Technology Acquisition Readiness Index and Processes

Lance Flitter
David Bartlett
1. REPORT DATE
SEP 2007

2. REPORT TYPE

3. DATES COVERED
00-00-2007 to 00-00-2007

4. TITLE AND SUBTITLE
Technology Acquisition Readiness Index and Processes

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

6. AUTHOR(S)

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Naval Surface Warfare Center, Carderock Div, PEO Ships S&T Directorate, 8500 Macarthur Blvd, West Bethesda, MD, 20817-5700

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES
See also ADM002182. Presented at the AFRL Technology Maturity Conference held in Virginia Beach, VA on 11-13 September 2007.

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:
a. REPORT
unclassified

b. ABSTRACT
unclassified

c. THIS PAGE
unclassified

17. LIMITATION OF ABSTRACT
Same as Report (SAR)

18. NUMBER OF PAGES
35

19a. NAME OF RESPONSIBLE PERSON

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18
• Technology Assessment Challenge
• Proliferation of new metrics and processes
• Technology Acquisition Readiness
• PEO Ships efforts - TAREP and TARI
• TAREP
• TARI
• Summary
• POCs
• Technology and systems can be highly complex

• Subjectivity impossible to eliminate

• S&T and Acquisition have different perspectives
New Metric and Processes

- Proliferation of new technology assessment / management metrics and processes in recent years
- Address some issues but raise others
• Need metrics and processes that support program and project management in assessing technology in an acquisition context and making acquisition decisions
• PEO Ships S&T Directorate staff work S&T within an acquisition organization

• Have been working on developing two approaches to address technology management issues:
  – Technology Acquisition Readiness Evaluation Process
  – Technology Acquisition Readiness Index tool
• Strongly driven from an acquisition perspective

• Objective is to provide a context for technology assessment / evaluation that feeds acquisition program / project management

• Not intended to reinvent the wheel

• Is a work in process
Determine Value

- Purpose is to determine if technology adds value to program and provide an initial take on degree of value
- Meet KPP Gap
- Meet Operational Need
- Add Value
- The value of the technology is a key input into the final decision making process. Decision makers should compare the value of the technology to the risks related to the technology and make a decision on the best course of action.
**Data Confidence**

- Assess the reliability and completeness of the data available for the technology
- Considerations: completeness, source, verification
- Data Confidence level will be used as a modifier of overall assessment
The type or level of technology will determine how it is evaluated.

- Enabling / Fundamental Technology
- Component Technology
- Subsystem
- System
Technology Readiness Level
- The classic measure of technology maturity
- Focused on functional / developmental level
- Required by DoD policy. Recognized as not being the only important element of assessing a technology’s maturity or readiness for acquisition
Evaluation Processes

**Manufacturing Readiness Level**
- Assess the maturity and risk of a technology’s underlying manufacturing processes

**Programmatic Assessment**
- Evaluate degree to which technology project / program has satisfied programmatic requirements for getting technologies on ships
Evaluation Processes

Technology Acquisition Readiness

Integration Assessment
- Assess the integratability / interoperability of the technology with the overall program / platform

Human Systems Interface Assessment
- Assess HSI aspects of the technology to factor into readiness assessment
Evaluation Processes

Technology Acquisition Readiness

Cost
- Assess life cycle costs (acquisition + support) of the technology
Evaluation Processes

Technology Acquisition Readiness

- Build on previous assessments of current state to assess future state
- Development Work Remaining (DWR) Assessment
- Advancement Degree of Difficulty
- Feeds into assessments of projected schedule, contractor capability and development cost assessments
Evaluation Processes

Technology Acquisition Readiness

Capability Assessment
- Assess the capabilities of the technology/developer source (e.g. supplier or industry base) to perform the required work to get to the desired readiness level

Schedule Assessment
- Based on the assessments of development work remaining and schedule data provided by technology source, assess the projected development schedule and how it meshes with program schedule and milestones
Development Cost Assessment
- Based on the assessments of work remaining and difficulty of the work, and possible source data (vendor provided), assess the expected cost to move from current to desired level of readiness

Budget Assessment
- Based on the development cost assessment, assess the funds available or projected by the technology source, the program or other sources
- Determine likelihood of achieving goals and/or impact on program budget
**Risk Assessment**

- Utilizing the risks determined by previous assessment processes develop an overall risk assessment for the technology

**Final Assessment**

- Consider the **overall risk**, the **value** of the technology and the **confidence** in the data to make a final assessment of the technology that can be used in making a decision on whether to pursue the technology as part of the program
• Provides a process flow and context to guide technology assessments with acquisition focus

• Utilize existing metrics and processes. Define relationships between assessment metrics and processes.

