

THE BOM IS A MIRROR

Correcting one BOM line may restart production. Correcting the process that created the error prevents the next disruption.

CHECK THE SYSTEM

- Configuration and revision control
- Change propagation
- Requirements and variants
- Master data and system handoffs
- Supplier substitutions
- Verification and validation

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The BOM Is Not the Problem

What manufacturing teams should investigate when the bill of materials appears to be wrong

By [Jon M. Quigley, PMP, CTFL](#) | [Value Transformation LLC](#)

A production line stops because the wrong component arrived. A connector does not match the drawing. The software will not communicate with the installed hardware. The first explanation is often simple: the BOM is wrong.

That may describe what was found, but it rarely explains why. The bill of materials is often the messenger, not the root cause. It exposes a failure somewhere in the system that turns customer needs and engineering decisions into a product that can be purchased, built, tested, delivered, and serviced.

Correcting one BOM line may restart production. Correcting the process that created the error prevents the next disruption.

A BOM cannot be accurate by itself

A BOM is more than a parts list. It is one governed view of product configuration and a physical expression of design intent. Its accuracy depends on whether the rest of the product definition agrees with it: requirements, drawings, CAD models, specifications, approved materials and suppliers, software and calibrations, manufacturing instructions, inspection criteria, test procedures, service information, and effectiveness rules.

The engineering BOM (EBOM) describes what engineering designed. The manufacturing BOM (MBOM) describes what operations must build. The transformation between them has to preserve intent while adding the parts, consumables, packaging, routing, and process details needed for production. If that handoff is weak, both BOMs can appear reasonable while describing different products.

What is hiding behind a bad BOM?

1. Configuration and revision control

Configuration management keeps the BOM synchronized with every item that defines the product. Revision control establishes which versions are authorized for a particular build and when they become effective. Without both disciplines, engineering may release Revision D while purchasing orders Revision C, manufacturing builds Revision B, and a supplier ships Revision A. Each group can follow its own records correctly and still produce the wrong system.

2. Incomplete change propagation

Engineering changes rarely affect one document. A material, supplier, dimensional, software, or performance change can ripple into the EBOM, MBOM, drawings, CAD, tooling, gauges, work instructions, PFMEA, Control Plan, inspection methods, test limits, supplier records, PPAP evidence, inventory disposition, and service documentation. Updating the BOM but not the surrounding configuration creates an internally inconsistent product definition.

3. Requirements and variant errors

The BOM must represent a product that satisfies customer, market, safety, and regulatory requirements. If a requirement changes without a corresponding product-definition change, the released configuration no longer reflects the intended design. Variant complexity magnifies the problem: regional content, option rules, feature compatibility, and customer-specific configurations must be explicit. Otherwise, individually valid parts can combine into an invalid product.

4. Weak master data and system handoffs

Duplicate part numbers, obsolete components left active, incorrect units of measure, poor naming conventions, missing supplier data, and invalid material specifications spread quickly. PLM, ERP, MES, purchasing, inventory, quality, and service systems may each hold a piece of the truth. Interfaces do not create governance; they can simply move an error faster and farther.

5. Supplier and substitution control

Suppliers need an unambiguous, revision-controlled product definition. Approved alternates, deviations, material substitutions, and purchased assemblies must be governed by technical review and effectiveness. An unauthorized substitution may fit physically but alter durability, compatibility, regulatory compliance, performance, or serviceability. The receiving discrepancy is only the last visible step in a much earlier control failure.

6. Verification and validation gaps

[Verification](#) asks whether the BOM and related product data were created and released correctly. Validation asks whether that configuration produces the product the customer and business actually need. Existence is not evidence of correctness. Check the BOM against the authorized design, the physical build, the tested configuration, and the intended use before volume production or customer delivery makes the error expensive.

