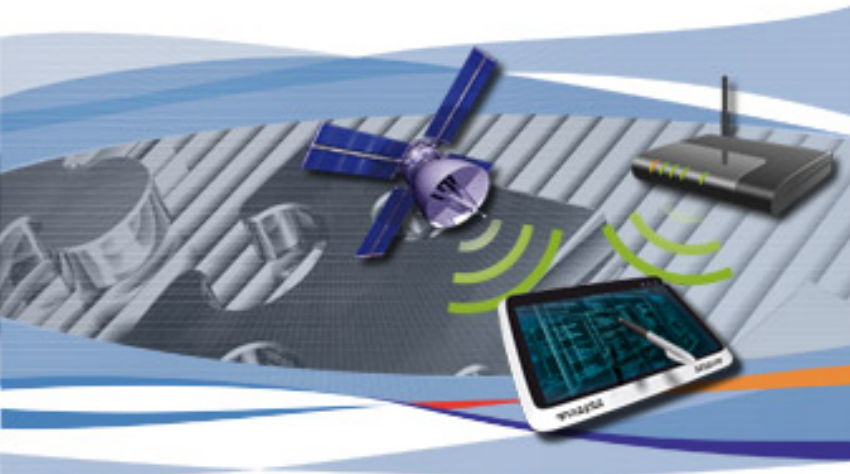


Collaborative Systems Engineering

Mastering Multi-Discipline Systems Development Process



Industry Business Drivers

No industrial sector has penetrated our way of life more than electronics. Electronics are becoming more and more pervasive as a common enabler across industry sectors and a key driver for innovation. Every day we discover that electronic systems have entered a new industry segment, driving the market differentiation of a new product. High-Tech and other companies that manufacture electronic components are facing top-level business drivers such as shorter product lifecycles, fewer resources, or the integration of global design, manufacturing, and test teams. Extremely fast functional coupling complexity, processing power increase, product miniaturization, digital convergence, connectivity, user interaction and autonomy requirements are many factors that make the High-Tech product delivery process more complex. To address these challenges, companies must master a systems development process that ensures traceability from needs identification to final

product verification and right-to-market delivery. A strategy is needed to help all engineering disciplines in the organization effectively contribute to a complete, end-to-end systems development process.

The Solution

As part of IBM's comprehensive V6 Product Lifecycle Management (PLM) solution, the Collaborative Systems Engineering solution helps engineers in High-Tech companies formalize, share and manage a unified, cross discipline systems development process. It allows customer needs and technical requirements to be captured, with complete traceability across product definition, functional, logical, physical and test aspects established. Systems and discipline engineers can also model and validate systems behavior to enable optimization, concept dimensioning, and multi-discipline interface management.

Highlights

- Provides tools and collaborative environment for mastering complex systems definition using the RFLP (Requirement, Functional, Logical, Physical) process approach
- Streamlines the early stages of product development involving requirements, functional, and technical definitions
- Integrates design with systems definition processes to ensure right-to-market delivery
- Provides traceability from initial customer requirements to final product validation
- Responds quickly to changes in market drivers with innovative, cross-discipline approach
- Reduce development time and costs for capitalizing corporate knowledge and design re-use
- Enables rapid cross-discipline systems modeling using the open Modelica language
- Simulates systems behavior to experience how the product comes to live from the end user's point of view

With the Collaborative Systems Engineering solution, High-Tech companies can master the collaborative multi-discipline systems development process, thanks to dynamic modeling, simulation, and traceability from needs identification to final product validation. Early and comprehensive validation enables High-Tech and electronic systems engineers to produce innovative designs more quickly, with reduced costly late-cycle issues and changes.

At the heart of the Collaborative Systems Engineering solution, the RFLP (Requirement, Functional, Logical and Physical) infrastructure enables systems to be defined across coherent views from early identification to final validation. Adhering to the Systems Engineering process as defined by INCOSE (International Council on Systems Engineering), the solution enables engineers to capture and analyze requirements coming from customers or stakeholders, derive a set of technical requirements and test plans, establish the systems architecture, model the systems, and finally, simulate the systems' behavior. Systems engineers find the solution's dynamic behavior modeling and 3D capabilities with the open Modelica language a great enabler for hybrid, continuous (physics) and discrete (control) systems modeling.

IBM's PLM solution enables all product development efforts to be centralized on a single, unified product definition so that engineers from various disciplines are brought together on a common development platform that fosters collaboration and innovation. This brings many advantages such as end-to-end process optimization, cross-discipline systems modeling and analysis, as well as systems-level configuration management. Changes to design or configuration can be rapidly communicated to related stakeholders using workflow and shared catalogs.

Since the majority of product costing is committed when a company establishes the product requirements, optimizing the systems functions and architecture early in the development cycle provides clear competitive advantages.



By employing a holistic approach using the RFLP infrastructure, High-Tech companies can take into account all business and technical aspects that influence the systems definition. The Collaborative Systems Engineering solution helps companies master the complexity of systems development, while meeting customer requirements and improving product performance.

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The Collaborative Systems Engineering solution integrates the following sub-processes:

- Requirement Management
- Functional Analysis
- Logical Design
- Systems Modeling and Simulation
- Integration, Verification and Validation
- Systems Analysis and Definition Control

The Collaborative Systems Engineering solution is supported by the following products:

- ENOVIA® 3DLive
- ENOVIA® Requirements Central™
- ENOVIA® Systems Functional Logical Definition
- ENOVIA® VPM Central™
- ENOVIA® VPM Configured Structure Definition
- ENOVIA® Live Collaboration
- CATIA® Systems Architecture Design
- CATIA® Systems Logical 3D Architecture
- CATIA® Systems Control & Logic Modeling
- CATIA® Systems Dynamic Behavior Modeling

This solution may also be completed by:

- IBM Rational Systems

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