

Event 205 - The Tactical Edge under DDIL - AI and Policy-driven Technologies for Collaborative Warfighter and UAS Mission Success and Survivability

Efforting a Resilient Autonomous Tactical Edge

Stan Mo – SW Architect (Stan.Mo@intel.com)

Intel Federal and Aerospace Division, IOT/NEX Group

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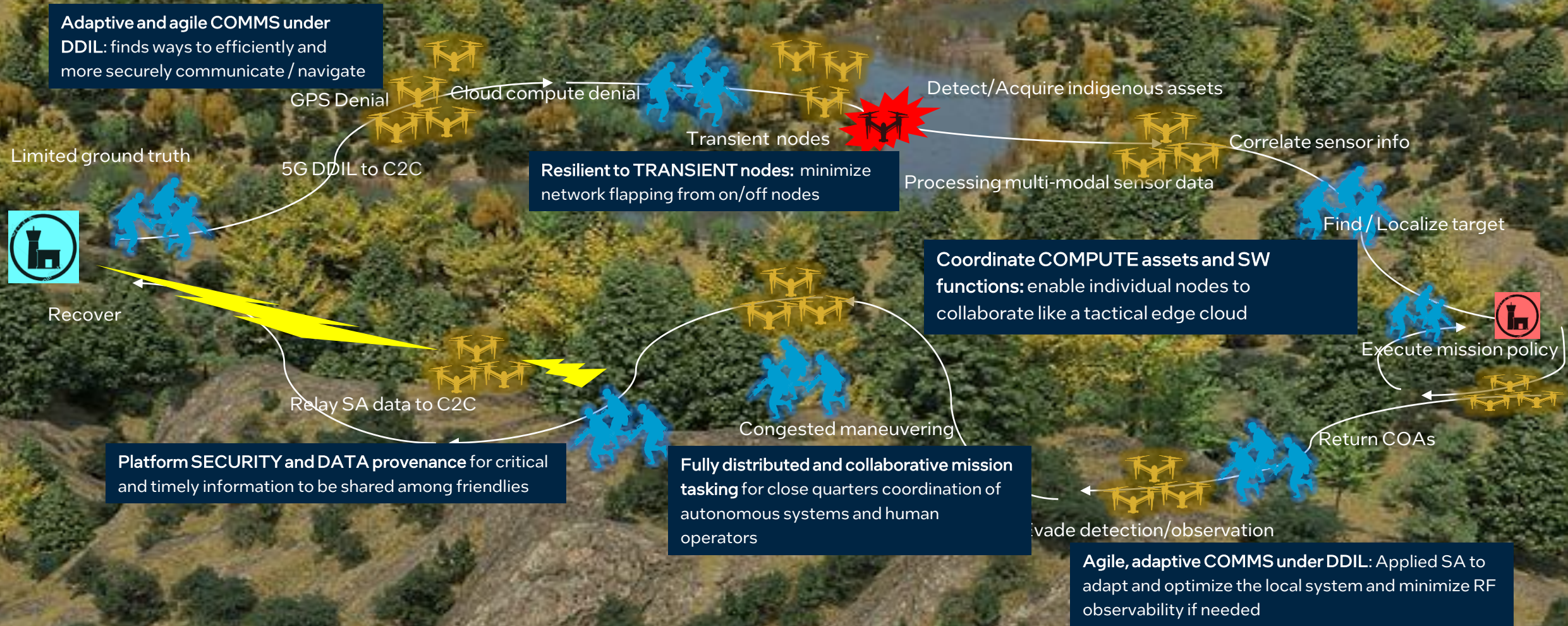
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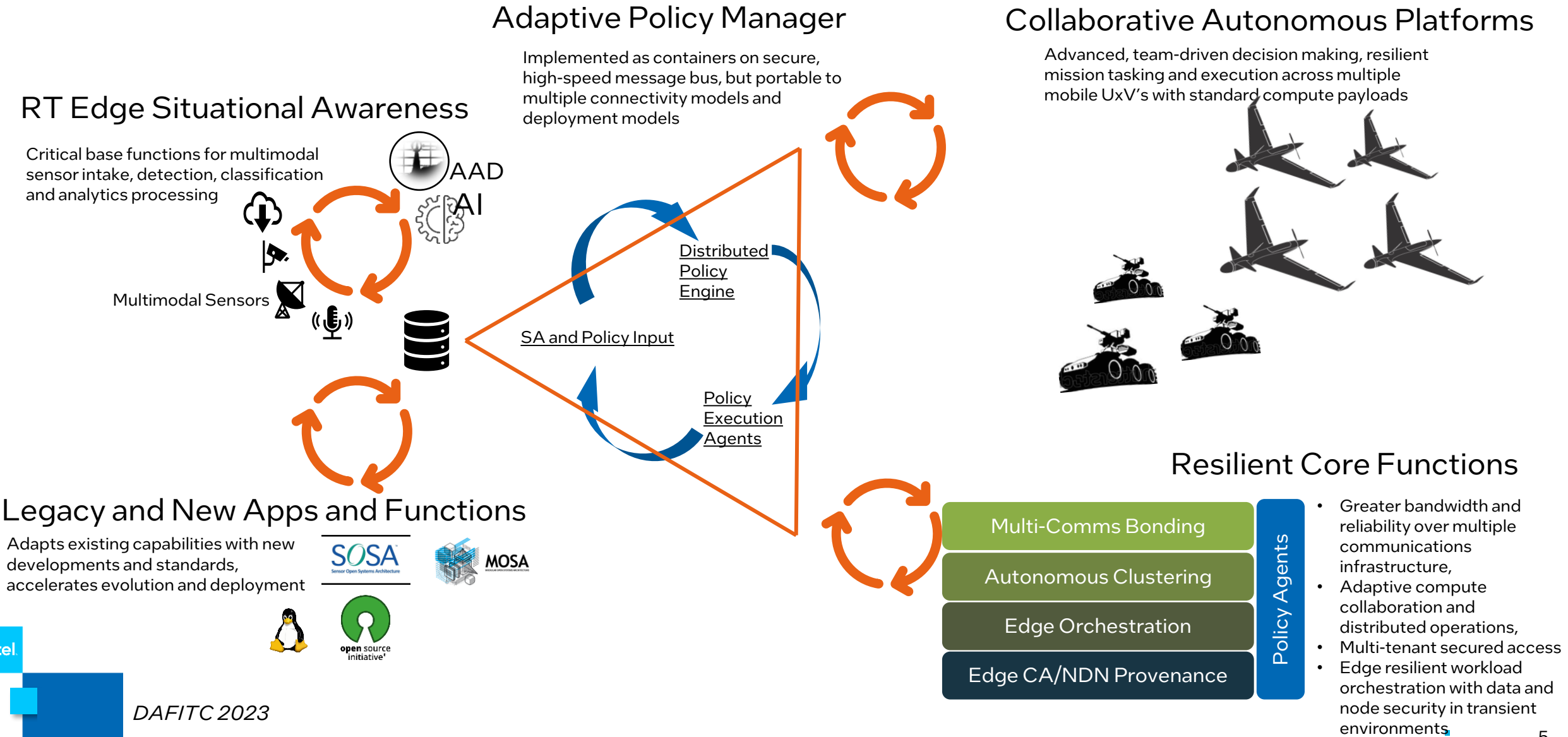
Glossary of Terms