• Technology evaluation process and subprocesses feed into risk analysis and provide the needed data to support decision making

• Basic process laid out. Next step is to refine and specify the interfaces / relationships to provide mechanism to enable / facilitate linking of metrics and processes.
Technology Management Discussion

- Natural void between development and procurement
- Mismatch between commercial viability and Military requirements
- Resources are becoming scarcer
Push initial procurement to leading edge... Pull replacement within trailing edge
Interaction of Technology & Acquisition

Technology Acquisition Readiness

TTA – 1
Interest

TTA – 2
Intent

TTA – 3
Commitment

Technology Management

• Defines each TRL as a phase

• Reinforces System Engineering Principles
  • Focuses on successful transitioning
    • Provides the criteria supporting TTAs
  • Defines each TRL as a phase
    • Aligns to DoD 5000

Acquisition Management

• Establishes Exit criteria & Deliverables for each TRL

Peak Involvement

Development Scale

Transition Management Model For Technology Maturation

Minimal Involvement
Technology Acquisition Readiness Index
Basic Principles

**Process:**
- Make Development Cycle Visible at multiple levels
- Utilize fundamental Systems Engineering Principals
- Establish End Goals, Communication methods and Transition paths early
- Identify / Align Resources
- Think in terms of Portfolio Mgt
- Concentrate on Developing Critical Mass

**Tools:**
- Web based
- Scalable
- Tailorable
- Automated as much as possible
TARI Framework

Technology Acquisition Readiness

- Crane B3-COI NETWORK
- WWW Authenticated Users
- Defense Knowledge Online

Relational linking between sites

Non-DoD Document Library
- Summary View
- Milestone Documentation
- Industry/Academia Partner Data

DoD Document repository
- Community of Interest
- Project Overviews
- TPOC/Gov’t Partner Data
### Program Executive Office, Ships

Please click a TARI Color Level to see more details

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# PEO SHIPS S&T WLAN Transition

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### Notes
- **Design AP Prototype**
- **Define Technical Guidance**
- **Perform component I accreditation**
- **System Architecture**
- **Evaluate**
- **Sys Arch**
- **Assembly & Ground Test**
- **Initial Install**
- **Sys Design**
- **Manufacture**
- **Initial Install**
- **Accredit**
- **MUA**
- **Acquire**
- **T&E**
• TAREP and TARI yet one more attempt to tackle aspects of the technology assessment challenge
• TAREP provides a means to define relationships between tech assessment metrics in an acquisition context
• TARI provides a technology project tool to aid project managers in achieving technology transition to acquisition
• Both are works in progress and are open to comment
• Lance Flitter
  (301) 227-3161
  Lance.Flitter@navy.mil

• David Bartlett
  (812) 854-2285
  David.Bartlett@navy.mil
TARI Slide Transitions
Program Executive Office, Ships

TARI Level Breakdown

Please click a TARI Color Level to see more details

| TSM | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Selected ARL Level: 5

Refresh Grid

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Ability to view associated documents
PEO SHIPS
Science and Technology Office

USS COLE Wireless Local Area Network (WLAN)

USAGE EVALUATION SURVEY
DECEMBER 2005

FINAL TABULATIONS

Prepared for:
Trident Warrior 05
Military Utility Assessment
(TW05 MUA)
# Program Executive Office, Ships

## TARI Summary Report

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<td>Transition Agreement (commitment)</td>
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Program Executive Office, Ships

TARI System GANTT Chart

Please click a TARI Color Level to see more details

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Selected ARL Level: 5

GANTT Timeline for TSM - ARL Level 5

- Operational: 28 Days
- Conduct Assessment: 16 Days
- Request Authority To Operate: 3 Days
- Initiate 5CD and Shipyard processes: 7 Days
- TRL: 28 Days
- Demonstrate Prototype: 7 Days
- Demonstrate Increased Capabilities: 25 Days
- Produce Prototype Hardware for a Relevant Environment: 4 Days
- Test Prototype as System in Simulated Operational Setting: 4 Days
- Programmatic: 44 Days
- LCC: 10 Days
- Transition Agreement (commitment): 14 Days