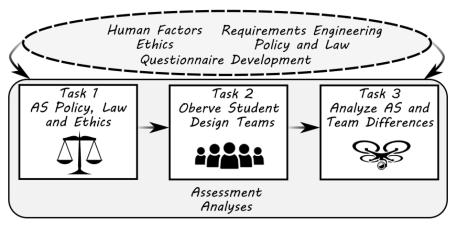# Formation, Implementation, and Verification of Requirements for Human-Autonomy Teaming

Proposed Research Tasks

Problem Statement

- Investigate the formation, implementation, and verification of requirements for autonomous systems, systems which have inherent uncertainties that challenge the static nature of requirements.
- Investigate current and future policies and laws that may impact autonomous systems requirements engineering, including ethical aspects.
- Develop a novel human study to observe UAH and NPS student design groups
- Develop a toolset to aid in the engineering of autonomous systems requirements for human-autonomy teaming.

Impact

- **Research Impact**: Technical report and/or one or more journal manuscripts discussing the human study and the investigation into current and future policies and laws that will impact autonomous systems requirements engineering; Reusable design team experiment, questionnaire, and semi-structured interview on design teams;
- **Warfighting Impact**: Evidence of the formation, implementation, and verification of autonomous systems requirements; Identification of approaches to aid in requirements engineering. Findings toolset will be directly applicable to DON systems and design engineers.
- **Assessment**: Rigorous statistical and engineering analyses

Transition

- Supports the "Autonomy in Context" CRUSER FY21 theme and incorporates topic areas of ethics, policy, and law.
- The internal (NPS: Systems Engineering and Policy/Law) and external collaborative team (UAH: Systems Engineering, Psychology, and Philosophy) will leverage the work performed here to propose for multi-year ONR and multi-year Army CCDC funding, working with Army leaders at UAH-Army Center.
- Follow-on topics: Validating simulations to be used during AS requirement development; Studying the warfighters' interactions with AS on the battlefield to improve testing of requirements; Development of novel verification processes for dynamic system performance.

Seed Research Program 2021

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