TWC: Medium: Micro-Policies:
# A Framework for Tag-Based Security Monitors

Challenge:

- Violation of language and program intent allow cyber-attackers to hijack programs and data.
- Unreasonable burden placed on C programmer to write invulnerable code.

Solution:

- Complete mediation of instructions at ISA-level to enforce fine-grained, software-defined policies
- Hardware to accelerate policy logic (PUMP)
- Formal specification and validation of policy guarantees
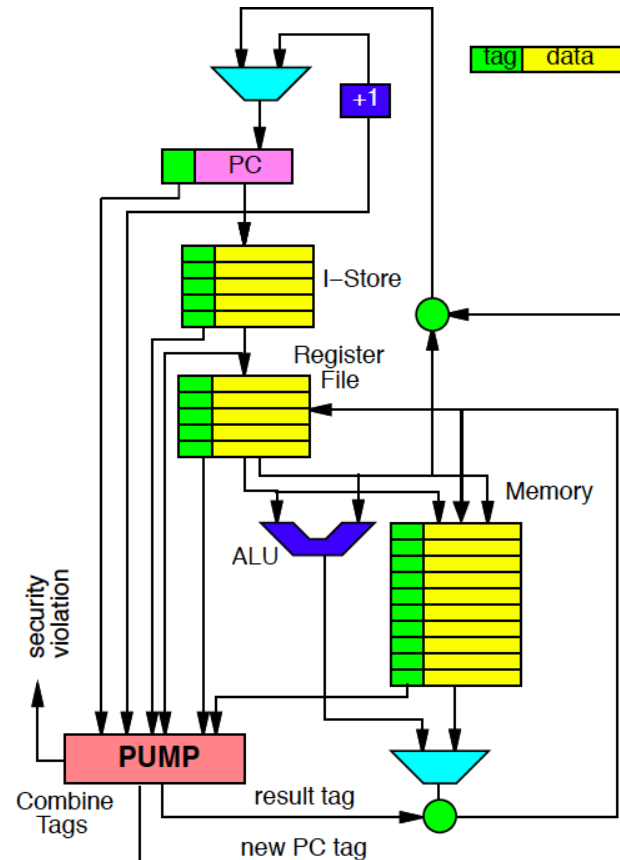
Scientific Impact:

- Provide hardware enforced interlocks to prevent security vulnerabilities
- Rapid adaptation to threats
- Identify and formalize key, low-level properties that should always be enforced

Broader Impact:

- Make today's interconnected and computerized systems worth of the trust we place in them
- Draper Laboratory developing a version (DOVER) for military and commercial systems
- Performance overheads <10% on most programs