

**Acoustic Rapid COTS Insertion (A-RCI)
formerly
AN/BSY-1 (ECP 1000) Acoustic
Upgrade Program ACAT III**



**Program Manager's Forum
August 1996**



Acoustics Rapid COTS Insertion

Why A-RCI ?

Deliver Acoustic Capability

Improvements to All

688/726 Class Submarines Faster

than the Plans of Record



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“The Dilemma”

- **Recent Acoustic Superiority Issues**
- **Major Acoustic Capability Improvements Are Needed Now**
- **Legacy System Processing Capacity Exhausted**
 - » No Room to Implement Acoustic Improvements
- **Upgrading Legacy Systems Is Too Expensive**
 - » High Cost Precludes Procurement of Significant Improvements
 - » Militarized Legacy Systems Leave Few Upgrade Options
- **Current Acoustic Planned Improvements Are Too Little Too Late**
 - » ECP 1000 is a Prime Example... Partial Upgrade for SSN 688Is in 2002

We had to Re-think the Details of Current Acoustic Programs of Record



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A-RCI Objectives

- **Achieve dB Gain Faster**
- **Deliver Additional Acoustic Improvements**
- **Make Improvements Applicable to all SSN 688, 688I, and SSBN 726 Class Submarines (and Not All Linked to TB-29)**
- **Implement COTS Based Open System**
 - » **Increased Processing Capacity**
 - » **Growth Potential**
 - » **Reduced Cycle Time for Future Upgrades**
 - » **Better return on Development Dollars**
 - » **Space/Weight Reduction**

