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PREFACE

By John Beverley

The *Semantic Technology for Intelligence, Defense, and Security (STIDS)* conference series has, since its inception, served as a focal venue for research at the intersection of formal semantics, knowledge representation, and mission-critical applications in intelligence, defense, and national security domains. The series originated under the name *Ontologies for the Intelligence Community* (2007–2009), and subsequently continued as *Semantic Technology for Intelligence, Defense, and Security* (2010–2016). Throughout this period, the conference brought together researchers and practitioners concerned with the principled modeling of complex domains, the integration of heterogeneous data sources, and the use of semantic technologies to support analysis, decision-making, and interoperability. Proceedings from these earlier iterations were published with CEUR, establishing a sustained archival record for the community's work.

Following a hiatus between 2017 and 2023, STIDS was re-established in 2024, reflecting renewed interest in semantic and ontological methods for intelligence and security applications, as well as the emergence of new technical and organizational challenges. The 2024 conference marks a deliberate effort to reconstitute the STIDS community while preserving its original intellectual orientation: an emphasis on rigorous semantic foundations coupled with practical relevance to operational settings.

STIDS 2024 was held in Woodbridge, Virginia, on October 22–23, 2024, and represents the twelfth conference in this series. The event featured keynote talks from senior leaders in defense, intelligence, and research organizations addressing issues at the intersection of semantic technology, artificial intelligence, and mission execution. Notably, Andreas Tolk (The MITRE Corporation) delivered a keynote on hybrid support solutions, examining how semantic technologies enable cross-disciplinary collaboration by improving interoperability across tools, methods, and organizational boundaries, while addressing both infrastructural and conceptual integration challenges. Lisa Costa, former Chief Technology and Innovation Officer of the United States Space Force and former Chief Information Officer at U.S. Special Operations Command, presented a keynote on transdisciplinary innovation, drawing on her experience integrating emerging technologies into operational defense contexts. The program also included a keynote by Anna Rubinstein, Chief Responsible AI Officer at the National Geospatial-Intelligence Agency, highlighting ongoing responsible-AI initiatives and governance efforts within the intelligence community. In addition, Anthony Patrick, Chief Data Scientist of the Intelligence Community at the Office of the Director of National Intelligence, delivered a keynote on data strategy and the role of partnerships between data and semantic strategies in supporting mission outcomes across the intelligence enterprise.

Beyond invited talks, the agenda incorporated multiple live demonstrations showcasing applied research and operational systems for which no corresponding papers were submitted, including platforms for semantic data dictionaries and knowledge graph construction, automated BFO-based knowledge graph generation, ontology-driven interoperability frameworks, and national and international semantic integration platforms. Together, these agenda elements underscored STIDS 2024's role as a forum not only for disseminating published research, but also for sharing emerging practices, operational experiences, and applied technologies that inform the evolving use of semantic methods across intelligence, defense, and security domains

The STIDS 2024 proceedings include a combination of short and long papers, reflecting both founda-

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tional investigations and applied research contributions.

Short Papers

An Ontological Analysis of Risk in Basic Formal Ontology by Federico Donato and Adrien Barton examines the notion of risk through the lens of Basic Formal Ontology (BFO). The paper analyzes how risk can be represented in a realist upper-ontology framework, clarifying its ontological status and relationships to dispositions, processes, and outcomes—issues of central importance for risk-aware reasoning in intelligence and defense contexts.

Ontological Foundations of State Sovereignty by Danielle Limbaugh and John Beverley develops an ontological analysis of state sovereignty, a foundational concept in international relations and security studies. The paper explores how sovereignty can be modeled in a formally precise manner, addressing its legal, political, and institutional dimensions, and providing a basis for interoperable representations of geopolitical entities and relations.

Long Papers

Broadening Ontologization Design: Embracing Data Pipeline Strategies by Chris Partridge, Andrew Mitchell, Sergio de Cesare, and John Beverley argues for a broader conception of ontologization that explicitly incorporates data pipeline considerations. The authors examine how ontological design decisions interact with data ingestion, transformation, and deployment processes, highlighting implications for scalable and maintainable semantic systems.

Digitalizing Uncertain Information by Chris Partridge, Andrew Mitchell, and Andreas Cola addresses the challenge of representing and managing uncertainty in digital and semantic systems. The paper analyzes different sources and types of uncertainty and proposes approaches for integrating uncertain information into structured semantic representations, an issue of particular relevance for intelligence analysis.

Integrating Activity Predictions in Knowledge Graphs by Alec Sculley, Cameron Stockton, and Forrest Hare explores methods for incorporating predictive information about activities into knowledge graphs. The paper focuses on integrating activity prediction outputs with semantic representations, enabling richer situational awareness and reasoning over anticipated events.

The Human Capital Ontology by Shane Babcock, Maxwell Farrington, and colleagues presents an ontology designed to represent human capital concepts, including skills, roles, and organizational structures. The work addresses challenges in modeling workforce-related information in a way that supports interoperability and analysis across organizational and institutional contexts.

Together, the papers in these proceedings reflect both continuity with the historical STIDS focus on rigorous semantic foundations and an engagement with contemporary challenges in data-intensive, uncertain, and operationally complex environments. The relaunch of STIDS in 2024 demonstrates the continued relevance of semantic technology for intelligence, defense, and security, and lays the groundwork for future iterations of the conference.

The editors would like to thank the authors, reviewers, and program committee members whose efforts made STIDS 2024 possible, and we look forward to the continued development of this community in the years ahead.