**Statement of Work:**

In Phase A of the project, the focus is on the global supply chain of the medical equipment. The analysis in Phase A will include four components:

1. Mapping and analyzing multi-tier global supply chain networks in the selected sector;
2. Mapping & analyzing select multi-layer global value chain networks corresponding with the global supply chain network;
3. Identifying high-risk firms, clusters of firms, industries, and countries; and
4. Running simulations to identify the alternative procurement routes in case of a rupture in the global supply chain.

We will identify the top countries and firms that can impose the highest interruption to the United States global supply chain of medical equipment. The model will be capable of expanding to a virtually unlimited number of backward and forward tiers. In this phase, we will showcase our multi-layer approach, where the licensing and finance network layers will be also analyzed along with the supply chain network.

In Phase B, we envision developing an interactive portal/interface to address the follow needs: 1) identifying high-risk links across the global supply chain network in select industries, and 2) providing a simulation solution that can simulate various future ruptures.

In this document we provided explicit evidences of feasibility of the work that also displays our unique capability across several industries. We have been developing our capability on this particular domain over the past several years. Deliverables will be in the form of report, visualizations, and analyzed large dataset in Phase A. In phase B we will also deliver a web portal along with new mathematical models for analyzing such complex networks.

**Schedule and milestones:**

**Mid-Phase A** (mid second month): Deliver ten-tier mapping of global supply chain of medical equipment at firm-level, industry-level, regional-level, licensing-level, and finance-level.

**Phase A Report** (end of month 3): Deliver newly developed measures of supply chain vulnerabilities and fragmentations, simulations of various scenarios about rupture in the global supply chain, as well as mathematical models to analyze multi-layer networks.

**Phase B Start** (first of month 5): Design the expanded supply chain mapping and analysis based on the need of the intelligence community.

**Mid-Phase B** (mid-month 7): Deliver multi-tier, multi-layer mapping, and report on the progress of developing novel mathematical tools for the network analysis.

**Mid-Phase B** (end of month 9): Deliver progress on the novel mathematical analysis tools. Deliver simulation and analysis interface prototype.

**Final Report** (end of month 12): Deliver comprehensive report, visualizations, network analysis, raw data, processes data, and operational analysis & simulation portal/interface (this could in the form of a public or private webpage).

**Milestone-based Budget:**

**50% of Phase A Budget:** Mid second month: Concluding and delivering ten-tier mapping of global supply chain of medical equipment at firm-level, industry-level, regional-level, licensing-level, and finance-level.

**50% of Phase A Budget:** End of month 3: Concluding and delivering newly developed measures of supply chain vulnerabilities and fragmentations, simulations of various scenarios about rupture in the global supply chain, as well as mathematical models to analyze multi-layer networks.

**25% of Phase B Budget:** First of month 5: Concluding the design of the expanded supply chain mapping and analysis based on the need of the intelligence community.

**50% of Phase B Budget:** Mid-month 7: Concluding and delivering multi-tier, multi-layer mapping, and report on the progress of developing novel mathematical tools for the network analysis.

**25% of Phase B Budget:** End of month 9: Concluding and delivering progress on the novel mathematical analysis tools. Deliver simulation and analysis interface prototype.

**Final Report** will be submitted by the end of month 12: Delivering comprehensive report, visualizations, network analysis, raw data, processes data, and operational analysis & simulation portal/interface (this could in the form of a public or private webpage).