

Infrastructure Resilience and Conflict
Building Adaptive Systems for Evolving Threat Landscapes
Palanga, Lithuania | 19–22 July 2026 | AGENDA

Workshop Charge & Book Project

This Advanced Research Workshop will produce three deliverables aligned with a forthcoming collective volume on stress testing infrastructure resilience in Ukraine: (1) a methodology for resilience-by-design planning, (2) a toolkit for dual-use infrastructure stress testing, and (3) policy guidance for NATO Allies and Partner Nations. Each working group will own a chapter of the volume and present scope, table of contents, and writing assignments at the closing plenary. Working group members will be invited to present cutting-edge research within their respective groups.

Working Groups

- **Working Group #1, Resilience-by-Design Methodology:** Frameworks, principles, and design heuristics for layered, adaptive infrastructure systems. Draws on systems engineering, civil infrastructure, urban planning, and complex-systems theory.
- **Working Group #2, Stress-Testing Tools and Analytics:** Machine learning, digital twins, system-of-systems modeling, real-time threat monitoring, and risk analytics for kinetic, cyber, hybrid, and cascading-failure scenarios.
- **Working Group #3, Policy, Governance, and Civil-Military Integration:** NATO-aligned decision-making, dual-use governance, mission continuity, and coordinated civil-military response. Anchors the Ukraine and Baltic case studies.

Day 1: Sunday, 19 July 2026

Arrival and welcome

17:00 – 18:00	<i>Registration</i>
18:00 – 18:30	Day 1 Introduction <i>Workshop Co-Directors</i> Brief welcome, orientation, and overview of the week ahead.
18:30 – 20:30	Welcome Reception & Group Photo <i>Informal arrival reception for participants. Light appetizers provided. Group photo during the reception. No formal program, speakers, or sessions.</i>
20:30 – end	<i>Group Dinner and Social</i>

Day 2: Monday, 20 July 2026

Threats, vulnerabilities, and the dual-use stress-test space



09:00 – 10:30	Day 2 Introduction & Keynote Address <i>Brief intro by Workshop Co-Directors</i> Short recap of Day 1 and objectives for the week, brief introductions to the working groups, and a 45-minute keynote framing infrastructure resilience under sustained conflict.
10:30 – 11:00	<i>Coffee Break</i>
11:00 – 12:30	Panel 1: Hybrid Threats and Infrastructure, Lessons from Ukraine and NATO's Eastern Flank <i>Framing the strategic context for the workshop: what kinetic, cyber, and hybrid pressures have Ukraine and the Eastern Flank absorbed, and what do they imply for NATO infrastructure design?</i>
12:30 – 13:30	<i>Lunch</i>
13:30 – 15:00	Panel 2: Science and Engineering of Layered Resilience, Dual Threats and Systemic Interdependence <i>Framing questions: What has Ukraine taught us? Where are NATO infrastructures most fragile? What is the gap between current practice and resilience-by-design?</i>
15:00 – 15:30	<i>Coffee Break</i>
15:30 – 18:30	Working Group Meetings: Session 1 WG1: Begin building the resilience-by-design framework. Define core principles (absorb, recover, adapt) and identify candidate design heuristics. WG2: Inventory existing stress-testing tools (digital twins, ML-based threat detection, SoS models). Identify gaps in current theory and practice. WG3: Map current NATO and Partner Nation governance landscape. Identify decision points where civil-military integration breaks down.
18:30 – end	<i>Dinner with Working Groups (in town)</i>

