Numerical Libraries

- Cat I: Uniquely exascale
  - Fault oblivious, Error tolerant software
  - Smart (AI based) algorithms

- Cat II: Exascale + trickle down
  - Async methods
    - Overlap data and computation
  - Algorithms that minimize communications
  - Self-adapting

- Cat III
  - Autotuning based software
  - Standardization activities
  - Architectural aware algorithms/libraries
  - Energy efficient algorithms
  - Mixed arithmetic
  - Hybrid and hierarchical based algorithms (eg linear algebra split across multi-core and gpu,)