

A Leader's Guide to Interoperability

What Is Interoperability?

Interoperability is “the ability to act together coherently, effectively, and efficiently to achieve tactical, operational, and strategic objectives.”¹

Why Strive for Interoperability?

- It leverages partner capabilities and fills capability gaps.
- It enables access to locations and additional forces (to lead or support partner missions).
- It reduces costs.
- It facilitates strategic messaging.

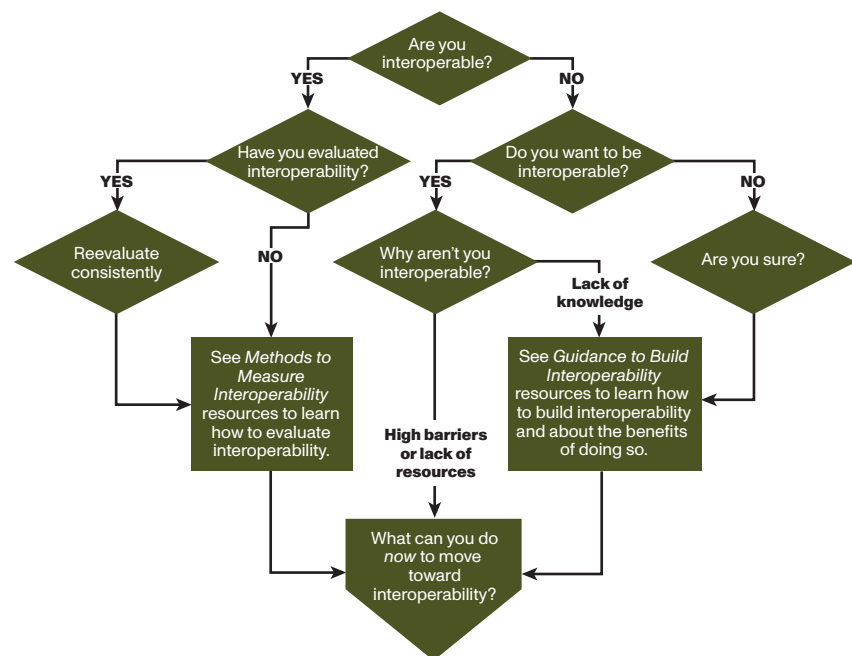
What's at Risk Without It?

- Adversary deterrence
- The ability to support and legitimize alliances
- Preparedness for anticipated shared future missions
- Objective and mission success
- The ability to minimize risk to forces

Research shows that

- 1 Interoperability can increase capabilities, shape the strategic environment, and reduce resource demands.
- 2 Building interoperability requires leadership to reorient goals and assign agency to units.
- 3 Strengthening unit-to-unit relationships and engaging in staff exchanges help to build targeted interoperability.
- 4 Actively measuring and monitoring progress toward interoperability goals helps to achieve those goals.

See p. 2 for more details.



Actionable Steps Toward Interoperability

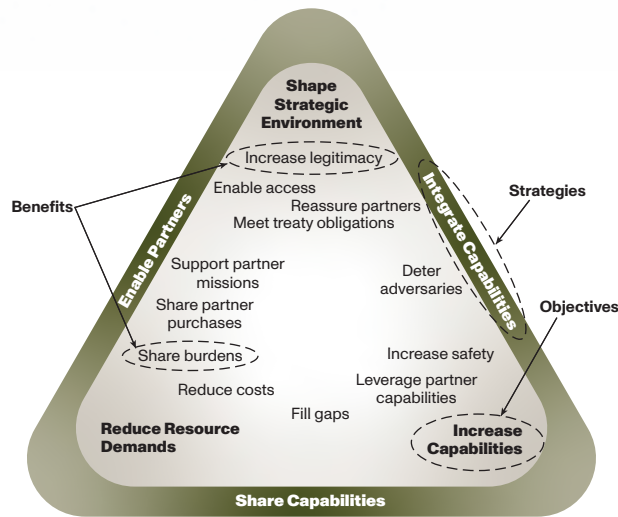
- Identify why interoperability is needed for particular missions, functions, and partners.
- Engage with partners to determine shared interests and priorities.
- Integrate partners into critical activities and exercises to achieve strategic objectives.
- Continually assess, monitor, and evaluate interoperability.