Day 3: Tuesday, 21 July 2026

Ukraine case studies, partner perspectives, and chapter drafting

09:00 – 09:30	Day 3 Introduction <i>Workshop Co-Directors</i>
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	Recap of Day 2, objectives for Day 3, and orientation to the day's lunch panel and working group sessions.
09:30 – 10:30	Working Group Meetings, Session 2: Problem formulation and priority setting.
10:30 – 10:50	<i>Coffee Break</i>
10:50 – 11:20	Plenary: Presentation of Working Group Progress
11:20 – 12:00	Working Group Meetings: Session 6 Continue chapter development and prepare questions for the lunch panel.
12:00 – 12:45	<i>Lunch</i>
12:45 – 13:30	Panel 3: Rebuilding for Resilience, Strategies for Post-Conflict Recovery and Future-Proof Infrastructure
13:30 – 15:00	Working Group Meetings: Shared Ideas and Concepts Cross-WG synthesis: identify shared definitions, overlapping frameworks, and integration points across the three chapters. Select WG spokespersons for Day 4 plenary.
15:00 – 15:20	<i>Coffee Break</i>
15:20 – 18:00	Working Group Meetings, Session 8: Draft Report WG1: Draft methodology framework: principles, heuristics, design patterns. WG2: Draft toolkit architecture: tool inventory, integration model, validation approach against Ukraine data. WG3: Draft policy guidance: recommendations matrix for NATO HQ, Partner Nations, and dual-use authorities.
18:00 – 19:30	<i>City Tour</i>
19:30 – 22:00	<i>Dinner as a Group (venue TBD)</i>
22:00	<i>Return to Hotel via Group Transportation</i>

Day 4: Wednesday, 22 July 2026

Synthesis, plenary reports, and next steps for the book

09:00 – 09:30	Day 4 Introduction <i>Workshop Co-Directors</i>
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	Recap of Day 3, objectives for the final day, and orientation to the closing summary panel and final remarks.
09:30 – 10:30	Working Group Meetings, Session 9: Wrap-Up Finalize chapter table of contents, action register, writing and editing process, and presenter prep.
10:30 – 10:50	<i>Coffee Break</i>
10:50 – 11:30	Working Group Meetings, Session 10: Prepare Summary Paper & Final Wrap-Up Each WG finalizes its summary contribution for the closing block, then locks chapter outline, writing assignments, and timeline.
11:30 – 12:30	<i>Lunch (Working Group Breakouts)</i> <i>Whole lunch hour reserved for working groups; informal WG breakout work encouraged throughout.</i>
12:30 – 14:00	Closing Summary Panel & Final Remarks <i>Closing Remarks: Workshop Co-Directors</i> 12:30: WG #1 (Resilience-by-Design Methodology) 12:50: WG #2 (Stress-Testing Tools and Analytics) 13:10: WG #3 (Policy, Governance, and Civil-Military Integration) 13:30 Closing Remarks: book project, publication schedule, chapter delivery milestones, peer review, editorial roles, and formal close of the workshop.

Appendix A: Working Group Charters

WG #1: Resilience-by-Design Methodology

Expertise sought:

- Systems engineering and complex adaptive systems
- Civil and structural infrastructure (energy, transport, water, telecom)
- Urban planning and critical infrastructure protection
- Resilience theory and risk-by-design practice

Chapter deliverable:

A methodology chapter articulating principles, design heuristics, and a step-by-step framework for embedding resilience into infrastructure planning at design time, validated against Ukrainian and Baltic experience.

WG #2: Stress-Testing Tools and Analytics

Expertise sought:



- Machine learning and AI for threat detection and risk analytics
- Digital twins and system-of-systems modeling
- Cybersecurity and real-time monitoring of critical infrastructure
- Operations research and decision-support modeling

Chapter deliverable:

A toolkit chapter cataloguing available stress-testing methods, proposing an integration architecture for dual-use infrastructure, and demonstrating application against Ukraine case-study data.

WG #3: Policy, Governance, and Civil-Military Integration

Expertise sought:

- NATO and EU policy on critical infrastructure protection
- National civil-military coordination, homeland security, and emergency management
- Ukrainian and Baltic government and operational practitioners
- Public-private partnership and dual-use governance

Chapter deliverable:

A policy chapter offering NATO and Partner Nation recommendations on governance, decision rights, and civil-military integration for infrastructure resilience, anchored in Ukraine case studies.

Cross-Cutting Themes (threaded across all WGs)

- Ukraine as the primary case study, with Baltic region as comparative context
- Dual-use infrastructure (civilian assets with military significance)
- Cascading failures across interdependent networks
- Stress testing as a unifying methodology across design, tools, and policy



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