoM are also supported.

Use Cases

Enabling a true electromechanical data model

With its ability to access and read native electrical design data, DS-E3 goes beyond the widespread practice of managing electrical designs as packaged (zipped) containers in a predominantly mechanical PDM/PLM product structure. Thanks to its native data management approach, DS-E3 is capable of tracking and analyzing electrical designs down to a component level, to leverage capabilities such as where-used information, and to enable variant design strategies based on functional modules.

Enhance engineering productivity through streamlined data and workflow management

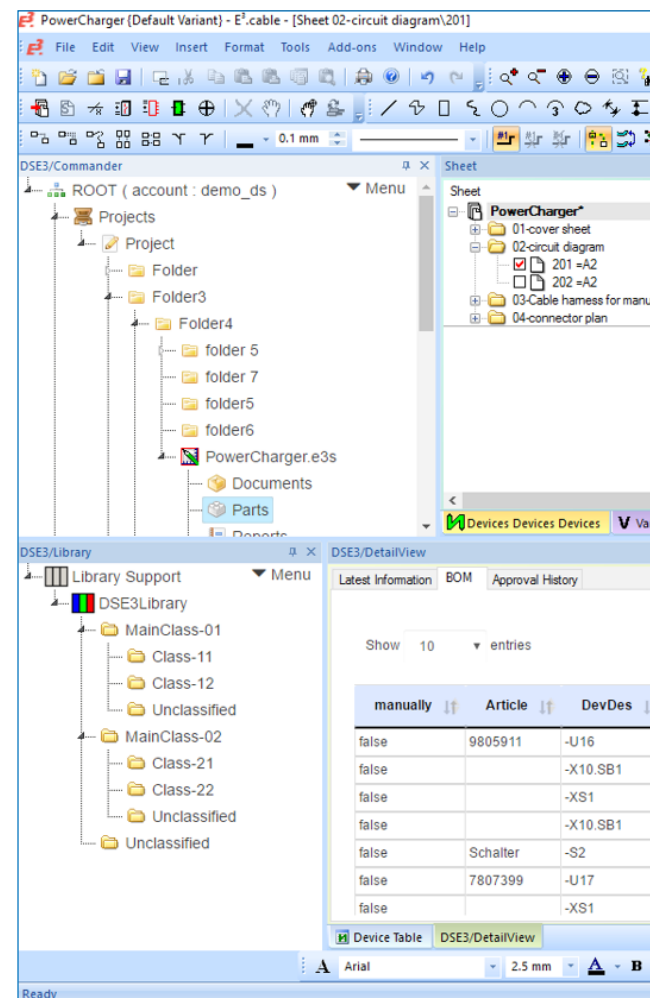
DS-E3 takes the approach of managing ECAD data in a native format one important step further by integrating data and workflow management functionality into the familiar user interface of E³.series. This means that an engineer does not have to leave their CAD application to retrieve designs, trigger workflows or manage options and variants. This reduction of the number of individual applications with different user interfaces represents a key productivity gain for the engineer.

Design reuse and module management

Design reuse is a proven approach to increase engineering productivity. Frequently, however, designs are reused informally by duplicating and modifying existing projects or sub-projects. While this may appear to be a quick and viable method, it spawns a multitude of downstream problems, as the relationship between the original and its different instances is broken when the copy is created. DS-E3 provides a solution to this challenge through a system-controlled reuse and sharing concept that maintains and documents all relationships between a design source and its related reuse instance across all versions and revisions.

Definition of variants and options

DS-E3 also provides comprehensive capabilities for managing configurations, options and variants. Using these capabilities, engineers can configure new products by selecting from a list of logical attributes in which modules and related constraints are defined. These attributes are tracked as part of the data management capabilities of DS-E3. Once a variant has been created, the system automatically creates the all related BoMs and reports. Using the variants and options capabilities of DS-E3, valid new product variants can be configured, while automatically adhering to the defined properties and constraints.



Data management functionality integrated into E³.series.

Enhancing productivity through lifecycle status information and automatic workflows

Being able to create and manage design process steps via lifecycle status information and workflows is an essential capability of any engineering management system. DS-E3 is unique in that it tightly integrates the lifecycle status of each design element into the E³.series environment, enabling immediate visibility and modification through the designer. In addition, lifecycle status changes can be subjected to approval flows that can be fully customized to suit the individual processes of the customer.

PDM/PLM Integration

DS-E3 was designed to enhance existing PLM systems – not to replace them. In a typical scenario, DS-E3 is used to manage work-in-progress design data. Once design milestones are achieved, BoM information will be synchronized with the PLM system.

DS-E3 is designed to work with all major PLM and ERP systems and provides SOA-based plug & play connectors. In addition, generic integration APIs are available for other 3rd party systems. The integration between DS-E3 and the PLM system is bi-directional and includes the synchronization of material data, bill-of-materials information, and related documents. Variant flows to generate a 100% BoM and documentation from a 150% BoM are also supported.

The screenshot displays the DS-E3 software interface. The main window shows a technical drawing of a mechanical assembly with various components and dimensions. Below the drawing, there is a table with columns: Assignment, Location, OwnerType, DeviceType, BomType, CompCode, CompVersion, and SheetGr. The table contains several rows of data, including parts like 'Clips-WS-6-FB', 'D-SUB-C-S-0.25', 'HE-C-Bu.AG-2.5', 'Schalter', and '90-WS-11-FB'. To the right of the drawing, there is a 'Symbol' panel with a tree view of symbols, and a 'Messages' panel showing a log of system events and process successes.

Assignment	Location	OwnerType	DeviceType	BomType	CompCode	CompVersion	SheetGr
=A2			10	4194305	Clips-WS-6-FB	1	/(offline)
=A2	+O10	10		268435456	D-SUB-C-S-0.25	1	
=A1	+Tank1	10		268435456	HE-C-Bu.AG-2.5	1	
=A2	+O10	10		268435456	D-SUB-C-S-0.25	1	
=A2	+O2		10	4194305	Schalter	1	=A2/201.B;
=A2			10	4194305	90-WS-11-FB	1	/(offline)
=A1	+Tank1	10		268435456	HE-C-Bu.AG-2.5	1	

"DS-E3 supports a number of advanced scenarios throughout the engineering lifecycle"

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About Zuken

Zuken is a global provider of leading-edge software and consulting services for electrical and electronic design and manufacturing. Founded in 1976, Zuken has the longest track record of technological innovation and financial stability in the electronic design automation (EDA) software industry. The company's extensive experience, technological expertise and agility, combine to create world-class software solutions. Zuken's transparent working practices and integrity in all aspects of business produce long-lasting and successful customer partnerships that make Zuken a reliable long-term business partner.

Zuken is focused on being a long-term innovation and growth partner. The security of choosing Zuken is further reinforced by the company's people – the foundation of Zuken's success. Coming from a wide range of industry sectors, specializing in many different disciplines and advanced technologies, Zuken's people relate to and understand each company's unique requirements.

For more information about the company and its products, visit www.zuken.com.

G e t t o k n o w Z u k e n



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