A-RCI Delivers these Objectives



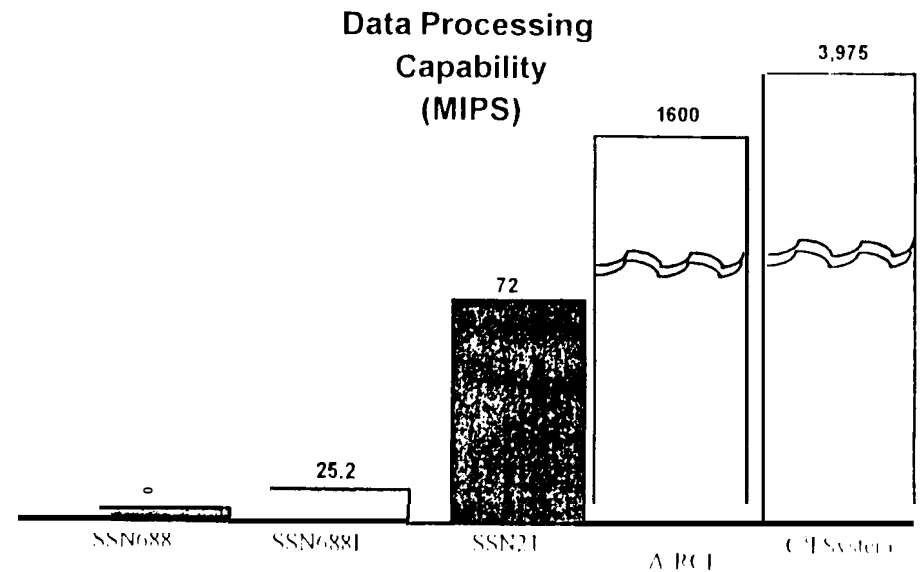
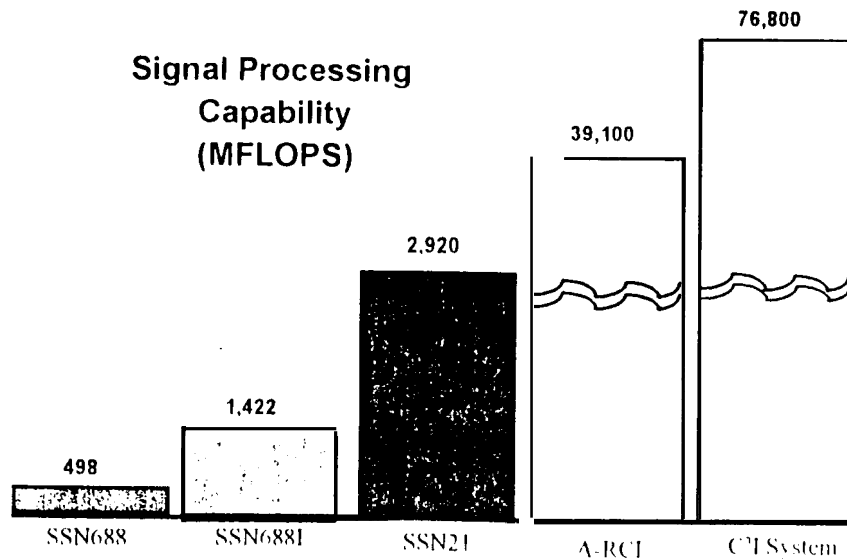
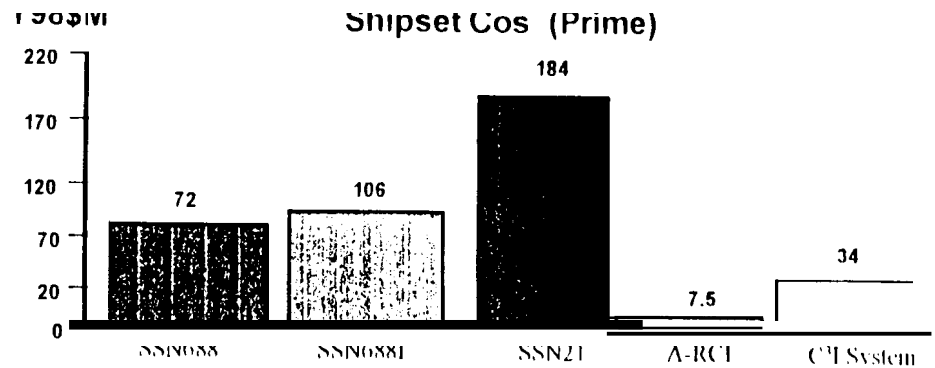
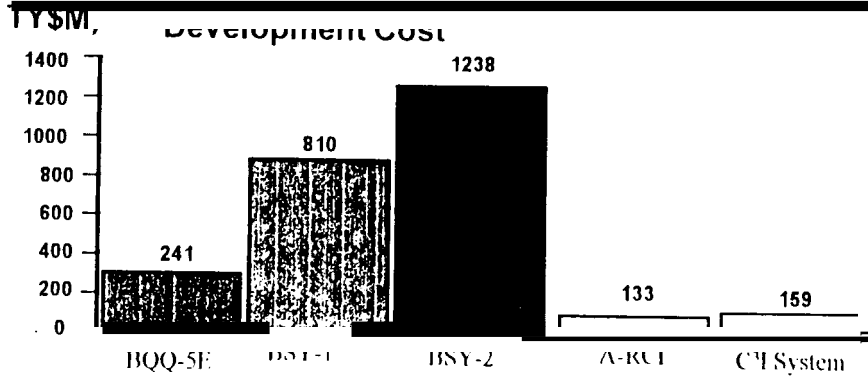
Acoustics Rapid COTS Insertion Improvements over ECP 1000

- Improved Towed and Sphere Array Performance within R&D Controls
- Performance Available in 11/97
- Implementable on all SSNs/SSBNs
- Linked with PEO-USW (ASTO) Advanced Processing Builds
- More Aggressive Leveraging of COTS Hardware/Open System Architecture



