



AN/UYQ-70 Technology Insertion '99 Overall Plan

5/4/99



Slide 1



Outline of '99 Plans



In addition to directed Trade Studies, the '99 Technology Investigation plan is broken down into three major areas.

- VME Migration
- Mission-Essential Variant (MEV)
- Cooperation w/ SPAWAR IT-21 Initiative



Directed Trade Studies

The PMC trade study as well as some new trade studies will be performed.

- **SPARC VME Study**
 - Trade off Force versus Themis processor modules
- **Larger DAT Storage Study**
 - Vendor trade study (DDS2, DDS3)
- **Optical Storage Study**
 - Vendor trade study
- **PMC Phase II Study**
 - Next slide



PMC Phase II

The successful PMC demonstration/investigation has been completed.

- Complete the Data Collection
 - Measurements
 - Lessons Learned
- Profile the PMC modules
 - OSA Profiles
 - PMC/PCI Profiles
- Provide On-call Support
 - External and Internal
- Write up final report and recommendations



VME Migration

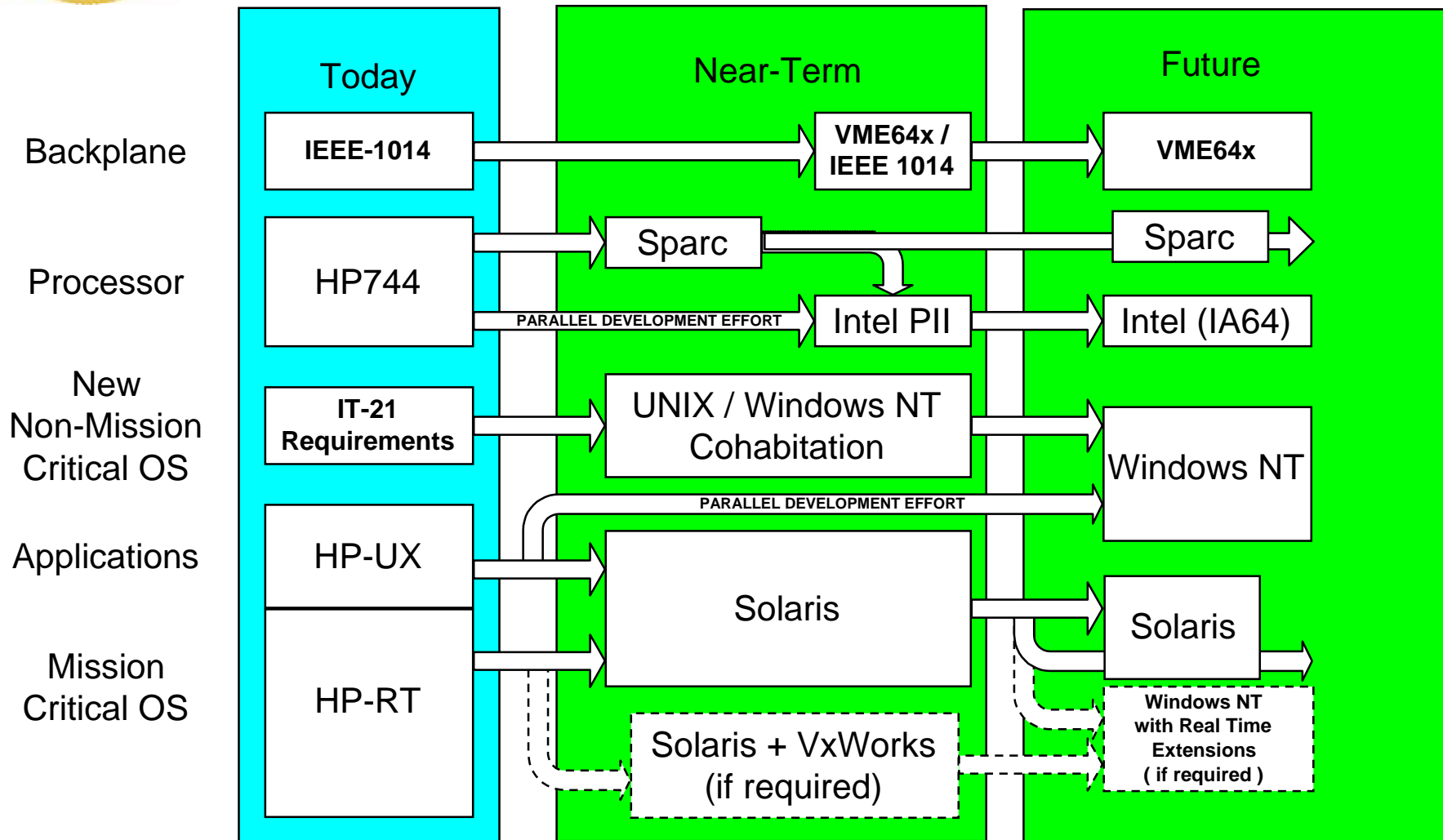


The current AN/UYQ-70 technology

- AN/UYQ-70 Backplane
 - Based on Standard VME (IEEE 1014)
- AN/UYQ-70 Processor
 - Current baseline HP 743 Single Board Computer (SBC)
 - Recompete is based on HP 744-132 SBC
 - Most users already desiring HP 744-165 SBC
- AN/UYQ-70 Operating System
 - HP-UX 10.2 & HP-RT 3.0 are the recompete baseline