Research Highlights

What's holding U.S. forces back? What's the solution?

Problem: Unclear value of interoperability

Solution: Understand and widely communicate benefits.^A



Problem: Lack of top-down guidance and bottom-up planning

Solution: Reorient goals toward interoperability and assign agency and authority to units.^B



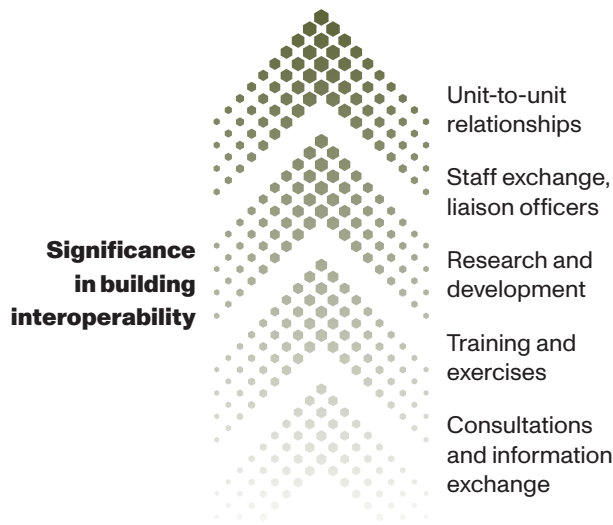
Work to build interoperability by explicitly detailing the following:

- How much interoperability is needed?
- What type of interoperability is needed?
- With whom do we need to be interoperable?

Assign authority to units who will drive interoperable relationships with partners.

Problem: Unclear about how to start building interoperability

Solution: Include partners in critical interoperability-building activities.^B

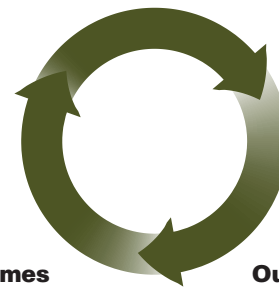


Problem: Assuming interoperability already exists

Solution: Consistently measure and monitor.^{A,B,D}

Activities

Programs, resources, and efforts that increase interoperability



Outcomes

True interoperability is the ability to act together coherently, effectively, and efficiently to achieve objectives

Outputs

Products and supplies that help build interoperability (e.g., common equipment)

“Interoperability is best understood as a means to some other end, not as an end in and of itself.”^A

Interoperability Resources for Leadership

Guidance to Build Interoperability

Resources That Describe the Value and Benefits of Interoperability and Provide Guidance on How to Build Interoperability

REFERENCE A:

Christopher G. Pernin, Angela O'Mahony, Gene Germanovich, and Matthew Lane,

Chasing Multinational Interoperability: Benefits, Objectives, and Strategies, RAND Corporation, RR-3068-A, 2020. www.rand.org/t/RR3068

This Army-focused report covers interoperability's value and benefits, provides guidance on how to build interoperability, and shows a cost and risk analysis for multinational interoperability.



REFERENCE B:

Christopher G. Pernin, Jakub P. Hlavka, Matthew E. Boyer, John Gordon IV, Michael Lerario, Jan Osburn, Michael Shurkin, and Daniel C. Gibson,

Targeted Interoperability: A New Imperative for Multinational Operations, RAND Corporation, RR-2075-A, 2019. www.rand.org/t/RR2075

This Army-focused report covers interoperability's value and benefits, provides guidance on how to build interoperability, and presents a case study and lessons learned for the 82nd Airborne Division.