- DDIL – Denied, Disconnected, Intermittent and high Latency communications environment
- P2P – Peer to Peer
- DAA – Detect and Avoid
- AAD – Adaptive Anomaly Detection
- CA – Certificate Authority
- UxV – Unmanned (air, sea, ground, space) Vehicle
- SA – Situational Awareness
- GenAI – Generative AI
- OCI – Open Container Initiative
- SWAP-C – Size, Weight and Power and Cost

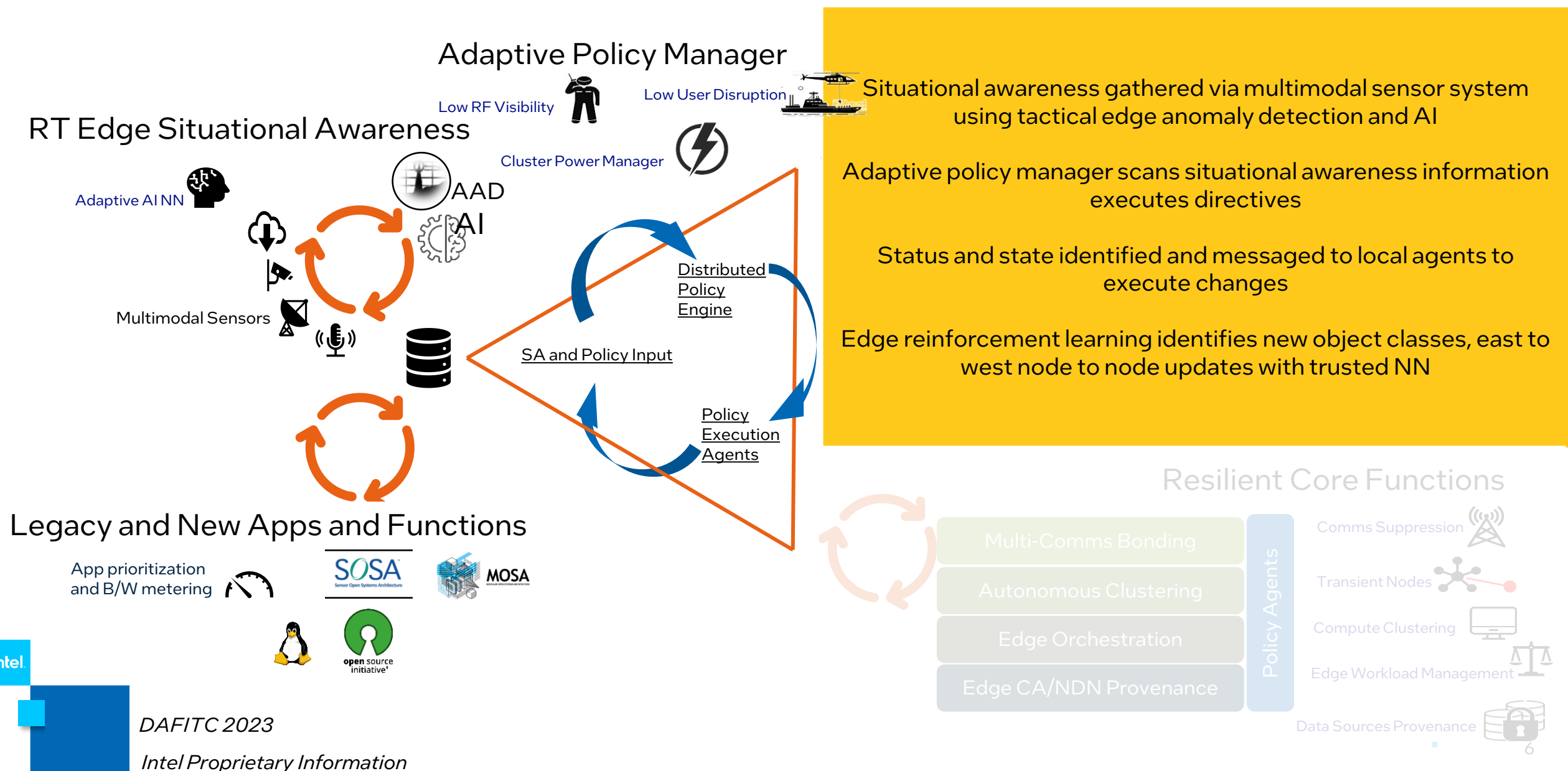
Edge Tactical Operations Challenges for Autonomous and Human Operators



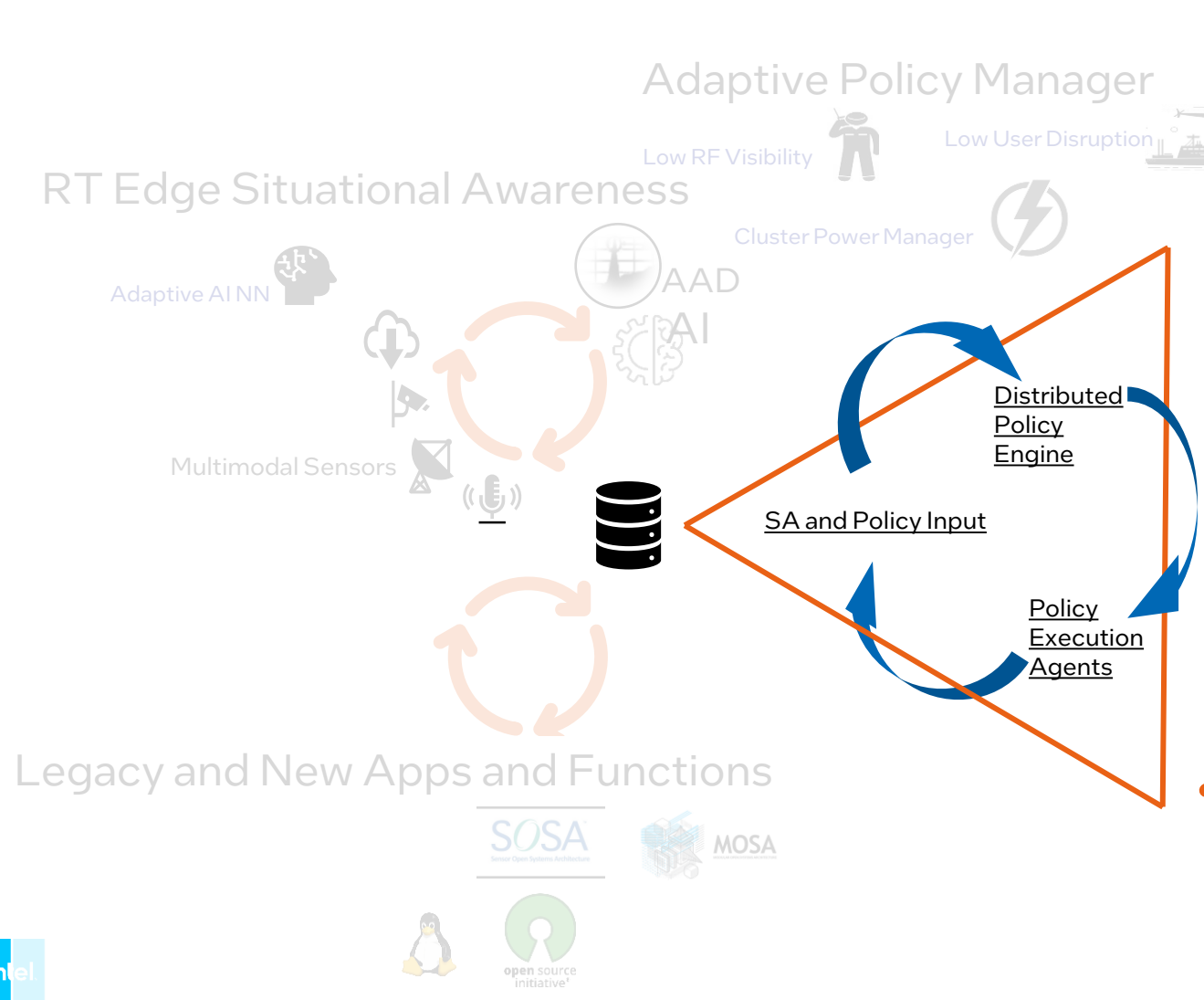
Designing Open, Modular SW for Resilient Operations at the Tactical Edge



