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GORE® Cables and Materials

ENGINEERING TRUST: WHY RELIABILITY IS THE NEW INNOVATION CURRENCY

The Department of Defense's latest acquisition guidance has made one goal clear: deliver capability faster.

The Pentagon now expects contractors to deploy advanced systems against evolving threats by reforming the requirements process, shortening design cycles, and moving from prototype to qualification at speed. In prototyping, teams move fast and iterate rapidly; in production, predictability and repeatable reliability take priority. The challenge is how to "move fast and break things" without compromising program momentum.

A GAO analysis show a clear pattern: when design maturity, integration, and prototype testing are pushed downstream, average schedule growth jumps from roughly 10–15% to 40–50%. That indicates that roughly half of the delay in complex missile and weapon programs is bound up in qualification, integration, and related technical maturity issues.

Across the missile and air-defense business, including companies like Raytheon, Lockheed Martin, and Northrop Grumman, engineers and integration teams are working to make systems more connected, autonomous, and reliable, all at the same time. Yet even as technical complexity increases, development timelines are shrinking.

The question of how fast a program can move becomes a matter of predictability and trust. In modern defense architectures, even the smallest component can influence program outcomes. A cable geometry that is slightly off or a material that behaves in an unexpected way can ripple through an integration plan, forcing redesigns or requalification. In this world, reliability accelerates programs by preventing redesigns and requalification — the real speed killers.

Engineers who live this reality know that when reliability is designed in from the start, systems integrate more cleanly and schedules are more likely to hold. That foundation of technical confidence is what we at Gore call "engineering trust." It all starts with materials, components, and designs that maintain reliable performance under extreme conditions.

Across radar networks, missile guidance systems, and sensor packages, Gore's interconnect and material technologies are engineered for stability under intense vibration, heat, and electromagnetic stress. The integrity of a signal path can determine whether testing ends in validation or more troubleshooting, whether a weapon fires or doesn't fire, whether lives are saved or put at risk. The closer reliability is built into the hardware, the more freedom there is to innovate at the system level. Teams are ready to prototype now, and Gore ensures they have immediate access to our highest-performing materials and components to accelerate early builds.

Technical trust, however, is only part of the equation. The other side is supply chain trust — confidence that critical components will be qualified, consistent, and available from prototype through production. Gore's defense manufacturing model combines U.S.-based production with global centers of excellence, applying the same rigorous testing at every step to ensure each assembly performs identically before shipment. At Gore, our responsive sampling program and qualified cables ready to ship means teams can begin prototyping without delay. For primes and

their suppliers, that consistency helps eliminate uncertainty and accelerates integration, two of the hardest things to achieve under today's fast-paced acquisition tempo.

The rise of drones and asymmetric warfare means that new defense systems are becoming smaller, lighter, and more complex. In seeker heads, EO/IR gimbals, and other compact sensor applications, every cubic centimeter matters. Gore's engineered fluoropolymers and ePTFE insulation enable smaller, lighter, and stronger cables that maintain signal integrity and resist breakage. Materials that are both tough and flexible reduce failure rates during assembly and improve yield. When teams avoid rework and qualification delays, they keep focus where it belongs — on project performance and speed of delivery.

This is what engineering trust looks like in practice: reliable systems that integrate without friction, expert suppliers who remove uncertainty, and next-gen technologies that perform exactly as promised. It's the difference between being part of a program's risk profile and being part of its risk-reduction plan.

Defense programs by their very nature will always be complex. The teams that are set to thrive under the new Pentagon mandate will be those that engineer trust into every layer of their systems, from technical to operational to logistical. They will be the ones who can turn speed from a potential vulnerability into a strategic capability.

In modern missile and defense development, success is not only about how fast you can move. It is about knowing what, and who, you can trust along the way. Because when reliability is engineered at the component level, confidence grows at the system level, and that confidence is what ultimately keeps critical defense programs on schedule.

Learn more about how Gore's commitment to reliability can support your program's success by visiting gore.com/engineering-trust.

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