Provisional MSI Token Roadmap

- **Phase 1 (complete in Q3/2022)**: Proof of Concept for token utility: Distributed, compensated scientific compute for virtual screening
  - Engineering / Product
    - Token Whitepaper (public by 07/2022)
    - Virtual Screen Job (VS Job) Spec
    - Distributed Compute Backend
      - Smart contract for VS Job lifecycle management
        - Publishes requested VS Jobs to blockchain
        - After VS Job deadline, reward mechanism evaluates candidate ligand poses and sends tokens to validators and qualifying workers
      - Node V1
        - Worker
          - Executes VS Jobs and submits candidate ligand poses to blockchain
          - Receives tokens from smart contract upon qualifying reward step
        - Validator
          - Uses a novel Proof-of-Affinity method to evaluate candidate ligand poses using QM/MM simulation and scoring functions
          - Sybil-resistant consensus scheme includes reputation staking system and escrow for robust verification
          - Receives tokens from smart contract for validating work performed by other worker nodes

        - Distributed storage layer implementation for input/output datasets
    - Web Frontend V1: Publicly accessible web frontend MVP for building, submitting, and monitoring virtual screening jobs and workflows
        - Supports uploading custom compound / protein libraries (free or proprietary)
        - Supports posting VS Jobs funded by connected wallet
        - Supports building discovery pipelines with basic process types
            - Ligand preparation
            - Protein preparation
            - Conformer generators
            - Cavity detection
            - Docking engines
        - Submits pipelines to Compute Backend for execution
        - Supports previewing and exporting pipeline result datasets
- Finance
    - Evaluate and select separate blockchain or ETH L2 solution based on token dynamics and technical requirements required for compute result publication
    - Smart contract audit
- Marketing
    - Token rebrand
    - Launch official website with mailing list
    - Social media presence
    - CoinMarketCap listing
- Operations
    - Begin building a target user group for the platform (researchers, industry employees, students, testers)

        - Start product steering committee with selected candidates from target user group
        - Begin building partnerships with wet-labs and CROs interested in future platform integration
    - Legal
        - Begin recruiting legal specialists in blockchain technology, digital assets, and IP/patent law for future work around IP royalty distribution
- **Phase 2 (complete in Q1/2023):** Enhanced platform capability
    - Engineering / Product
        - Web Frontend V2: Additional tooling
            - AlphaFold protein source
            - Molecular dynamics integration
            - Fragment-based screeners
            - Protein sequence analysis tools
            - Homology modeling suite
            - Isostere generation
            - QSAR + pharmacophore filtering
            - ADMET modeling
            - Additional FF, QM/MM, and GPU-accelerated screeners
            - SMILES/structure search for compound libraries
        - Node V2
            - Support for worker pooling
            - GPU platform support
            - Better task selection filters allow workers to determine contribution to individual projects
    - Cross-functional
        - Workflow Specification V2

        - Engineering and ops teams work with CRO/web-lab candidates to add in-vivo assay tools and support to the Job spec
    - Legal
        - Begin building legal framework for distributing IP royalties
- **Phase 3 (tentative)**
    - Cross-functional
        - Legal and engineering teams create a mechanism to sub-license pharmaceutical IP royalties to participants in the discovery process via blockchain record
        - Engineering, ops, and finance teams add organizations/DAOs to compute network, allowing independent research teams the ability to define their own governance structures on the platform
- **Phase 4 (tentative)**