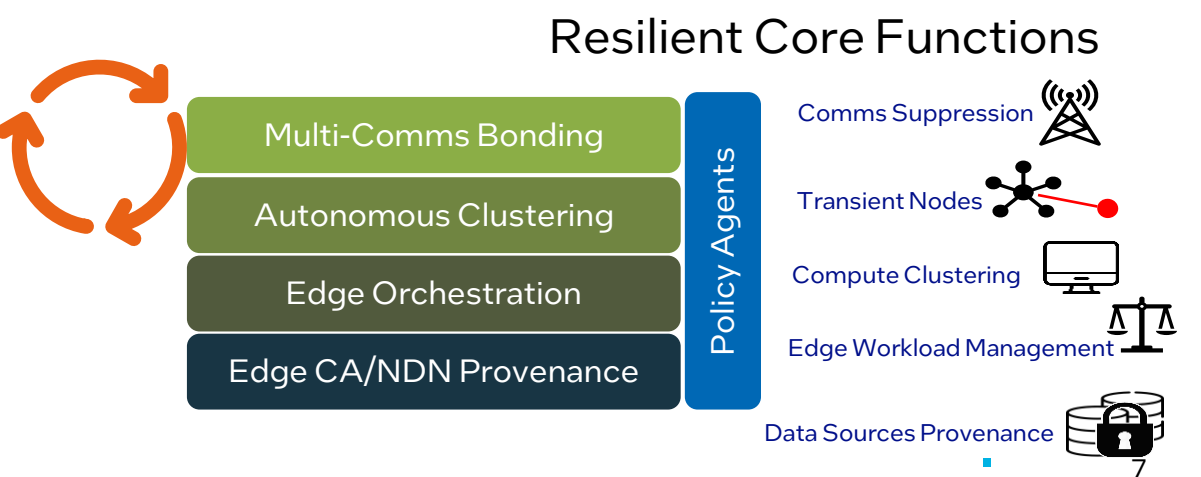
Designing Open, Modular SW for Resilient Operations at the Tactical Edge