VME Technology Insertion

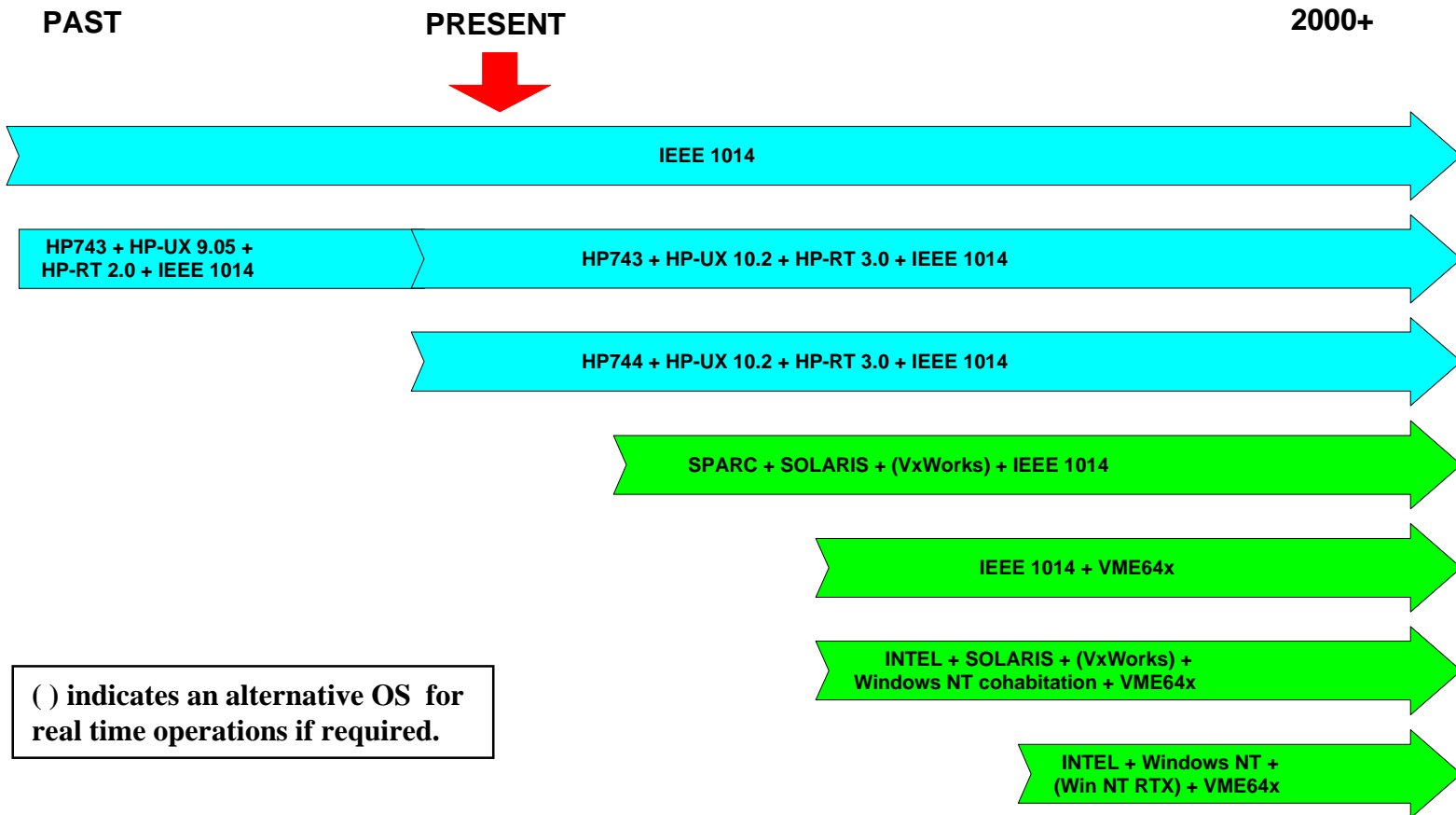




Q-70 VME Product Options



Q-70 users will have a choice of more CPUs and OSs in the future.





Mission Essential Variant (MEV)



A family of low cost solutions that address mission essential applications

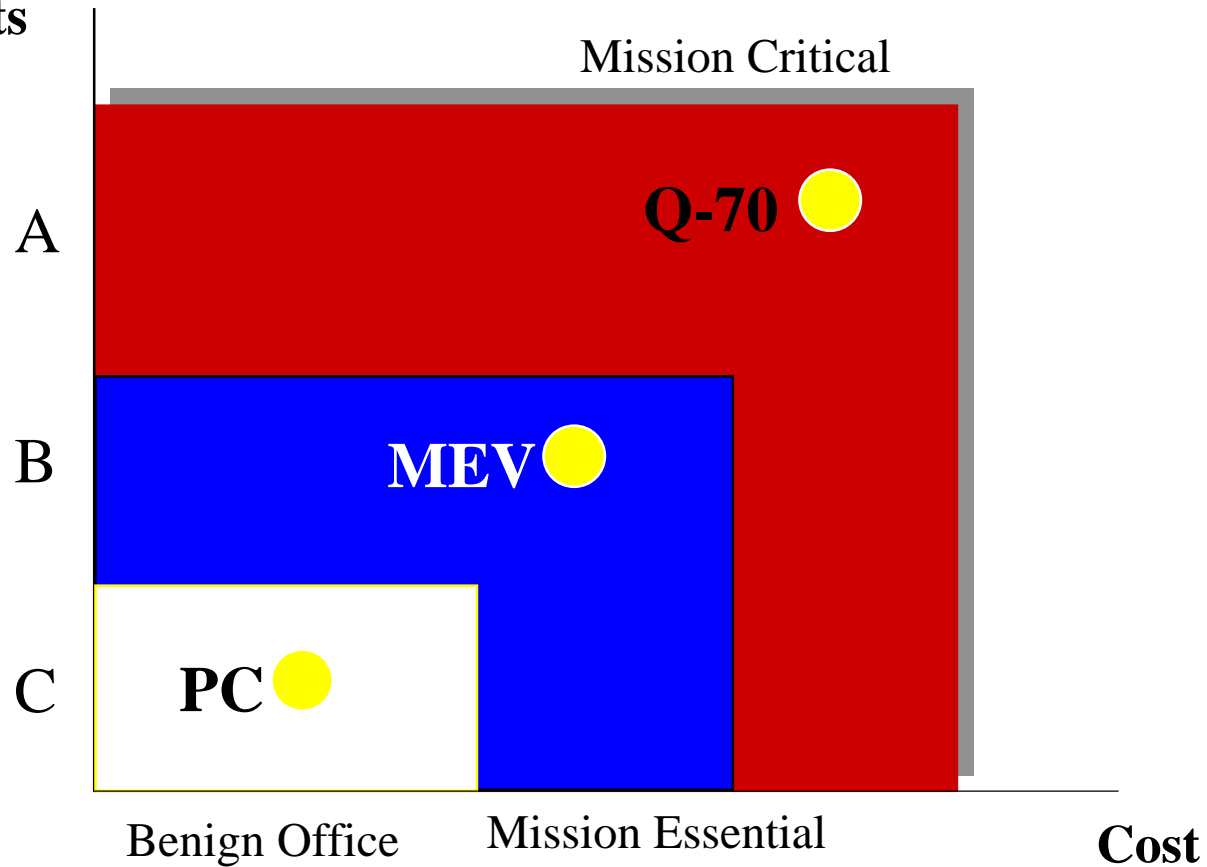
- Current concept; A client/server architecture consisting of Future Technology Demonstrators (FTD).
- Demonstrator units available for user evaluation, comment and feedback.
- Can be productized to meet user requirements.
- Includes Q-70 support infrastructure including ILS and Technology Insertion.
- Providing solutions for mission essential applications that do not require the existing Q-70 stringent Mission Critical environmental requirements.



