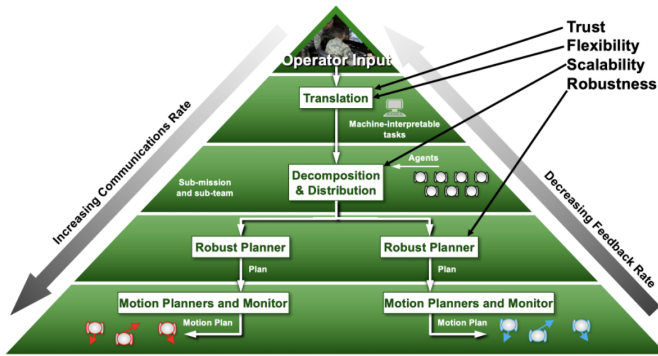


Inter- and Intra-Team Coordination from High-level Specifications (IITCHS)

IITCHS is a collaboration between MIT and MIT Lincoln Laboratory to develop and field test methods for planning and coordinating teams of autonomous systems based on spatial and temporal constraints and goals. The IITCHS framework was developed by Lincoln researchers and integrated into the MIT MOOS-IvP autonomy framework by MIT student(s). Field testing in the Fall of 2021 consisted of four Heron USVs in a coordinated mission on the Charles River. This will be extended to nine Heron USVs in 2022 with other platform types included in field exercises. The overall project goals are to (a) validate the IITCHS framework and algorithms on field-tested platforms, (b) provide existing MOOS-IvP autonomy users with a temporal planning tool with the integration layer implemented, and (c) provide existing or potential IITCHS users with a platform autonomy system with a mature integration layer.



Status:	Ongoing since July 2021
Sponsor(s):	MIT Lincoln Laboratory
People:	Craig Evans, Mike Benjamin (PI), Tyler Paine, Supun Randeni
Robots:	https://oceanai.mit.edu/pavlab/herons
Software:	MOOS-IvP public codebase, MOOS-IvP-Pavlab codebase, IITCHS codebase
Photos:	https://oceanai.mit.edu/media/IITCHS-Tests/album

Relevant Prior Publications

2021 (1 item)

1. K. Leahy, Z. Serlin, C.I. Vasile, A. Schoer, R. Tron, and C. Belta. Scalable and Robust Algorithms for Task-based Coordination from High-level Specifications (ScRATChES). *IEEE Transactions on Robotics (Submitted)*, 2021.

2019 (1 item)

2. A. Jones, K. Leahy, C.I. Vasile, S. Sadraddini, Z. Serlin, R. Tron, and C. Belta. ScRATChES: Scalable and Robust Algorithms for Task-based Coordination from High-level Specifications.

In *International Symposium on Robotics Research (ISRR 2019)*, Hanoi, Vietnam, October 2019.

References

- [1] A. Jones, K. Leahy, C.I. Vasile, S. Sadraddini, Z. Serlin, R. Tron, and C. Belta. ScRATCHS: Scalable and Robust Algorithms for Task-based Coordination from High-level Specifications. In *International Symposium on Robotics Research (ISRR 2019)*, Hanoi, Vietnam, October 2019.
- [2] K. Leahy, Z. Serlin, C.I. Vasile, A. Schoer, R. Tron, and C. Belta. Scalable and Robust Algorithms for Task-based Coordination from High-level Specifications (ScRATCHeS). *IEEE Transactions on Robotics (Submitted)*, 2021.

See also:

<https://www.ll.mit.edu/r-d/projects/coordinating-teams-autonomous-systems>