



E&HT INDUSTRY GUIDE: CAPABILITIES TO POWER INNOVATION IN HIGH-TECH



R5_CORE_SMP
1374_84DRX



ACTIVE RECORD

YOUR MUST-HAVE TECHNOLOGY CAPABILITIES GUIDE FROM CONCEPT TO CUSTOMER

Electronics and high-tech (E&HT) companies are in flux. Compressed product cycles, multi-discipline systems, and volatile supply chains are forcing **E&HT companies** to redefine how they build and launch. At the same time, compliance expectations are tightening, and software now drives as much value as hardware.

The cost of misalignment is real: late changes, quality escapes, audit risk, and missed windows. What's needed isn't another point tool—it's a connected product data backbone that links requirements, design, verification, change control, BOMs, and supplier data from concept, design, manufacturing, and product launch.

This guide is meant to help high-tech companies narrow down their requirements when researching and evaluating software vendors to help them scale innovation.

READY TO SEE WHERE YOUR BIGGEST OPPORTUNITIES LIE?
Book your free value assessment with our E&HT sales experts for tailored guidance on accelerating innovation, improving compliance, and scaling with confidence.

[Request Now >](#)

CONNECTION STATUS | 10000 Mbps
10000 Mbps
10000 Mbps
10000 Mbps

EXPORTING OUTPUT



UNIFYING THE PRODUCT DEFINITION WITH INTEGRATION AND ORCHESTRATION

In a disconnected development environment, critical information is often lost or misinterpreted as products move from one stage to the next. Building a strong product data foundation is the first step to retaking control over that information. With a robust product lifecycle management (PLM) solution, you will create an authoritative source of truth that connects every piece of product data. Several integrated capabilities make this foundation possible:

INTEGRATED REQUIREMENTS AND TEST MANAGEMENT:

Many organizations are still managing requirements and test cases in isolated systems, like Excel, which creates a significant risk of misalignment. By integrating these functions, including ticketing for bugs and defects, teams can ensure thorough testing and validation. If a test fails for a new component in a connected medical device, a bug report can be automatically generated and linked back to the specific requirement, giving developers the full context needed for a quick resolution.

CHANGE AND TRACKING MANAGEMENT:

Enterprise-wide change management provides a structured, auditable process for proposing, evaluating, and implementing changes. Whether it involves a minor component swap or a major architectural shift, this capability ensures that all stakeholders are informed and impacts are assessed before approval. This prevents unauthorized changes and maintains the integrity of the product definition across globally distributed teams.

ADVANCED CAPABILITY DIGITAL PRODUCT TRACEABILITY:

This provides end-to-end traceability from requirements through design, testing, and validation. When a market requirement changes, leaders can instantly see which designs, tests, and components are affected. For a company developing a new industrial IoT sensor, this means a change in a required communication protocol can be traced directly to the specific hardware module, firmware version, and validation tests that need updating, preventing costly downstream errors.

ADVANCED CAPABILITY UNIFIED PRODUCT DATA LAYER FOR AI READINESS:

A strong product data foundation provides the necessary structure, governance, and availability to leverage existing and emerging AI capabilities. With this foundation inside your enterprise systems, you can take advantage of AI that analyzes, understands, and acts with precision.



By connecting product data through the product lifecycle, organizations gain needed visibility. This allows leaders to make more informed decisions, proactively mitigate risks, and ensure that the final product precisely matches market needs and quality standards.



MASTERING COMPLEXITY THROUGH ADVANCED CONFIGURATION AND COLLABORATION

Modern E&HT products are rarely a single, static entity. They are often complex systems with numerous variants, optional features, and configurable components. Managing this variability while fostering collaboration among dispersed teams is a significant challenge that requires specialized capabilities.

BOM TRANSFORMATION ACROSS LIFECYCLE STAGES:

A product's bill of materials evolves as it moves from concept to production. The [engineering BOM](#) (eBOM) is structured around function, while the [manufacturing BOM](#) (mBOM) is organized for assembly. A critical capability is the ability to seamlessly transform the eBOM into the mBOM, ensuring manufacturing teams (whether internal or external) have an accurate and complete parts list. This continuity prevents procurement errors and production delays.

COLLABORATIVE PRODUCT DEVELOPMENT:

With engineering teams located around the world, effective collaboration is non-negotiable. Modern platforms must support real-time, cross-functional teamwork. This includes secure data sharing, multi-user design reviews, and integrated communication tools. Furthermore, multi-CAD integration is essential, allowing mechanical, electrical, and software teams to work in their native design tools while contributing to a single, unified product model. This removes data-sharing friction and accelerates design cycles.

