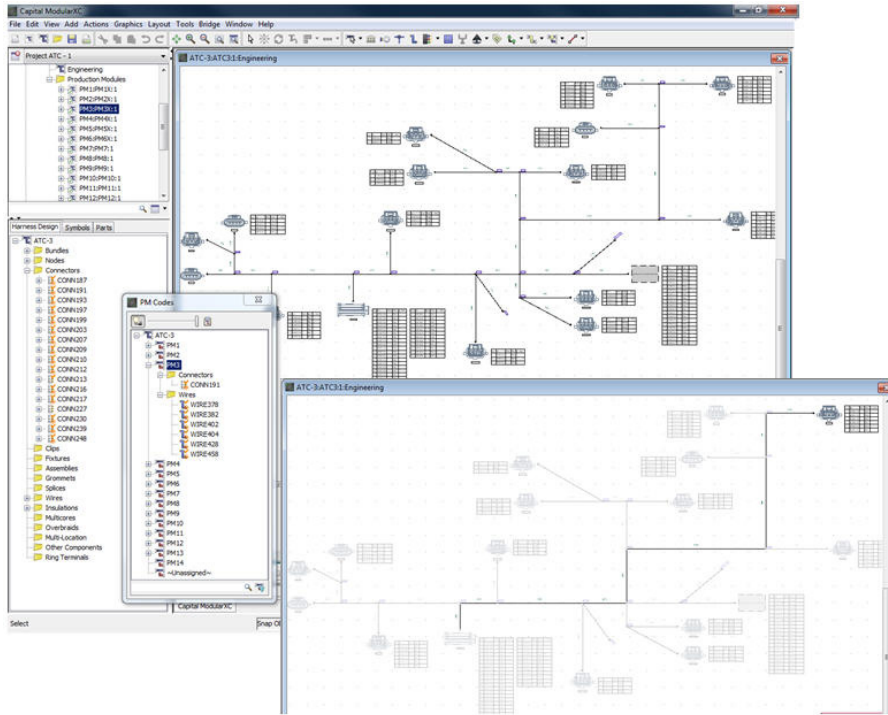


# Capital ModularXC

## Automated Harness Design

### Electrical Systems Design and Wire Harness Engineering

D A T A S H E E T



Capital ModularXC—Harness engineering with automated module breakdown.

#### Major Product Features

- Graphical harness design environment
- Automated harness engineering, validation, and reporting
- Support for mass customization and KSK customer-specific harness designs
- Parallel management of functional modules, production modules, and derivatives
- Management of module code, option, and variant relationships
- Automated module breakdown, component selection, BOM, and drawing creation
- Collaborative design merge raises efficiency of multiple-site, parallel design
- Styling templates provide multiple, “single-click,” drawing formats
- Data integration interfaces with major MCAD platforms, PLM, and other data exchange formats
- Powerful reporting, data, and management facilities, and seamless integration with other Capital tools

### PRODUCT OVERVIEW

Mentor Graphics Capital® ModularXC enables harness engineers to create fully detailed, validated, and manufacturing-ready harness designs from 150% harness designs. Buildable harness variants (including diagrams and BOMs) are automatically generated, based on user-defined choices for decomposition—Composite-Derivative or Modular decomposition. Modular decomposition offers both functional module decomposition, for example “tail lamps,” and production module decomposition, for example “ECU connector sub-assembly.”

### MODULAR DESIGN AUTOMATION

Functional assignment algorithms identify modules based on codes assigned to the wires, then automatically identify and configure all related components—connectors, protections, clips, etc.—to complete the definition of each module. Production assignment algorithms identify and configure the optimum set of manufacturing subassembly modules, based on user-defined best-practice rules and constraints to increase manufacturing efficiencies and reduce costs.

### AUTOMATED ENGINEERING AND VALIDATION

The Capital ModularXC selection routines automatically select terminals, seals, cavity plugs, tapes, tubes, heat-shrink sleeves, and all other harness components to create a full manufacturing BOM.

Automated engineering functions calculate: manufacturing wire lengths, bundle diameters, optimized splice positions, taping quantities, harness weight, and other quantities that describe the finished design.

Multiple, configurable, design-rule-checks are provided to ensure the final design meets the organization's defined best-practices. Automated design comparison facilities identify graphical and specification changes between different revisions.