Requirements Versus Cost



Environmental Requirements





MEV: FTD Consoles



FTD Consoles provide a low cost, IT 21 compliant alternative

FTD Console packaging concept based on the Intel Architecture (among others).

- Employs advanced Human Computer Interface (HCI) concepts.
- A thin client architecture integrated with the FTD Server supporting a Q-70 heterogeneous architecture.
- Prototype consoles for demonstration and future evolution based on user feedback.



MEV: FTD Servers



A 19” rack based concept focused at meeting the requirements for non-mission critical applications

- Concept is based on an Industry standard 6 foot high 19” rack with a 24” x 32” footprint.
- Provides the hotel space and power to house 19” rack mountable equipment.
- Functionality includes an equipment rack housing 19” rack mountable products with remote operator capability.
- Another possibility is to ruggedize commercial “turn-key” solution that already meets Navy requirements.
 - This will be considered on a case-by-case basis
 - Repackaging the “turn-key” system is also a possibility



Future Q-70 IT-21 Operational Enhancements

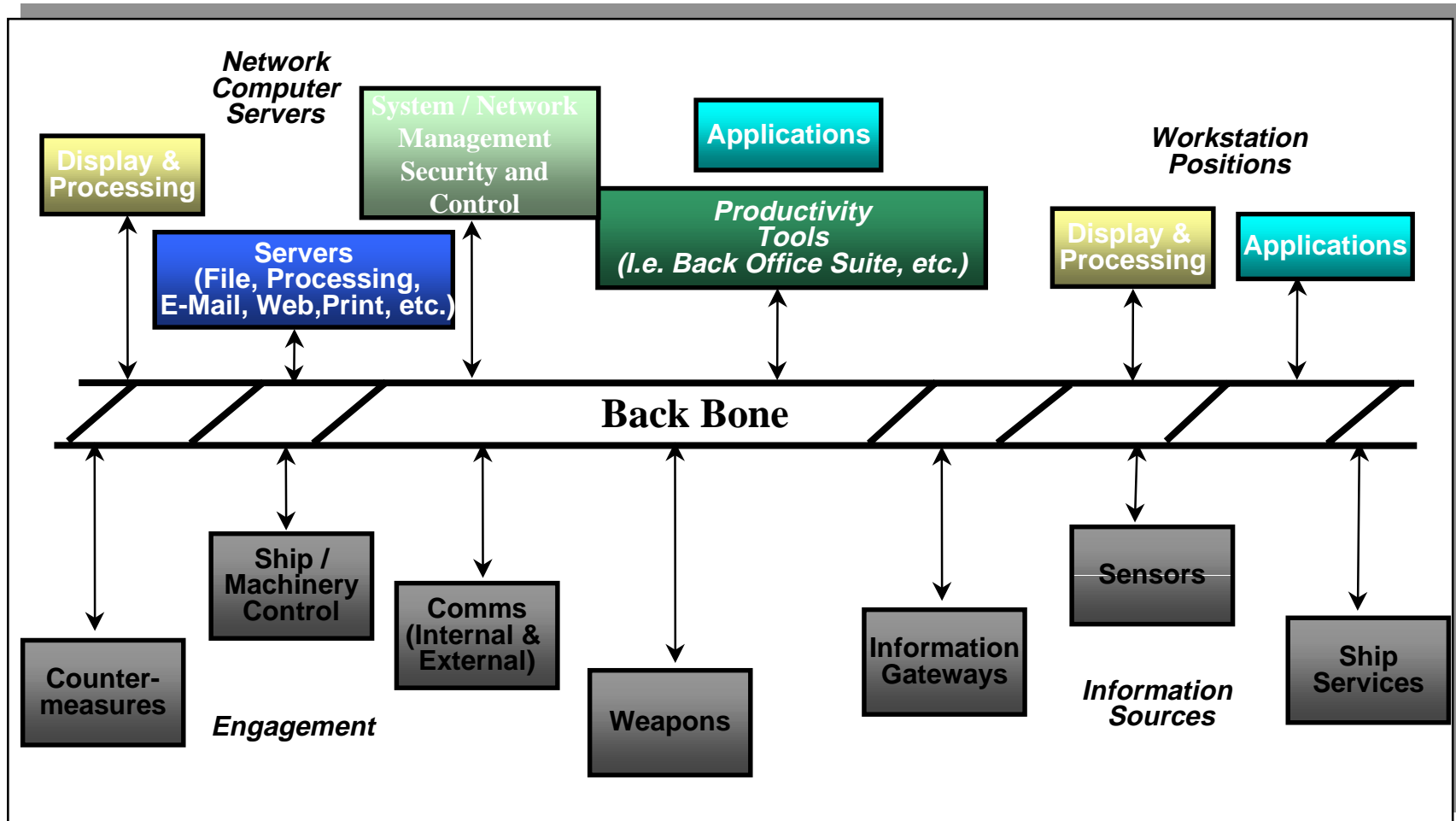


Provide the computer, network hardware and software resources required to operate the vessel

- Send e-mail messages with attachments to the crew members, for example, distribute night orders for review.
- Conduct a video and voice conference with other members of the battle group for collaborative mission planning.
- Provide battlespace visualization with seamless access to diverse and intelligence sources.
- Provide inter and intra net services; applying Internet technology to solve shipboard problems.
- Share combat system and weapons data between workstations.
- Issue weapons firing and other battle orders.