REFERENCE C:

Michael Spirtas, Jennifer D. P. Moroney, Harry J. Thie, Joe Hogler, and Thomas Young,

Department of Defense Training for Operations with Interagency, Multinational, and Coalition Partners, RAND Corporation, MG-707-OSD, 2008. www.rand.org/t/MG707

This U.S. military-focused report recommends training program improvements relevant to interoperability.



Methods to Measure Interoperability

Resources That Review Previous Interoperability Measurement Systems, Describe Improvement Methods, and Support New System Development

REFERENCE D:

Bryan W. Hallmark, Christopher G. Pernin, Andrea M. Abler, Ryan Haberman, Sale Lilly, Samantha McBirney, Angela O'Mahony, and Erik E. Mueller,

An Analysis of Alternative Approaches to Measuring Multinational Interoperability: Early Development of the Army Interoperability Measurement



System (AIMS), RAND Corporation, RR-A617-1, 2021. www.rand.org/t/RR-A617-1

This Army-focused report reviews previous measurement systems, proposes a new system, and supports the pilot of a new system, the Army Interoperability Measurement System.

REFERENCE E:

Jon Schmid, Bonnie L. Triezenberg, James Dimarogonas, and Samuel Absher,

The Role of Standards in Fostering Capability Evolution: Does Design Matter? Insights from Interoperability Standards, RAND Corporation, RR-A1576-1, 2022. www.rand.org/t/RR-A1576-1

This Army-focused report provides interface standards to support interoperability and enable future evolution of forces.



REFERENCE F:

Angela O'Mahony, David E. Thaler, Beth Grill, Jennifer D. P. Moroney, Jason H. Campbell, Rachel Tecott, and

Mary Kate Adgie, *Prioritizing Security Cooperation with Highly Capable U.S. Allies: Framing Army-to-Army Partnerships*, RAND Corporation, RR-A641-1, 2022. www.rand.org/t/RR-A641-1

This Army-focused report uses a mixed-method approach to identify activities to prioritize security cooperation. It also identifies the challenges of, opportunities for, and mechanisms to enhance security cooperation.



Examples and Lessons Learned

Resources That Provide Examples of Barriers and Challenges to Build Interoperability with Specific Partners, and That Recommend Methods to Improve and Build Interoperability

REFERENCE G:

Angela O'Mahony, Thomas S. Szayna, Christopher G. Pernin, Laurinda L. Rohn, Derek Eaton, Elizabeth Bodine-Baron, Joshua Mendelsohn, Osonde A. Osoba, Sherry Oehler, Katharina Ley Best, and Leila Bighash, *The Global Landpower Network: Recommendations for Strengthening Army Engagement*, RAND Corporation, RR-1813-A, 2017. www.rand.org/t/RR1813

This Army-focused report identifies challenges in strengthening an interoperable network with various key partners and provides methods to overcome those challenges.



REFERENCE H: Eric V. Larson, Gustav Lindstrom, Myron Hura, Ken Gardiner, Jim Keffer, and William Little, *Interoperability of U.S. and NATO Allied Air Forces: Supporting Data and Case*

Studies, RAND Corporation, MR-1603-AF, 2004. www.rand.org/t/MR1603

This Air Force-focused report identifies barriers to interoperability with key North Atlantic Treaty Organization (NATO) allies and recommends methods to overcome those barriers.



REFERENCE I:

Myron Hura, Gary McLeod, Eric V. Larson, James Schneider, Daniel Gonzales, Daniel M. Norton, Jody Jacobs, Kevin M. O'Connell,

William Little, Richard Mesic, and Lewis Jamison, *Interoperability: A Continuing Challenge in Coalition Air Operations*, RAND Corporation, MR-1235-AF, 2000. www.rand.org/t/MR1235

This Air Force-focused report identifies barriers to interoperability with NATO allies and recommends methods to overcome those barriers. It also focuses on command, control, communication, intelligence, surveillance, and reconnaissance.