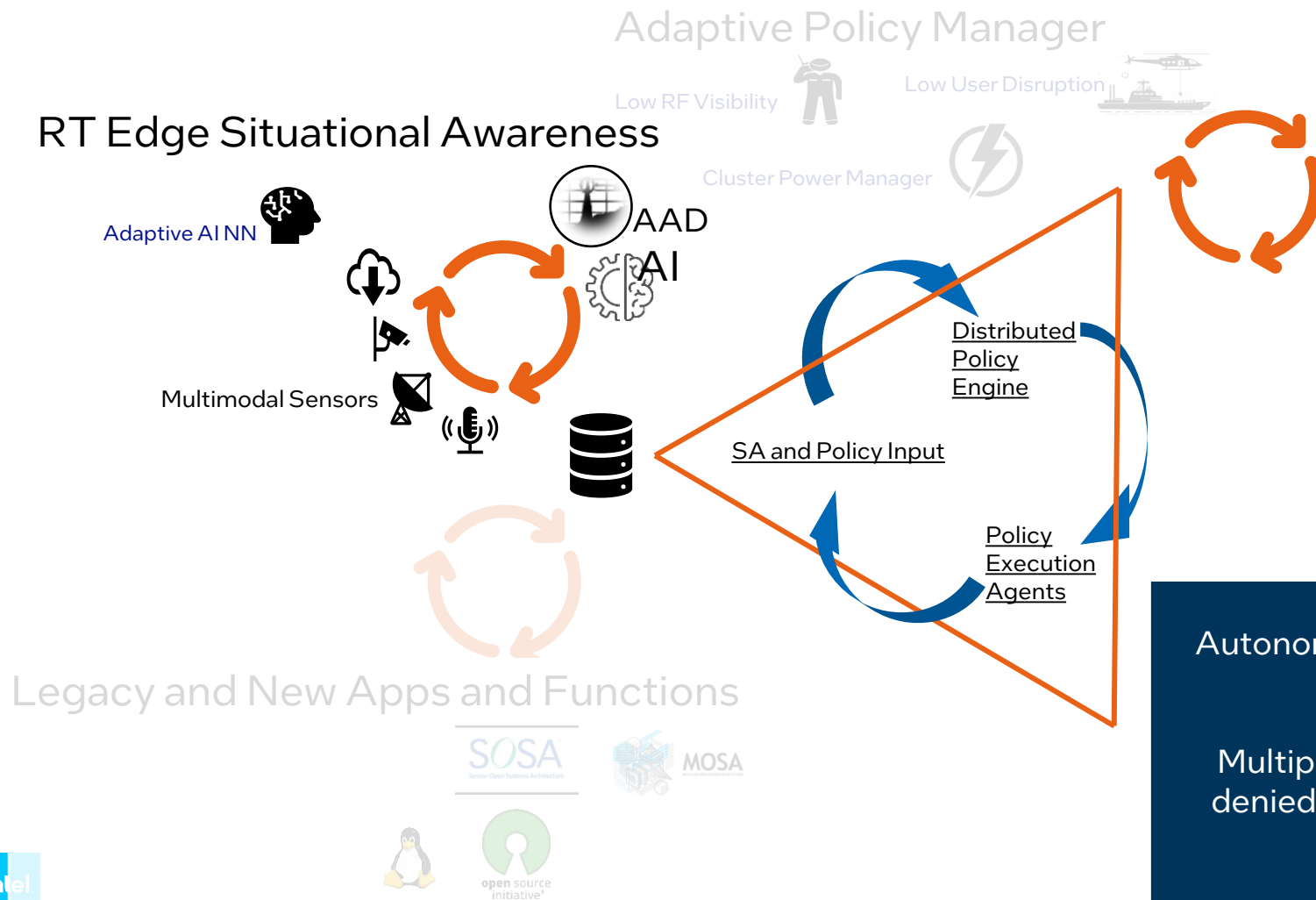
Designing Open, Modular SW for Resilient Operations at the Tactical Edge



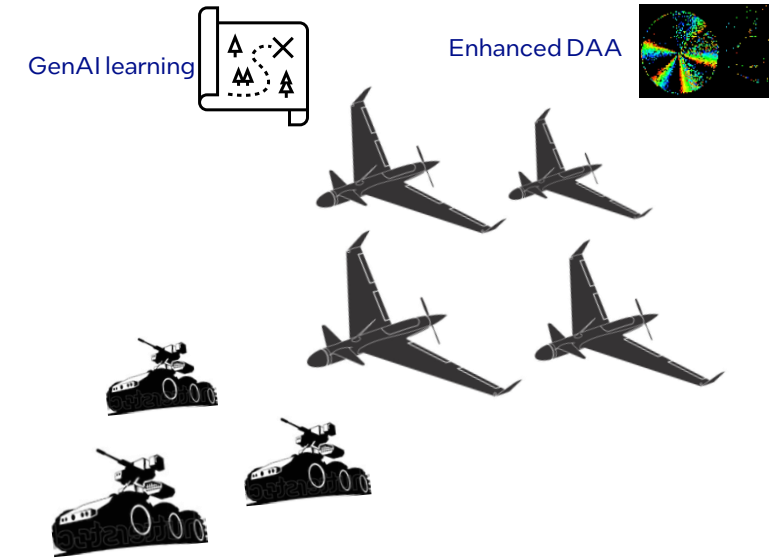
- Policy agents receive state broadcasts and execute local device and application responses
- Fully distributed tactical edge architecture resilient to node loss
- Data-focused, edge security enables timely information availability, provenance and key/credentials management
- Compute clustering enables tactical cloud at the edge resource coordination and workload orchestration
- Smart comms manager enables multiple communications options for greater bandwidth / assured data delivery