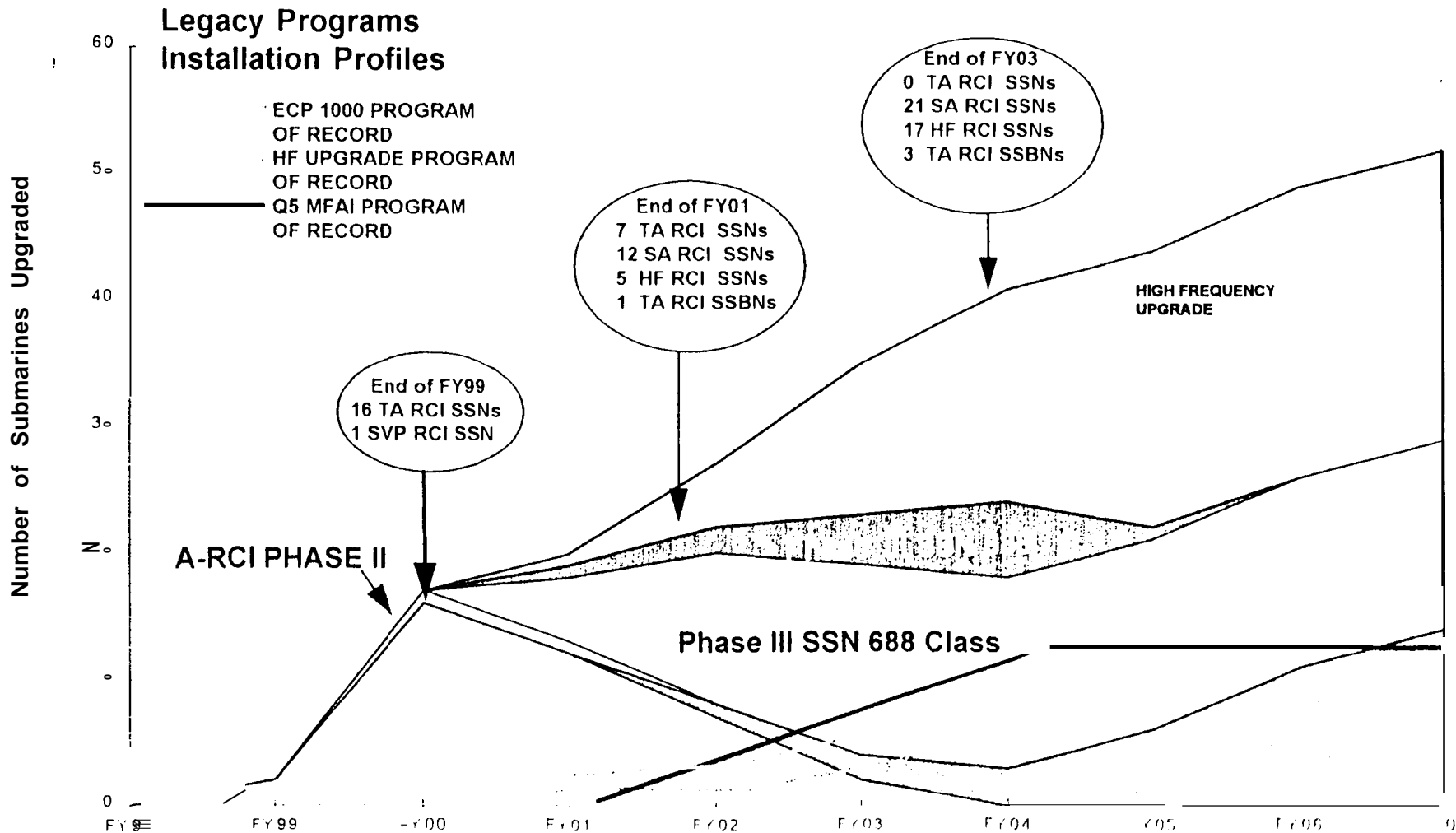
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Submarine Combat System Cost - Reversing the Trend





Acoustics Rapid COTS Insertion Installations (RAD XI)