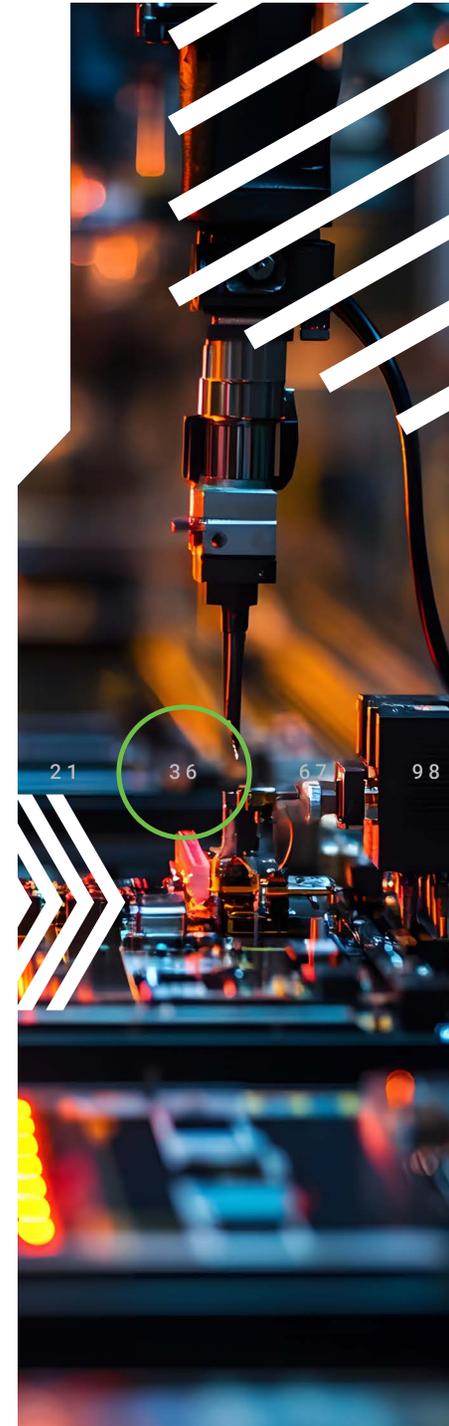
PRODUCT VARIABILITY AND CONFIGURATION MANAGEMENT:

This capability enables companies to manage a portfolio of product variants from a common platform. Instead of creating separate, disconnected designs for each product version, teams can define a **"150% bill of materials (BOM)"** that includes all possible components and features. From this, they can automatically generate specific configurations for different markets or customers. For a semiconductor manufacturer, this means efficiently managing different performance grades of a processor module from a single, unified dataset.

ADVANCED CAPABILITY



These capabilities provide the control and flexibility needed to manage intricate product ecosystems. They empower organizations to offer customized solutions at scale, streamline the handoff from design to manufacturing, and leverage global talent pools effectively.



ENSURING QUALITY AND COMPLIANCE FROM DESIGN TO DELIVERY



In the E&HT industry, quality and compliance are not optional; they are table stakes. Building these considerations into the product lifecycle from the very beginning is far more effective than trying to address them during an NPI process. A proactive approach reduces the risk of recalls, fines, and reputational damage.

QUALITY MANAGEMENT:

Integrating quality management processes directly into the product development workflow enables a proactive stance. This includes tools for Failure Mode and Effects Analysis (FMEA), Corrective and Preventive Actions (CAPA), and non-conformance reporting. By identifying potential quality issues early in the design phase, organizations can resolve them when the cost of change is lowest.

COMPLIANCE AND AUDIT READINESS:

E&HT companies must adhere to a complex web of regulations like RoHS, REACH, and conflict minerals reporting. An integrated compliance capability automates the collection, validation, and reporting of compliance data. This ensures materials and components meet all regulatory requirements and provides a complete, auditable trail. When an auditor requests documentation, it can be generated in minutes, not weeks.

SUPPLY CHAIN COLLABORATION:

Compliance extends beyond internal walls to the entire supply chain. Secure platforms for collaborating with suppliers are vital for exchanging part specifications, compliance certificates, and quality data. This allows for real-time visibility into supplier performance and ensures that components arriving at the factory meet all requirements, minimizing the risk of production stoppages due to non-compliant parts.

ADVANCED CAPABILITY



By embedding quality and compliance into the development process, companies can build better, safer products. This not only protects the business from legal and financial risk but also strengthens brand trust and customer satisfaction.





DRIVING INNOVATION WITH SIMULATION AND MODEL-BASED DEFINITION

To win in a competitive market, E&HT companies must continuously push the boundaries of performance and innovation. Adopting a simulation-first mindset and digitalizing the flow of information to manufacturing are key enablers of this goal.

SIMULATION-DRIVEN DESIGN:

Traditional design-build-test cycles are too slow and expensive for today's development pace. Simulation-driven design allows engineers to digitally test and validate thousands of design variations before committing to a physical prototype. This front-loading of analysis helps optimize performance, reliability, and manufacturability early in the process. For example, a team designing a new 5G antenna can simulate its electromagnetic performance under various conditions to find the optimal geometry without building dozens of physical models.