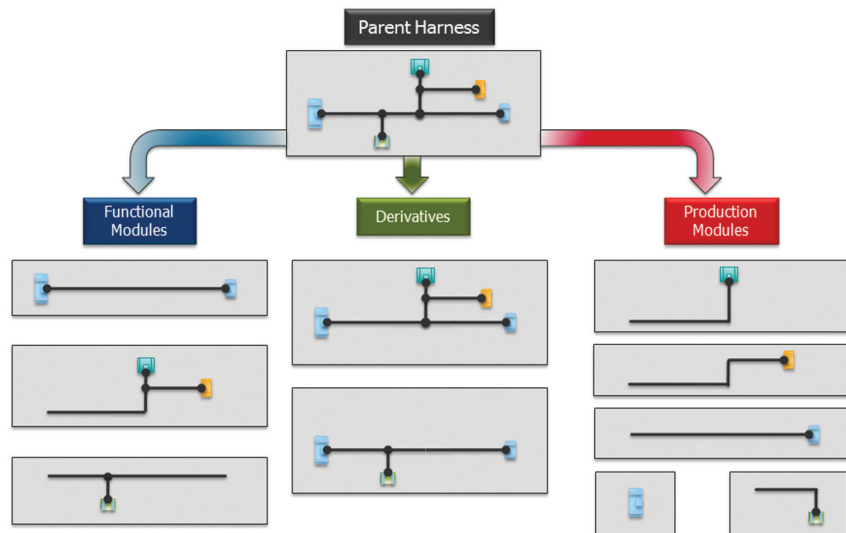
## MODULES, OPTIONS, AND VARIANTS MANAGEMENT

Capital ModularXC provides parallel management of functional modules, production modules, derivatives and their code relationships, with automated creation of technical modules and assignment of module codes to harness objects. A wide variety of module assignment algorithms are provided, and these can be extended with customized algorithms.

Capital ModularXC can manage multiple harness variants from a 150% parent design. The tool automatically identifies which components are assigned to which variant and compiles the manufacturing BOM for each.

## COLLABORATIVE DESIGN MERGE

Design changes from MCAD and other tools can be merged into existing harness designs continuously—without overwriting locally mastered design details and attributes. Change policies are used to control how Capital ModularXC should respond to design changes originating from multiple sources; the system automatically assesses the design change impact and applies the changes to the harness design.



## MCAD INTEGRATION AND THIRD-PARTY DATA EXCHANGE

Standard integrations with popular MCAD platforms include CATIA V4, CATIA V5, CATIA V6, Siemens NX, Pro/ENGINEER, and I-deas. Various data transfer standards are supported, including KBL. Web services and API interfaces provide for deep integration with the IT infrastructure.

## CAPITAL — PLATFORM LEVEL ELECTRICAL ENVIRONMENT

Capital is a suite of software applications that efficiently creates and uses electrical design data. The applications respond to the ever-growing importance and complexity of vehicle electrical/electronic systems. Powerful technologies help optimize business value by reducing the design, validation, manufacturing, and servicing costs associated

with electrical distribution systems and wire harnesses.

Developed for transportation platforms such as aircraft, automobiles, and off-road vehicles, Capital is scalable from small, localized projects through to complete enterprise-wide deployments. The suite spans an extended flow from vehicle concept and electrical architecture definition to wire harness manufacture and vehicle maintenance. The core Capital tools can be implemented individually or deployed together in a unified flow that seamlessly matures data within a consistent environment. Robust integration with adjacent domains (such as MCAD and PLM) is fully supported, as is cross-organizational collaboration.

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**Corporate Headquarters**  
Mentor Graphics Corporation  
8005 S.W. Boeckman Road  
Wilsonville, Oregon 97070 USA  
Phone: 503-685-7000  
North American Support Center  
Phone: 800-547-4303  
Fax: 800-684-1795

**Silicon Valley**  
Mentor Graphics Corporation  
1001 Ridder Park Drive  
San Jose, California 95131 USA  
Phone: 408-436-1500  
Fax: 408-436-1501

**Europe**  
Mentor Graphics  
Deutschland GmbH  
Arnulfstrasse 201  
80634 Munich  
Germany  
Phone: +49.89.57096.0  
Fax: +49.89.57096.400

**Pacific Rim**  
Mentor Graphics Taiwan  
Room 1603, 16F,  
International Trade Building  
No. 333, Section 1, Keelung Road  
Taipei, Taiwan, ROC  
Phone: 886-2-27576020  
Fax: 886-2-27576027

**Japan**  
Mentor Graphics Japan Co., Ltd.  
Gotenyama Hills  
7-35, Kita-Shinagawa 4-chome  
Shinagawa-Ku, Tokyo 140  
Japan  
Phone: 81-3-5488-3030  
Fax: 81-3-5488-3031

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