- Provide multi-level security network solutions.



Notional Network Centric Q-70 System Model





Q-70 Network Infrastructure



Q-70 product offerings will be enhanced to provide common networking infrastructure.

- Focused on reliable, highly available delivery of services to users
- Networks consist of switches, routers, bridges and network interface cards, as well as the software and tools to manage the network resources
- Product offerings will include devices (switches, routers and bridges) and software (SNMP agents/MIB, system/resource management tools) to manage system hardware and operational software configuration



Multiservice Information Distribution



Multiservice Information Distribution includes sensor data, live video and voice information

- Current Navy solutions for data distribution include point-to-point or potentially obsolete network interfaces.
- Q-70 needs to investigate methods to incorporate additional commercial technologies to meet evolving Navy requirements.
- Methods need to be developed that utilize Multiservice Networking Technologies to reduce/eliminate multiple point-to-point interfaces while providing long term support.
 - Sensor Data Distribution
 - Multimedia Information Distribution



Middleware



Define Middleware solutions that protect the Navy's investment in applications software

- Enable Navy to take advantage of changes in commercial technology with minimal impact to application software.
- JTA and DII COE activities include initial implementations of middleware aimed at warfighters.
- DCOM /Active-X, CORBA, and Java/JINI are commercial technologies that provide additional solutions for emerging Navy application requirements.
- Maintain and migrate Q-70 Unique middleware (BRM, Print Mgr, etc.) as well as consider additional middleware for RDSC, NTDS I/O, and others.