Designing Open, Modular SW for Resilient Operations at the Tactical Edge



Collaborative Autonomous Platforms

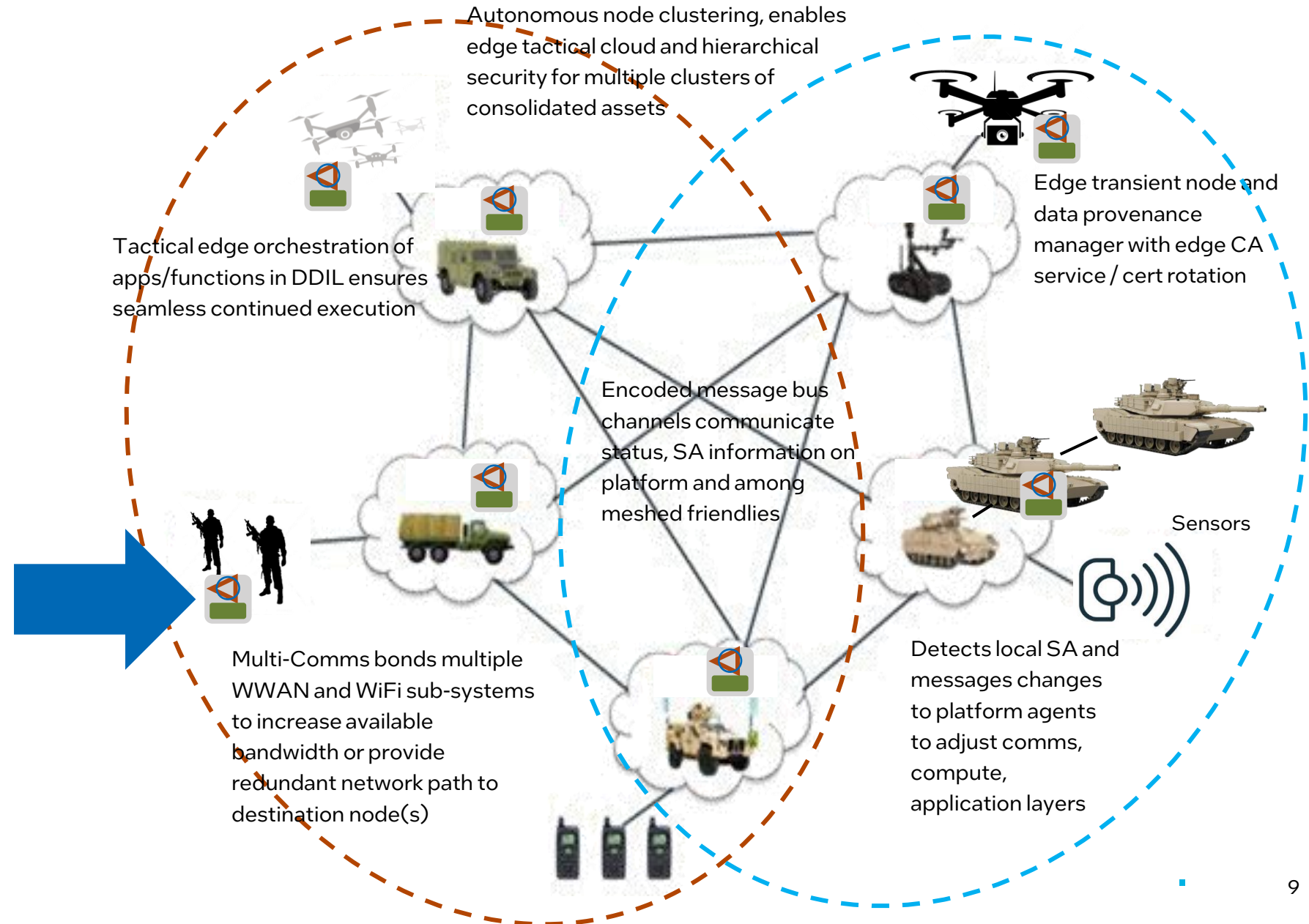
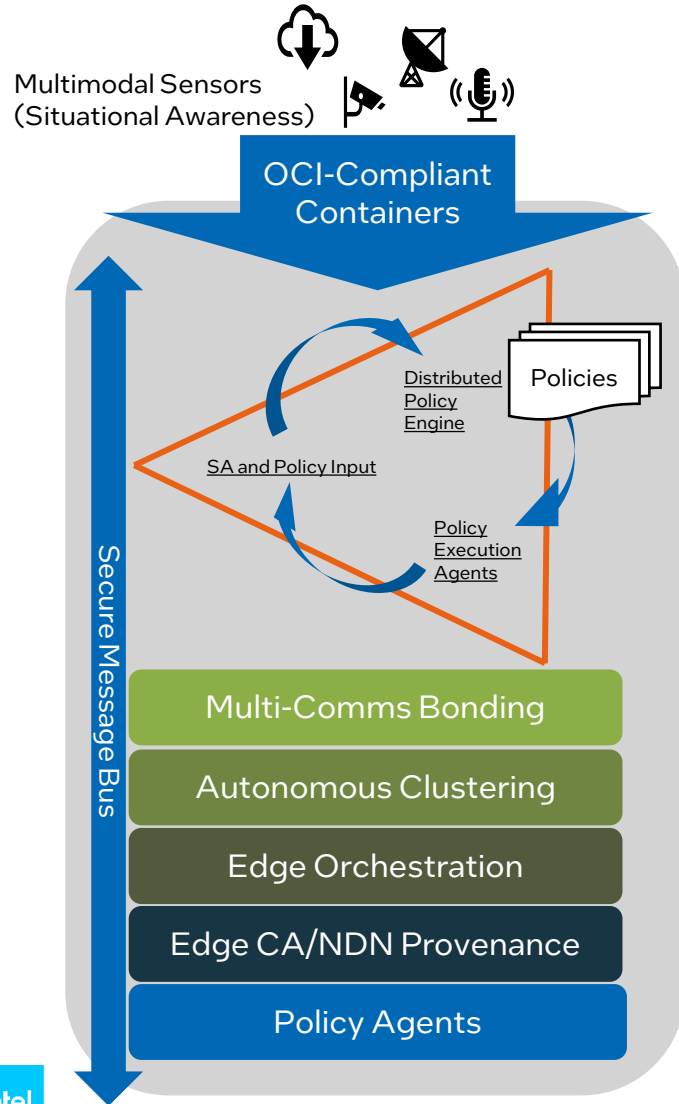


