1. **Research Title:** Visualization and Fusion of Big Data

2. **Individual Sponsor:**
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3. **Academic Area/Field and Education Level**
   Computer Science/Computer Engineering (MS or PhD)

4. **Objectives:**
   The Mission Analytics Branch (711 HPW/RHWA) specializes in the fusion, analysis, and visualization of diverse datasets and "big data." The objective of this research is to investigate innovative methods for automating the discovery and display of interesting and evolving trends using fused data sources, including geotagged text. Computation and visualization of the results need not be limited to a single computer or display, but could also be distributed contextually across multiple networked machines or devices, with results being tailored to individual operator stations, as applicable. Novel concepts and approaches for collecting, combining, and visualizing data are encouraged. Successful products generated by this research will be integrated into the branch's data visualization toolkit, enhancing AFRL's collection of conceptual and practical tools being applied to meet the immediate needs of Airmen.

5. **Description:**
   The researcher will survey, design, develop, and evaluate software implementations of algorithms and approaches for fusing and visualizing the types of data typically used in command and control applications supporting real-time decision-making capabilities. The principal datasets used for this work are expected to include geotagged textual information (i.e. social media data and text messaging), timelines, maps, and a variety of similarly interesting and available unclassified source materials. The student should be prepared to apply data mining, information fusion, and graphical approaches to generate a stand-alone proof-of-concept demonstration capable of running on multiple computing platforms. (Scripting languages such as Python, and GUI libraries such as Gtk, are ideal candidates for this work.) The branch also offers large displays, 3-d displays, and touch tables and displays, which can be integrated into the final prototype, as applicable.

6. **Research Classification/Restrictions:** Unclassified, no restrictions

7. **Eligible Research Institutions:** Universities local to WPAFB preferred, but not required.