A-RCI Acquisition Reform Initiatives



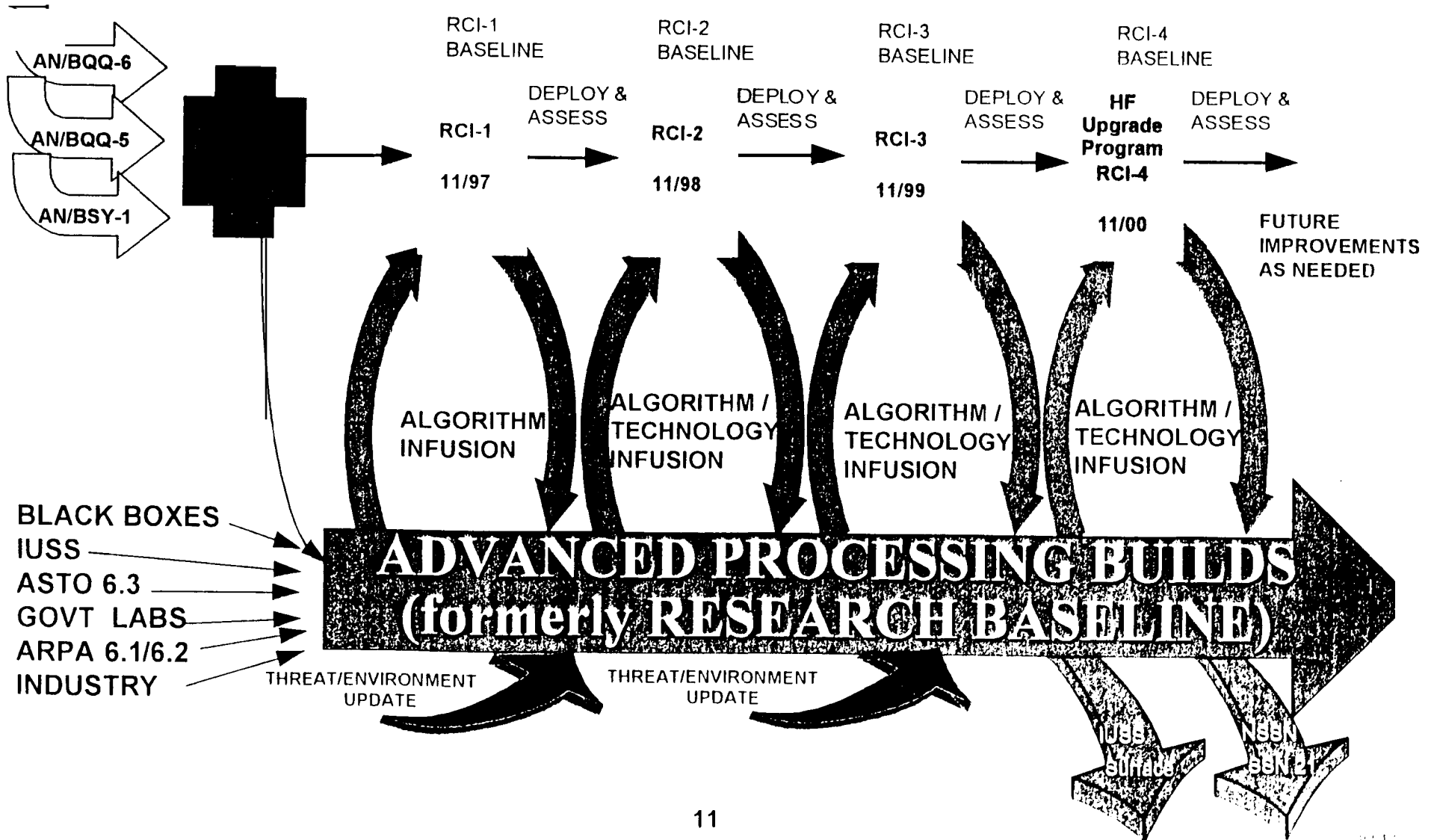
Acoustics Rapid COTS Insertion Acquisition Strategy

- **Leverage, Leverage, Leverage from Current Efforts**
 - » **NSSN SBIR for COTS Processor**
 - » **Standard AN/UYQ-70 Display Workstations**
 - » **TAC-X System Control**
 - » **Connect Submarine Sonar R&D (ASTO) with Submarine Sonar Fleet Implementation**
- **Maximum Use of COTS/NDI**
 - » **Embracing Industry Driven Commercial Products**
- **Institutionalize Software Re-Use**
- **Merge Multiple Improvement Efforts into One Development Program**
- **Eliminate Duplication Between Program Offices**