Autonomous system utilizes SA data and sensors for enhanced DAA, photogrammetry and mapping functions

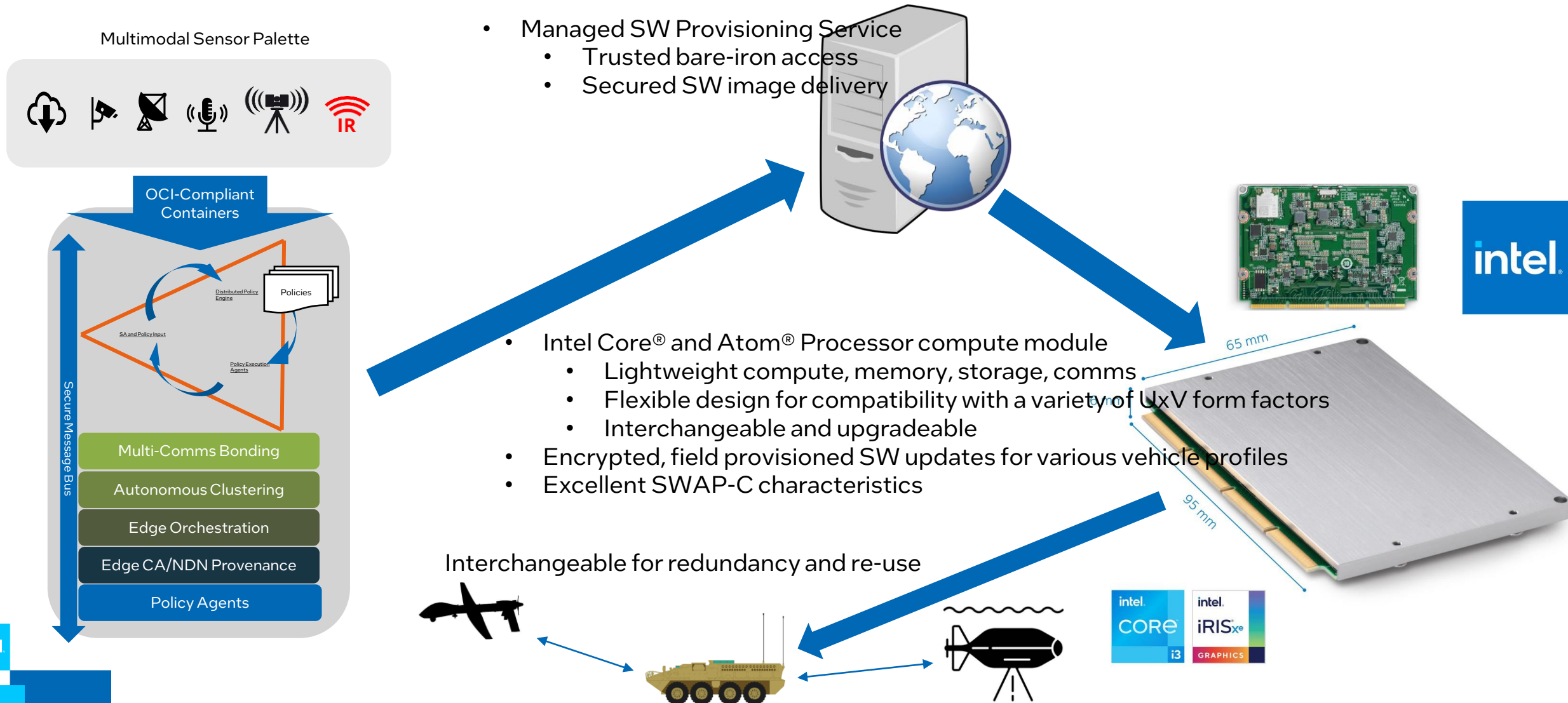
Multiple vehicle mission tasking and operation in DDIL / GPS denied environments using peer-to-peer consensus model of operation with policies

