



NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

September 23-25 | Minneapolis, MN

NSF Program (either CC or CICI): CICI

Program Area: RSARC

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**Project Title: SECTOR: Building a Secure and Compliant
Cyberinfrastructure for Translational Research**



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Quad Chart for:

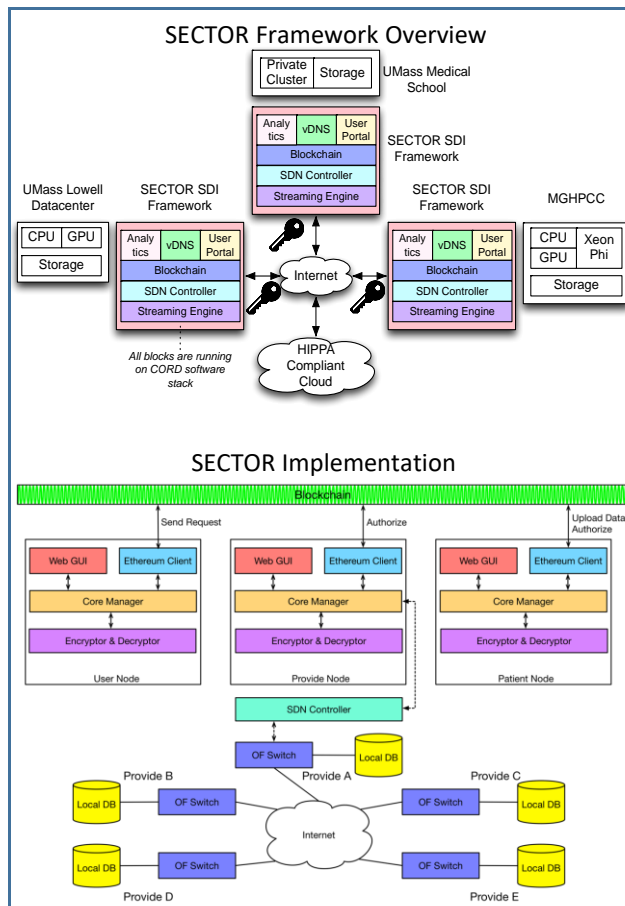
SECTOR: Building a Secure and Compliant Cyberinfrastructure for Translational Research

Challenge:

- Traditionally closed environment is not efficient to facilitate secure data sharing among multiple stakeholders
- Bandwidth and cost of cloud-based computing do not scale well with emerging needs
- Lack of regulation compliant computing facility for patient data diagnosis and analytics.

Solutions:

- Employ **blockchain** technique to facilitate secure and accountable data sharing among different parties.
- Leverage **SDI** on the network edge to provide higher data bandwidth and less transmission latency.
- Employ advanced network security, PKI model and authentication techniques to ensure regulation compliance.



Broader Impact:

- Benefit clinical research that relies heavily on analysis of sensitive data
- The proposed software defined security infrastructure can be applied in a wide range of IT infrastructures that carry sensitive data
- Strengthen the collaboration among computer scientists, clinical researchers, IT managers

Metadata tag:

- Toward Secure, Privacy-Preserving, and Interoperable Medical Data Sharing via Blockchain. 25th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2019)
- ChainSDI: A Software-Defined Infrastructure for Regulation-Compliant Home-Based Healthcare Services Secured by Blockchains. (2019) IEEE Systems Journal.
- Parallelizing blockchain transactions with sharding technique for higher throughput