Acoustics Rapid OOTS Insertion

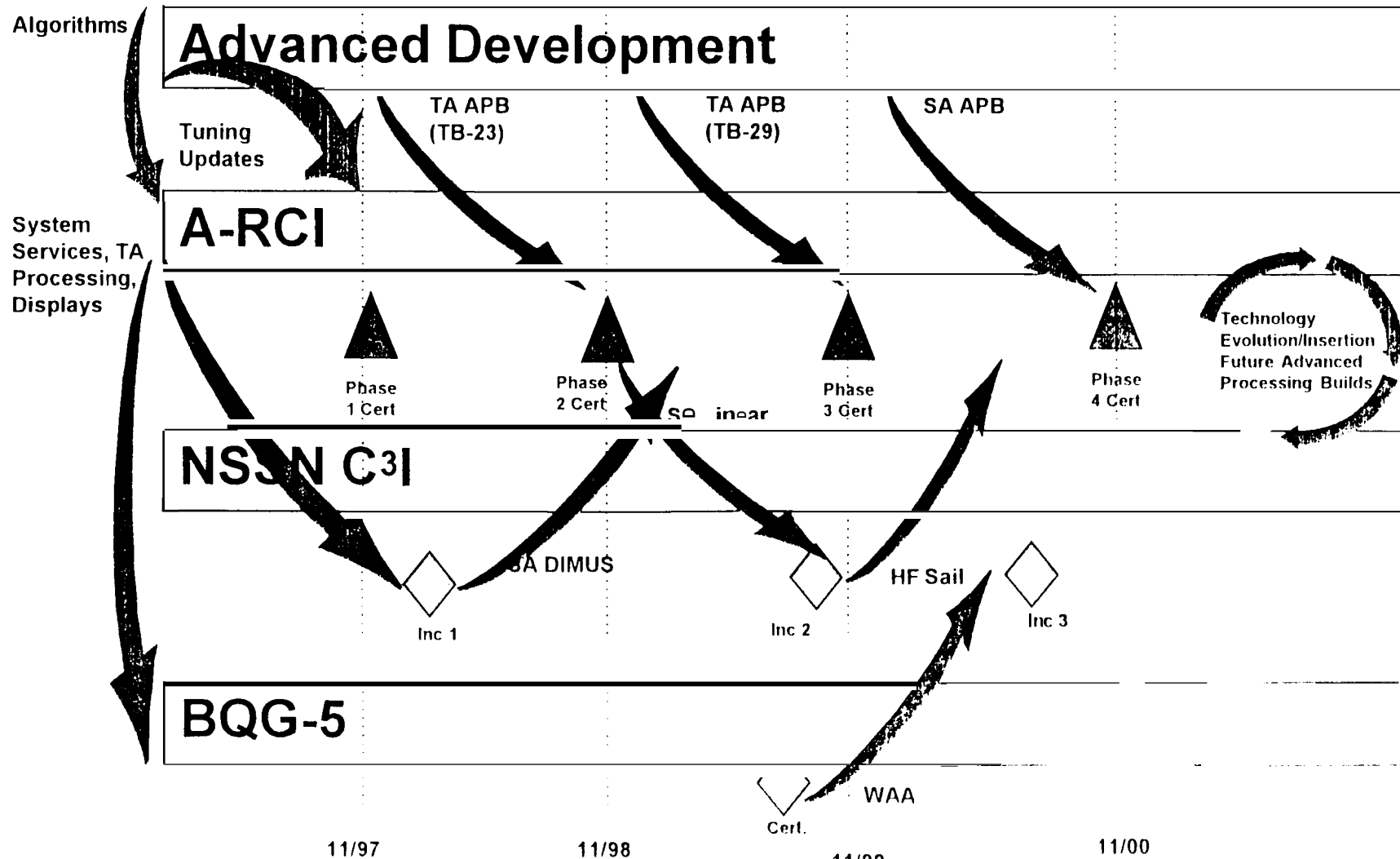
Advanced Processing Build Roadmap (Build-Test-Build)





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Submarine Acoustics Development Leveraging





Acoustics Rapid COTS Insertion Acquisition Reform Initiatives

- **Increased early involvement of OPTEVCOR to Streamline Operational Testing**
- **Minimized Use of MIL-STDs**
 - » **Original ECP 1000 SOW contained 81 Military Unique Standards/Specifications**
 - 44 Eliminated
 - 16 Replaced with Commercial Specifications
 - 21 Retained as Guidance
 - A-RCI Eliminated 5 Additional, Added 3 as Guidance
 - » **Original ECP 1000 PIDS contained 68 Military Unique Specifications**
 - 58 Eliminated
 - 2 Replaced with Commercial Specifications
 - 4 Retained as Guidance
 - 4 Retained Mandatory (Waiver Granted)
 - Primarily Interface/Shock and Vibration
 - A-RCI added 12 as Guidance and added 8 Commercial Standards
- **Formalized Integrated Product Teams**



Acoustics Rapid COTS Insertion Streamline Path to MSII Decision

- **MSII decision achieved in less than 6 weeks using revised DoD 5000 guidance**
 - » **Used Acquisition Coordination Team approach to expedite review of program documentation**
 - » **focused MSII decision on key documents -- APB AP, ASR, TEMP**
 - » **Combined the many formerly required figures, charts, and tables into a single Integrated Test Program Schedule.**
 - » **Combined the majority of “program plans” into a single master document**