GenAI learning to optimize mission strategies and improve navigation capabilities

Architecting Critical Services for Meshed Resilient Edge Operations



System View – A Concept for a Universal Compute Module and Provisioning Service at the Tactical Edge

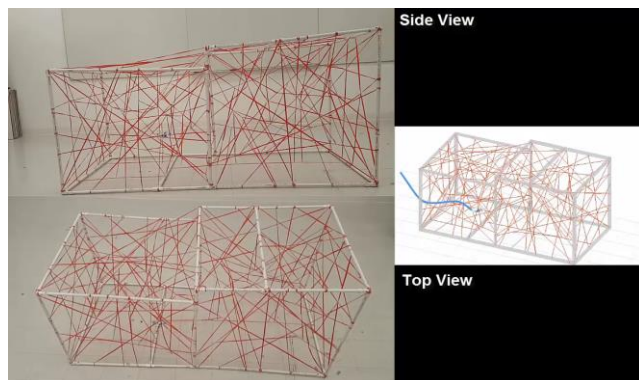


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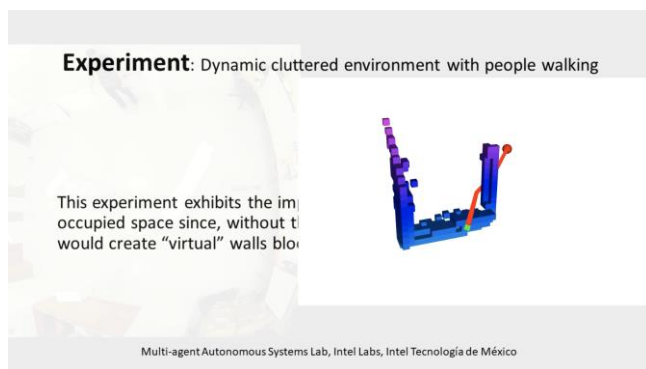
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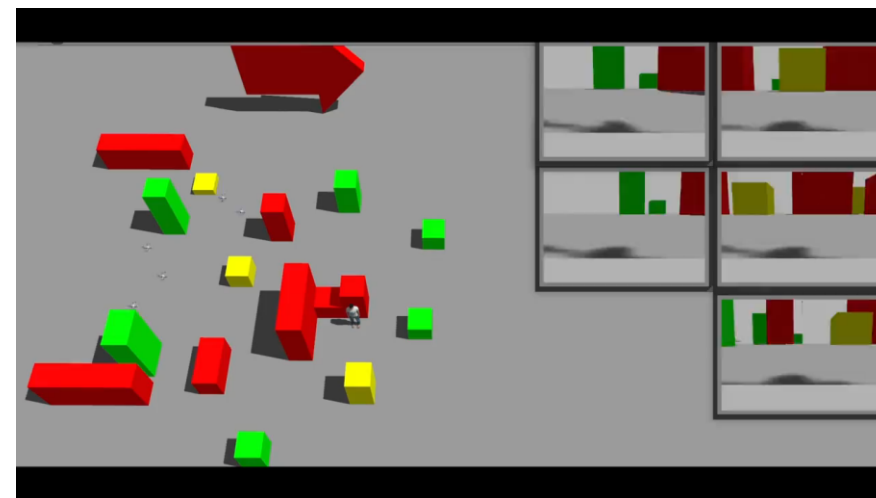
Proof of Concepts for Resilient, Autonomous Solutions for Defense and Federal Markets



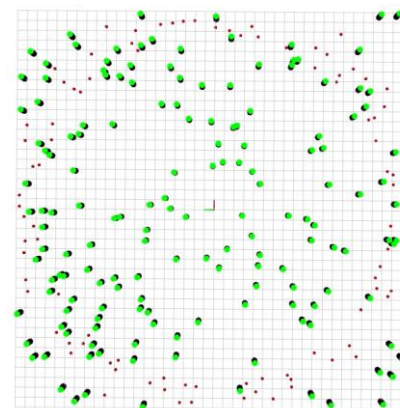
Path planning in close quarters



Dynamic environments – DAA and deconfliction



Autonomous P2P team mission tasking



Scalable Collaborative Path Planning

Summary

- Use of autonomous systems with human operators and increased tempo at the tactical edge drives need for resilient operations and mission intelligence
- Autonomous resilience (at least) must address communications, compute, node and data level security, minimize potential points of failure, operate safely and intentionally in DDIL and be operationally redundant/reusable
- Intel has significant development and experience in resilient commercial and industrial infrastructure and platforms
- Interested to know more? Reach out to your local Intel Representative for a more detailed discussion on how we can collaborate on the Mission together.

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