MODEL-BASED DEFINITION (MBD) & GD&T:

MBD enriches 3D CAD models with all the product and manufacturing information (PMI) needed to build a part, including Geometric Dimensioning and Tolerancing (GD&T). This eliminates the need for separate 2D drawings, which are often a source of errors and misinterpretation. A single, rich 3D model becomes the authoritative source for manufacturing, inspection, and service teams, ensuring design-to-manufacturing continuity.

ENTERPRISE SYSTEMS INTEGRATION:

True digital transformation requires breaking down long-standing silos that separate engineering from the rest of the enterprise. Integrating the product lifecycle management (PLM) system with other enterprise platforms, such as Enterprise Resource Planning (ERP) and Manufacturing Execution Systems (MES), creates a seamless flow of information. When a design is approved in PLM, the corresponding BOM and manufacturing instructions are automatically pushed to ERP and the factory floor, ensuring alignment and accelerating production.

ADVANCED CAPABILITY



These advanced capabilities empower engineering teams to innovate more freely and effectively. By leveraging simulation and model-based workflows, organizations can shorten development cycles, reduce prototyping costs, and deliver higher-performing products to market faster.





CHOOSING A PLM SOLUTION PARTNER



In addition to the capabilities outlined above, PTC's solutions are differentiated by:

INDUSTRY EXPERTISE:



91% of the High-Tech Fortune 500 are PTC customers

MARKET LEADER:



Top Analyst Rankings for CAD, PLM, ALM, and SLM

OPEN ARCHITECTURE:



Open APIs, multi-CAD, and integration with ERP/MES

EMBEDDED AI:



Scalable, secure, and trustworthy AI that delivers measurable value

SAAS DELIVERY OPTION:

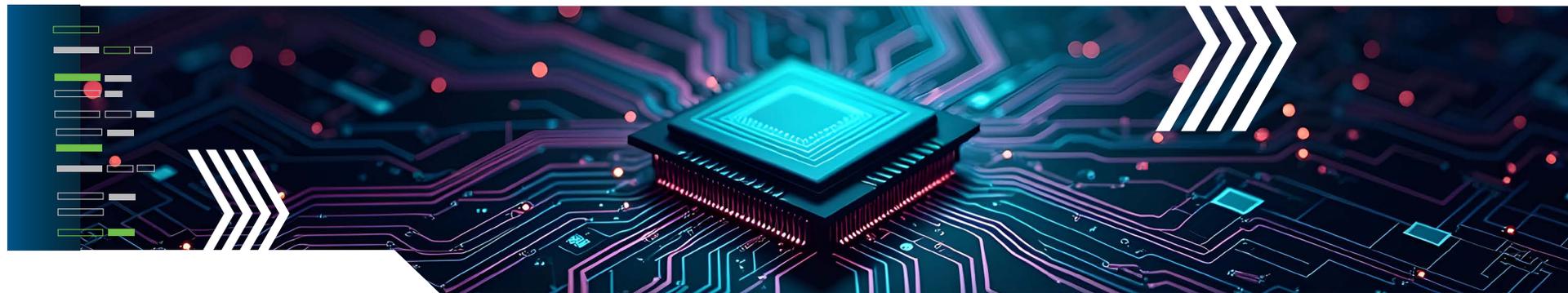


Global collaboration, enterprise security, and compliance

COMPLIANCE WITH EASE:



Industry-specific templates and workflows





TURN COMPLEXITY INTO COMPETITIVE ADVANTAGE

The winners in E&HT will be the ones who unify product data, tighten governance, and frontload learning with simulation and MBD. That journey starts with choosing a focused pilot, proving value, and scaling with discipline.

We partner with leaders like you to align stakeholders, benchmark current maturity, and implement the right capabilities—without disrupting existing strengths. Now, let us do the same for you.

Ready to reduce rework, accelerate compliant releases, and unlock capacity in your engineering organization? Schedule a conversation with our sales experts to map your first 90 days.



CURIOUS WHERE YOUR ORGANIZATION STANDS—OR HOW QUICKLY YOU CAN UNLOCK MEASURABLE VALUE? REQUEST A FREE VALUE ASSESSMENT WITH OUR E&HT SALES EXPERTS. WE'LL HELP YOU:

- Identify your biggest challenges and opportunities
- Prioritize critical capabilities for immediate impact
- Map out a tailored path to faster launches, stronger compliance, and scalable efficiency

[Request Now >](#)





Need more information?

[Learn More About PTC](#)

© 2025, PTC Inc. All rights reserved. Information described herein is furnished for informational use only, is subject to change without notice, and should not be taken as a guarantee, commitment, condition or offer by PTC. PTC, the PTC logo, and all other PTC product names and logos are trademarks or registered trademarks of PTC and/or its subsidiaries in the United States and other countries. All other product or company names or logos are the property of their respective owners.

913452 E&HT Capabilities Guide_Ebook