Treat BOM errors as system signals

When you find an error, correct the immediate record, then investigate the mechanism that allowed it to survive. A useful review asks:

- Change: What changed, why did it change, and which configuration items should have been affected?
- Authority: Which revision and effectiveness were approved for this build, supplier shipment, and software load?
- Propagation: Did the decision reach the EBOM, MBOM, drawings, PLM, ERP, MES, work instructions, Control Plan, inspection and test criteria, and service information?
- Variants: Were option, regional, feature, and customer-specific rules explicit and tested?
- Suppliers: Were alternates, substitutions, deviations, and approvals technically reviewed and traceable?
- Evidence: Can the organization reconstruct the as-designed, as-built, and as-tested configuration, including hardware, software, calibration, and supplier lots?

The BOM is a mirror

Calling the BOM the "single source of truth" places too much responsibility on one artifact. The real source of confidence is an aligned, controlled process with clear ownership, synchronized data, visible assumptions, approved changes, and objective evidence. The BOM is the mirror that reflects whether those disciplines are working together.

When they are, BOM accuracy becomes a natural outcome. When they are not, teams spend their time correcting transactions, expediting parts, sorting inventory, reworking products, and debating which revision is real.

The next time a production problem is traced to the BOM, do not stop with the incorrect line item. Ask the more valuable question:

What process failure allowed this BOM error to exist in the first place?

That question moves the organization from correction to prevention - and from maintaining a parts list to managing product truth.

Continue the conversation

Where does your organization see the greatest BOM risk: change propagation, revision control, master data, supplier substitutions, variants, or verification?

**QUESTION THE
ASSUMPTIONS**

A risk register records what the team can see.

Unexamined assumptions hide what the team has taken for granted.

FOUR QUESTIONS

- What must be true for the project to succeed?
- What do we take for granted?
- What do we rely on but cannot control?
- Which assumptions have we never questioned?

REMEMBER

All assumptions expire. Review them when business needs, people, technology, funding, or the industry changes.

VALUE TRANSFORMATION LLC

The Hidden Risks Your Risk Register Misses

Visible assumptions reveal risks that probability and impact scores can overlook.

By Steven G. Lauck | Value Transformation LLC

As a project manager, you may rely on your risk register to manage potential issues and make better decisions. But even a comprehensive risk register with probability, impact, response, owner, and status columns is not enough. What is missing? Assumptions.



You may assume that key stakeholders will remain involved, funding will continue, business needs will remain stable, the technology will work as intended, users will embrace the change, and the supplier will deliver the required goods.

None of these assumptions are unreasonable; indeed, you need to make assumptions in order to launch the project. The problem is that the assumptions are invisible. When you don't see them, you don't think about them.

Think about your last or a similar project.

Did the supplier fail to deliver? Maybe you assumed that the supplier had the capacity to satisfy your requirements.

Did the users resist the new system? Perhaps you assumed that they would welcome a faster process.

Did the senior management change their minds? Maybe you assumed that the business needs would not change, good or bad.

These things turned into risks. Until then, they were assumptions that you hadn't addressed.

The Questions to Consider First

This approach has an implication on how you assess your project.

Ask the following four questions to identify the assumptions underlying your risk register:

1. What must be met or true for the project to succeed?
2. What do you take for granted?
3. What do you rely on but cannot control?
4. What are the assumptions that you've never questioned?

These questions will give you far more insight than another probability evaluation. Sometimes, they will reveal a new risk. Sometimes, they will let you proactively reduce uncertainty.

Treat Assumptions Like Risks

Have your team answer the following question for each deliverable:

"Our plan is viable because we believe that..."

Answer examples include: ...the client will approve the design early on. ...the SMEs will be available. ...the new product will require no custom programming. ...the budget will remain unchanged.

Ask the following follow-up question: "What happens if any of these are not true?" This shifts the focus from creating artificial scenarios to examining the project's foundation. This is how you start identifying serious risks.

Remember that all [assumptions](#) expire. An assumption that seems valid today may become invalid six months later. Businesses evolve. Industries evolve. People change jobs. Technology evolves. It is tempting to continue doing what you have been doing. You end up executing a plan that is no longer relevant in a changing environment.

Review assumptions periodically, not only at the planning stage, and whenever business needs, personnel, technology, funding, or industry change.

During your next risk meeting, ask "What are some of our questionable assumptions?" instead of "What are some of our new risks?" You will probably have a more productive meeting. Some assumptions will still be valid. Some assumptions will require an update. Some assumptions will reveal previously unknown risks. This is not a sign of inadequate planning. This is good project management.