Army Resources

Resources Created by the Army on Interoperability

REFERENCE J:

Army Regulation 34-1, *Interoperability*, Headquarters, Department of the Army, April 9, 2020. https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN19606_AR34-1_FINAL.pdf

This Army regulation provides information on how to standardize interoperability.



REFERENCE K: Center for Army Lessons Learned, *Commander and Staff Guide to Multinational Interoperability*, No. 20-12, undated.

<https://api.army.mil/e2/c/downloads/2023/01/31/3ddadfaa2/20-12.pdf>

This Center for Army Lessons Learned guide helps those training for or operating in a multinational environment.



REFERENCE L: U.S. Army Training and Doctrine Command Pamphlet 525-3-1, *The U.S. Army in Multi-Domain Operations 2028*, U.S. Army Training and Doctrine Command, December 6, 2018. <https://adminpubs.tradoc.army.mil/pamphlets/TP525-3-1.pdf>

This U.S. Army Training and Doctrine Command pamphlet describes how interoperability will be a key element in future operations.



Frequently Asked Questions on Interoperability

Q: I'm a commander of a unit and interested in increasing my unit's interoperability but don't know where to start. To whom should I reach out?

A: Please reach out to your higher headquarters. Additionally, the Army has assigned the Unified Action Partners Interoperability (UAP-I) Proponent Office with responsibility for multinational interoperability. Please contact the UAP-I Proponent Office for more information at MCCOE-UAP_Interoperability@army.mil.^{J,K,L}

Q: I'd like my subordinate commands to be more interoperable. How should I start?

A: First, interoperability should be made a command priority, and it should be conveyed to your subordinate units. Resources should be put toward those ends and guidance provided as to how to start. Please contact the UAP-I Proponent Office for more information.

Q: I'm trying to make an argument to build more interoperability. What are the main benefits on which I should focus?

A: There are several benefits of being interoperable, such as leveraging partner capabilities, filling capability gaps, enabling access to locations and additional forces (to lead or support partner missions), reducing costs, and deterring adversaries.^{A,B}

Q: Can I pitch interoperability as an investment to my superiors?

A: Yes. Interoperability must be viewed as an important component of a unit's investment strategy (which includes such components as training; tactics, techniques, and procedures development; and leader development), specifically in such areas as integrating capabilities, sharing capabilities, and enabling partners.^A

Q: What are the biggest costs related to building multinational interoperability?

A: The costs of building multinational interoperability span human, procedural, and technical areas. These costs could include more training hours, divided attention

among priorities, and several years of effort of intensive planning and guidance. Furthermore, materiel development and acquisition may also increase costs if not properly planned.^A

Q: How do I adjust or add training initiatives to build interoperability?

A: Many training initiatives that can help build interoperability can already be found in existing joint and service task lists. A review of these task lists and recommendations for improvement can be found in reference C. UAP-I provides commander, staff, and training guides.

Q: How do I determine how much interoperability we should have and what type of interoperability we should have? And how do I determine with which partners and allies I should be interoperable?

A: Near-term interoperability requirements should be coordinated with your higher headquarters.^B

Q: How should I pay for the activities I use to build interoperability?

A: While there is no separate pot of money for building multinational interoperability, many activities (such as training and exercises) already have budgets that can be allocated to that endeavor.

Q: I have relationships with a couple partner and allied militaries. How do I assess how interoperable we are?

A: The Army has a tool called AIMS, the Army Interoperability Measurement System, which can be found at the UAP-I Proponent Office. This tool can be used during exercises or training events to help units assess their interoperability.^D Please reach out to the UAP-I Proponent Office for more details.^{E,F}

Q: Can you point to any specific examples from which I can learn more?

A: Lessons learned can be helpful to understand methods to improve interoperability.^{G,H,I}

This research brief was developed by Christopher G. Pernin, Emily Eikey, and Angela O'Mahony; it describes work done in the RAND Arroyo Center that is fully documented in the works cited on page three. To view this brief online, visit www.rand.org/t/RBA3241-1. RAND is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. **RAND**® is a registered trademark.

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