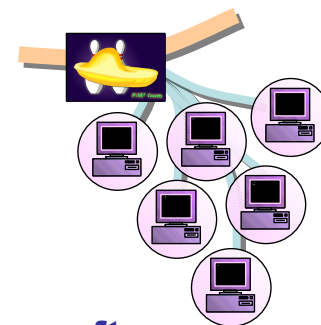
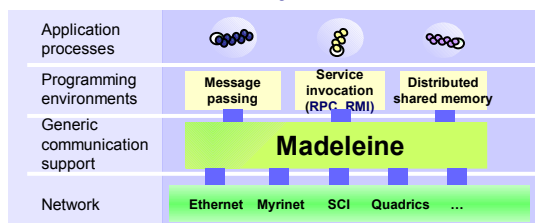


# The Madeleine High Performance Communication Library



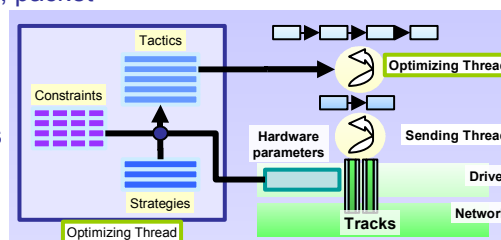
## Generic communication interfacing

- For distributed computing programming environments
  - Message passing
  - Remote procedure calls
  - Distributed-shared memory
- On top of high-bandwidth, low latency networks
  - Quadrics
  - Myrinet
  - SCI



## Original features

- Expressiveness
  - Contract-based programming interface
  - Application constraints
  - Fine-grained message semantics control
- Adaptation
  - Dynamic communication scheme optimization
  - Opportunist, asynchronous, multi-flow, packet scheduler/optimizer
  - Dynamic transfer method selection
- Extensibility
  - Programmable optimization strategies
- Good properties
  - Efficiency, reactivity, portability



## Madeleine-enabled versions of popular distributed computing software

- MPI implementations
  - MPICH-Mad Argonne National Laboratory
  - Yampii-Mad University of Tokyo
- Network-attached disk
  - ISCSI-Mad University of New Hampshire (using In-Kernel version of Madeleine)
- Multi-environment interoperability framework
  - PadicoTM Runtime Project

## Performance results

- On top of Quadrics
  - Latency ~ 2.7  $\mu$ s, Bandwidth ~ 612 Mbytes/s (using regular unpatched Linux kernel)
- On top of various networks

