# Dossier: MEMCOMPUTING, INC.

## SBIR Award Details

**Award Title:** N/A

**Amount:** $74,845.00

**Award Date:** 2024-05-15

**Branch:** USAF

## AI-Generated Intelligence Summary

**Company Overview:**

MemComputing, Inc. is a US-based company focused on developing and commercializing disruptive computing technology based on its patented non-von Neumann architecture. The company's primary business is creating and offering hardware and software solutions that can efficiently solve computationally hard optimization problems that are intractable for traditional computers. They aim to address the growing need for faster and more energy-efficient solutions to complex challenges in areas such as supply chain optimization, materials design, quantum chemistry, and financial modeling. MemComputing's unique value proposition lies in its ability to leverage physics to create a novel computing paradigm that surpasses the limitations of classical computing for specific problem sets, offering significant performance gains and reduced energy consumption compared to conventional digital computers.

**Technology Focus:**

* Virtualized MemComputing:\*\* Employs memory elements to perform computation, solving optimization problems by mapping them onto physical systems exhibiting energy minimization. The core technology is its "Self-Organizing Logic" (SOL) which allows problems to be solved in polynomial rather than exponential time.
* MemPilers:\*\* Software tools that translate problem descriptions into a format suitable for virtualized memcomputing, enabling users to easily access and utilize the power of MemComputing's architecture without requiring deep expertise in hardware or specialized programming languages.

**Recent Developments & Traction:**

* Partnership with AFRL (Air Force Research Laboratory):\*\* In 2021, MemComputing announced a cooperative research and development agreement (CRADA) with the AFRL focused on exploring the application of memcomputing technology to optimize scheduling in contested logistics environments.
* Technology for Defense Applications:\*\* Continued focus on using memcomputing capabilities for defense-related optimization problems, highlighting potential uses cases in areas like resource allocation and mission planning.
* Application Development in Supply Chain:\*\* Expanded efforts to apply their technology to solve complex supply chain optimization problems, showcasing improved efficiency and cost savings for businesses.

**Leadership & Team:**

* John Beane (CEO):\*\* Background includes experience in executive leadership roles within technology and investment firms, bringing expertise in business development and strategic partnerships.
* William Massey (CTO):\*\* Co-founder of MemComputing. Expertise in physics and computer science and a key inventor of MemComputing's core technology.

**Competitive Landscape:**

* D-Wave Systems:\*\* D-Wave focuses on quantum annealing, while MemComputing uses a non-quantum, physics-based approach. MemComputing's differentiator is its potential for broader applicability due to its use of readily available hardware and ability to run on existing computing infrastructure.
* Classical Optimization Software Vendors (e.g., Gurobi, CPLEX):\*\* While these vendors offer powerful optimization algorithms for classical computers, MemComputing claims significant speed and efficiency advantages for certain problem types, particularly those that are NP-hard.

**Sources:**

1. [https://www.memcomputing.com/](https://www.memcomputing.com/)

2. [https://www.prnewswire.com/news-releases/memcomputing-inc-announces-cooperative-research-and-development-agreement-crada-with-air-force-research-laboratory-afrl-301389964.html](https://www.prnewswire.com/news-releases/memcomputing-inc-announces-cooperative-research-and-development-agreement-crada-with-air-force-research-laboratory-afrl-301389964.html)

3. [https://www.youtube.com/watch?v=0Wf3F8-pY70](https://www.youtube.com/watch?v=0Wf3F8-pY70) (Presentation outlining the technology)