



# **Benchmarking Publish/Subscribe Middleware for Radar Applications**

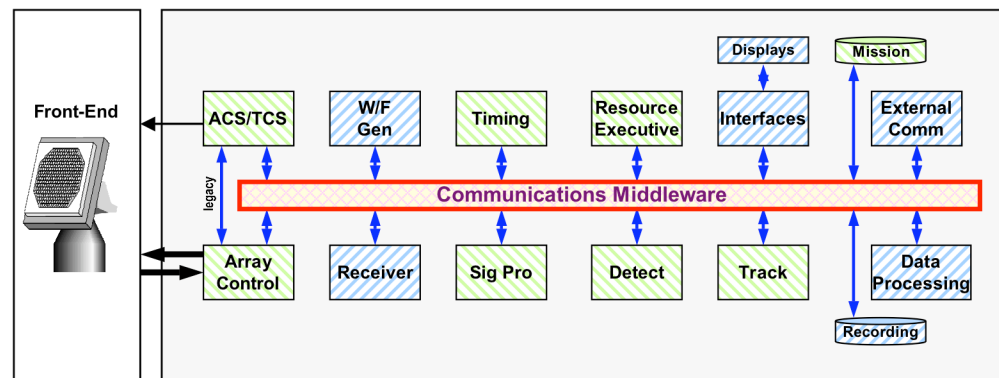
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**September 2007**



# Motivation

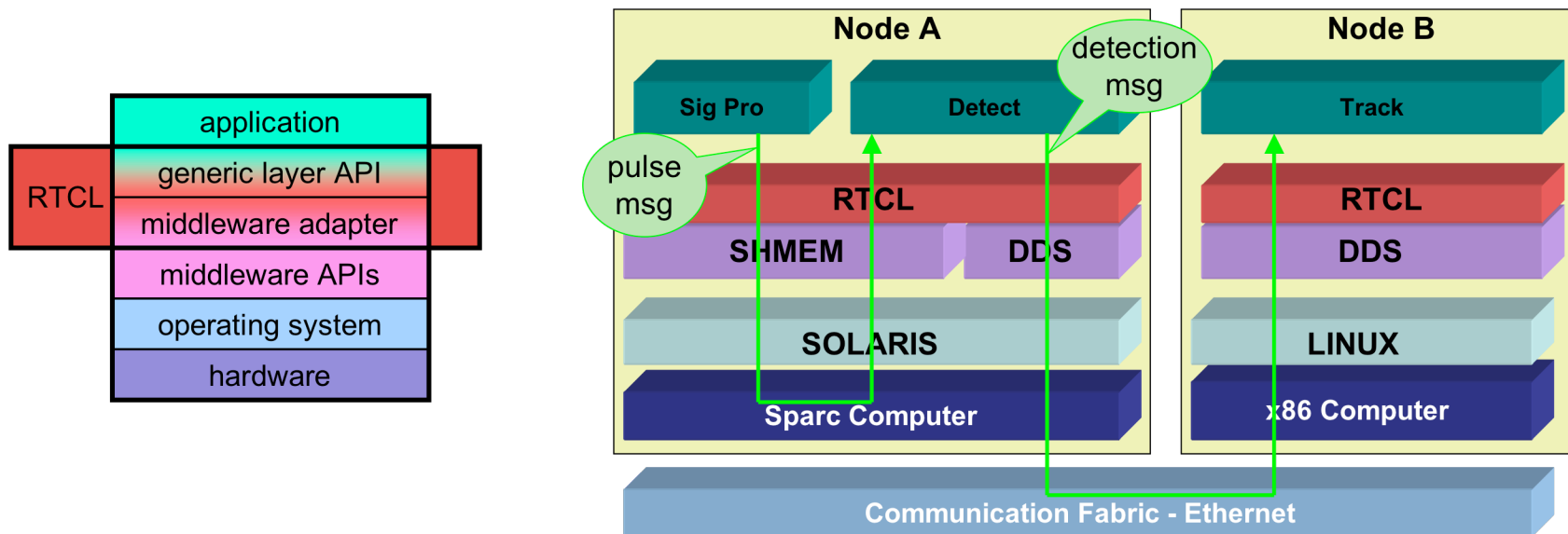
- **Future MIT/LL radar systems need:**
  - portability -- across hardware architecture, OS, etc.
  - upgradeability -- for technology refresh, adding capability, etc.
  - expandability -- for adapting to evolving mission requirements, re-purposing systems, etc.
- **Leads to modular designs:**
  - using standardized communications middlewares
  - using different middlewares for different applications
  - where single middleware may not be adequate for all communications requirements within a system





# Communications Middleware

- MIT/LL is developing a thin abstraction layer for communications middleware (called RTCL)
  - provides consistent communications API, not tied to any specific middleware
  - uses publish/subscribe semantics, DDS flavor
  - built on top of other communications middlewares
  - zero copy; low overhead (adds estimated 5 usec)





# Benchmarking Infrastructure

- **Benchmarking Application**
  - configured at runtime, instance is publisher and/or subscriber according to configuration files
  - measures latency + transmit time for each message
  - outputs histogram data of latency timings
- **Initial Characterization Tests**
  - sets of benchmarking application instances in fundamental communication patterns
  - covers parameter space for radar applications:
    - msg rates 5+ kHz, sizes 32+ kb, 10+ instances
    - Linux, Solaris, VxWorks
    - RTI DDS, LL shm, PVL conduits
  - testbed hardware:
    - 8 x86 Linux, 2 Sun Solaris, 2 VME VxWorks, IRIG boards





# Sample Results