Closing

Your risk register is a great tool, but it doesn't tell the full story. Every risk is based on an assumption. Every project failure starts with an unaddressed assumption. Good project managers do more than record known risks. They identify, challenge, and revisit the underlying assumptions. If you examine the assumptions and evaluate the consequences of being wrong, you will discover hidden risks and improve your decision-making.

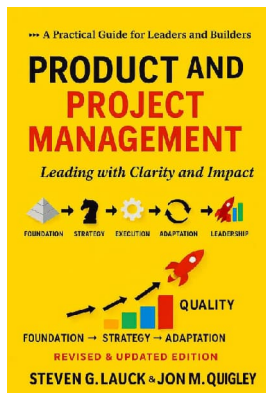


FEATURED BOOK

Product and Project Management

Leading with Clarity and Impact

Revised & Updated Edition



Great products need more than a good idea, and great projects need more than a schedule. They need a shared way to turn strategy into coordinated action.

[Product and Project Management](#) bridges the disciplines that shape what should be built and how it is delivered. Steven G. Lauck and Jon M. Quigley connect foundation, strategy, execution, adaptation, and leadership in one practical framework.

The revised and updated edition is written for leaders and builders who must align customers, engineering, operations, suppliers, quality, and business objectives. It helps readers clarify intent, establish priorities, guide teams through uncertainty, and adapt without losing control of scope, value, or outcomes.

Whether you lead products, projects, technical teams, or cross-functional programs, this book offers a practical reminder: impact comes from connecting sound decisions with disciplined execution.

INSIDE THE BOOK

Who It Is For

- Product leaders
- Project and program managers
- Engineering and manufacturing leaders
- Executives, founders, and cross-functional teams

WHAT IT CONNECTS

Foundation
Strategy
Execution
Adaptation
Leadership

AVAILABLE NOW

Available from Value Transformation LLC. Explore this and other practical resources for product development, project management, testing, quality, and continuous improvement.

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Why Product and Project Management Belong Together

Product management protects the value proposition: the customer need, the product direction, and the reason the work matters. Project management organizes the path from intent to delivery through plans, resources, decisions, risks, coordination, and evidence.

When the disciplines are separated, teams can deliver efficiently toward the wrong objective - or pursue the right idea without a reliable path to market. When they work together, priorities remain connected to value, changes are assessed in context, and teams can adapt without losing sight of the outcome.

This practical guide helps leaders build that connection from the foundation upward: strategy informs execution, execution creates learning, learning drives adaptation, and leadership keeps the system aligned.

THE PRACTICAL PATH

FOUNDATION

STRATEGY

EXECUTION

ADAPTATION

LEADERSHIP



VALUE THROUGH CLARITY AND EXECUTION

Product decisions, project discipline, systems thinking, quality, testing, and manufacturing must work as one connected system.

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- **The BOM Is Not the Problem P.1**
The BOM is often the messenger, not the root cause. Investigate the controlled system that turns design intent into the as-built product.
- **The Hidden Risks Your Risk Register Misses P.2**
Make assumptions visible, challenge what the project takes for granted, and revisit those beliefs as conditions change.
- **Featured Book: Product and Project Management P.3**
A practical guide connecting foundation, strategy, execution, adaptation, and leadership.

Professional Development

Value Transformation LLC provides practical training, coaching, facilitation, and advisory support for teams building stronger product development, project management, testing, quality, and supplier management capability.



About Value Transformation LLC

Value Transformation LLC helps organizations improve how products are conceived, developed, tested, launched, manufactured, and supported. We connect product and project management, systems engineering, supplier coordination, configuration management, quality, and testing so strategy becomes evidence-based execution.

Core capabilities

- Product and project management
- Product development and systems engineering
- Testing, verification, and validation
- APQP, PPAP, and quality improvement
- Supplier and multi-vendor coordination
- Training, coaching, and facilitation

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FROM CONCEPT TO PRODUCTION

Practical experience for complex products, regulated environments, multiple suppliers, and real-world delivery constraints.