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Review of Contract Requirements

- **Contract requirements expressed as a performance specification**
 - » Jointly developed by Navy/Lockheed using IPT process
- **Reduced number of data requirements on existing A-RCI contracts from 111 to 67.**
- **Maximized acquisition of data in digital format**
 - » IAW ASN (RD&A) memo dated 2 July 1996



Acoustics Rapid COTS Insertion Implementation of IPT Pricing

- **IPT pricing will allow contract definitization in < 100 days required by FAR**
 - » Estimate definitization in 125 days; NAVSEA average is over 300 days
 - » Proposal jointly prepared by Navy/Lockheed
 - » Traditional “fact finding” process eliminated
 - » Requires mutual agreement on performance requirements
 - Reduces “misunderstandings” during actual performance
 - » Lessons Learned
 - IPT Training essential
 - Build up of trust during process critical to success



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More Success Stories

- **GFE Management -- reduce administrative burdens**
 - » **Master GFE list development for both Syracuse and Manassas to support WAA, A-RCI, NSSL**
 - **Allows GFE use across multiple contracts without additional administrative modifications**
 - **One time contract modification will be in place September 1996**
- **CDRL Review -- reduction in volume**
 - » **WAA, A-RCI and NSSL contracts will be modified to deliver all CDRLs in contractor specified vice government specific format**

<u>Type</u>	<u>Original #</u>	<u>Deletions</u>	<u>Reduced Frequency</u>	<u>Relaxed/Commercial Format</u>
Pgm Mgt	18	8	1	TBD
Logistics	108	38	TBD	41
Engineering	115	24	20	57
Totals	241	70 (29%)	21 9%	98 (41%)



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Continuing Efforts

- **“Good Ideas” Clause -- a method to share/avoid costs**
 - » Multiple approaches being investigated
 - Value Engineering Changes
 - Standalone contract to collect changes across multiple contracts
- **SubCLIN Usage**
 - » Navy uses multiple subCLINs as means of tracking funding and contract oversight
 - Large administrative burden and major source of NULO's/UMD's
 - Navy practice not consistent with other services
 - Goal: Get out of subCLIN business



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Continuing Efforts

- **Asset Management -- reduce inventory tracking requirements**
 - » Form/fit/function tracking adequate for COTS
- **EC/EDI -- migration to paperless contract**
 - » CPR deliveries will utilize EC concepts
- **System Support -- merge similar efforts across programs**
 - » Merge AN/BSY-2, WAA, A-RCI support contracts
 - » Pass infrastructure to NSSN
 - » Evaluate feasibility in FY97



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Lessons Learned

- **Training of staff critical to success**
 - » IPTs, Business Process Improvement, Team Building, etc.
 - » Need to institutionalize across Navy/LMFS
- **Logistics paradigms slow to change**
 - » COTS support is “different”, but why ??????
- **Recognition of Navy/LMFS business partnership**
 - » Focus on building trust that is reflected in speed and accuracy of contract actions
 - » Balance between “profit” and “stewardship of taxpayer funds”
- **NAVCOMPT View of Savings not Tested yet**



Acoustics Rapid COTS Insertion

Axioms

1. Rapid COTS Insertion Means Just That.
2. Deliver Each Sensor's Full Theoretical Gain to the Operator: All Bearings, All Frequencies, All the Time.
3. Avoid Modifying Successful Commercial Products.
4. Use the Lessons Learned.
5. Use State of the Practice, not State of the Art; A-RCI is not a Beta Test Site.
6. Configuration Management, vice Configuration Control.
7. Software Reuse Is Key to Our Success!
8. No One Organization Has the Full Story.
9. Submarine Acoustic Superiority Depends on the Success of A-RCI.



Acoustics Rapid COTS Insertion Summary

- **More Capability Within RDT&E Budget**
- **Delivers Capability Three Years Early**
- **Uses Commercial Processing to Implement and Expedite Additional Capabilities Well Beyond Programs of Record**
- **Acoustics-RCI Applicable to All Submarines**
- **Captures Benefits of COTS Based Open Architecture**
 - » **Future Acoustics Improvements Easier and Cheaper to Implement**
 - » **Substantial Processing Capacity for Advanced Processing Build Products and Acoustic Capability Growth Potential**