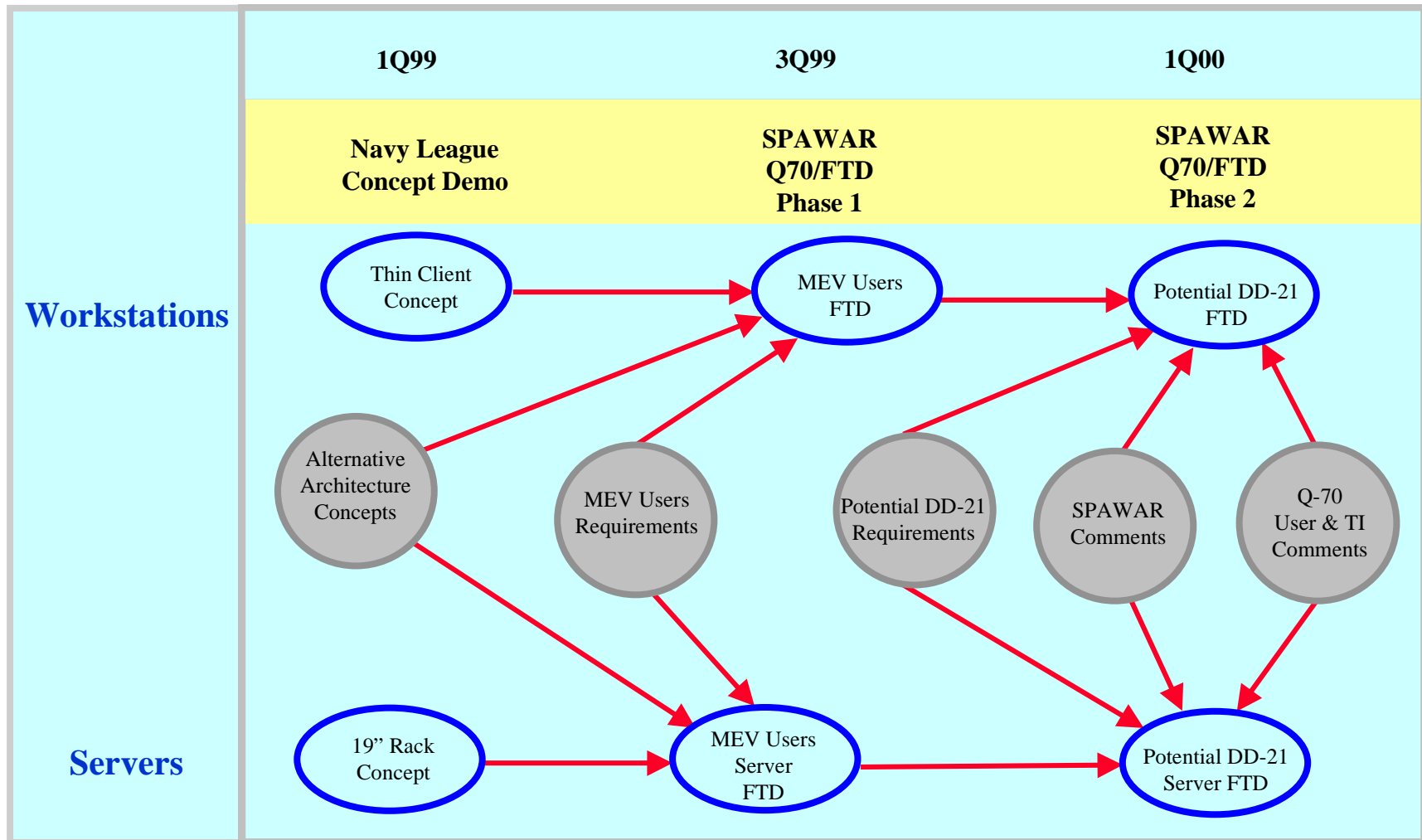
WINTEL Architecture



- Investigate survivability of PCI based offerings, et. al., in the Navy environment.
- Developing a packaging concept that is flexible enough to permit the use of various solutions as the compute engine.
- Benchmarking/Analysis of various software related issues including the following:
 - Operating Systems (UNIX, Windows, Linux)
 - BRM, Native Cohabitation, BIT, Drivers
 - X-Window support
 - Real-Time
 - Compilers (C, C++, Ada95, VB)
 - Migration Tools
 - Development/Case tools
 - Productivity Tools (Backoffice Suite)



Q-70/SPAWAR Cooperation





Summary of '99 Q-70 TI Initiatives



A comprehensive plan that encompasses current and future customers

- VME migration plan for processors, operating systems and backplanes.
- Introduction of low cost solutions
 - MEV FTD consoles and racks
 - Demonstrator units for user evaluation and feedback
- Plan in place to incorporate IT-21 initiatives into the Q-70.
- Plan to provide SPAWAR a unit for evaluation.



Demo & On-Going TI IPT Support



- Provide ongoing TI IPT and System Engineering support to PMS-440.
- Conduct additional Trade Studies as required.
 - APFDDI Replacement
 - Future Navy Topologies
- Conduct user and vendor surveys and site visits; update the coupling charts in the TI Plan.
- Q-70 needs to demonstrate heterogeneous console platform operations (Mission Critical workstations on same network as Mission Essential and Non-Mission critical workstations,etc...)



Demo & On-Going TI IPT Support (cont)



- Develop a demo suite
 - Console emulation (applications)
 - Display Kernel, BRM, etc. (Middleware)
 - System Monitor & Control, Adaptive Resource Management
 - System Support (ASVADS, MTT)
 - Multiple network protocols (802.3, ATM, etc...)
 - Multi-level security
- Conduct an end-of-year demo at the WOC in Sept.
- Publish user requirements with timelines indicating required need dates.