# Attachment 1 – DAGSI Research Topic Template

**NOTE: Under the Cooperative Agreement, Technical Directorates have three options for topics. First, a topic can strictly be considered in the pool for the state allocation of funding. DAGSI will work across the TDs for this allocation. Second, the TD can be prepared to be a funding partner with the State of Ohio. This would include: providing additional funds to support additional recipients of a topic, or expand the proposers team to include additional members on a topic. Third, the TD may elect to fully fund a topic not selected for State of Ohio funding or to pursue University teams outside the State of Ohio. Contact lindsay.kotouch.2@us.af.mil for questions.**

1. **Research Title:** Heterogeneous Integration Packaging
2. **Individual Sponsor:**


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3. **Academic Area/Field and Education Level**

   Electrical Engineering, Mechanical Engineering, Material Science, Physics, or Chemistry (BA/BS, MS or PhD level)

4. **Objectives:** The goal of this research project is to develop 3D heterogeneous integration (3DHI) packaging techniques using either traditional or non-traditional fabrication techniques (such as additive manufacturing techniques, polymer materials, etc.). We are expanding in-house 3DHI fabrication techniques and the development of improved packaging techniques and methodologies for 3D heterogenous integration devices is critical before they can be integrated into functional devices and applications. The performance of these devices will be compared to that of current state-of-the-art devices.

5. **Description:** This proposed project can explore the use of traditional fabrication techniques and the use of newer additive tools and processes, such as ink jet printing, aerosol jet printing, nano-imprint lithography, and nScrypt printing, can be used. Existing procedures for electronic device testing will be used to analyze and compare these devices to the current state of the art. It is anticipated that a willingness to obtain multi-disciplinary academic excellence, drawing primarily from electrical engineering, materials science, physics, and chemistry, will be required for graduate level research success.

6. **Research Classification/Restrictions:** The research performed on this project is anticipated to be mostly fundamental in nature, with no inherent publication or presentation restrictions, however public release will need to be obtained before any work can be released outside of the government. There may be aspects of requirements analysis or comparison to state-of-the-art devices that have public release or export control restrictions.

7. **Eligible Research Institutions:** Universities, DAGSI, AFIT

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