CHAPTER 5
IMPACT OF ADA 95
ADOPTION ON THE
SOFTWARE PROCESS

Having assessed the Ada 95 adoption issues, and having begun to manage them, the PEO and/or PM must then examine the adoption of Ada 95 and its impact on the software acquisition process for contracted development and the software development process for in-house development. Each process is dealt with in its own separate section.

CONTRACTED DEVELOPMENT

This section informs the PEO and PM how to tailor their software acquisition processes if Ada 95 is adopted by their organization. It introduces the general issues associated with each major step of the software acquisition process. *PEOs and PMs should refer to the* Ada 95 Transition Planning Guide *for additional information.*

Acquisition Strategy Planning and Preparation

Some activities associated with acquisition planning will need to be modified when Ada 95 is adopted. However, these provisions will be relatively small. Assistance can be found from a number of sources including a Research, Development and Engineering Center (RDEC), FFRDC or a Software Engineering and Technical Assistant (SETA) contractor. *PEOs and PMs who have procured Ada 83 software will find the modification to be much smaller than those who purchase Ada 95 as their first Ada procurement.* While the process of Acquisition Strategy Planning and Preparation will be essentially the same, *the contents of the acquisition plan and the source selection plan will be slightly different.*

The PM staff must account for several issues when tailoring an acquisition plan and source selection plan for Ada 95. Assistance for this effort should come from the supporting RDEC. The major issues are:

- Source Capabilities,

- Competition,

- Contracting Considerations,

- Budgeting and Funding,

- Schedule, and

- Evaluation Criteria.

Detailed issues and actions on each of these topics are given in the following subsections.

Source Capabilities

To ensure an adequate balance of both Ada 95 expertise and application domain expertise, PEOs and PMs should:

- Broaden their base of bidders to increase the likelihood of success during the project's development. During the initial cut-over to Ada 95, there may be fewer contractors with demonstrable experience. Many will be making the transition at the same time the PM office does.

- Expand the base of bidders to balance those with application domain expertise against those with Ada 95 and prior Ada 83 expertise.

- Require a source capabilities statement for both Ada 95 and application domain capabilities from prospective bidders to qualify or disqualify them.

Competition

PEOs and PMs must weigh* Ada 95 expertise *and* application domain expertise *in selecting potential contractors. To improve the probability of success, the PM may need to make trade-offs between these two factors. The transition to Ada 95 may either increase or decrease the amount of competition present on a bid:

- *Increased Competition* — Increased competition will occur when the PM Office encourages *bidders with Ada 95 experience*, because an RFP that requires Ada 95 usage will attract bidders with Ada 95 experience outside the application domain.

- *Decreased Competition* — If the PM Office emphasizes *application domain expertise*, then competition will decrease if there are only a few bidders with that expertise *who have already transitioned to Ada 95*. To offset this effect, the PM Office must accept that the contractor may have to transition to Ada 95 as a part of the project and build this into the following parts of the acquisition strategy.

Contracting Considerations

PEOs and PMs must ensure that the contract type employed on the project takes into account any adoption issues involved on the part of both parties. Any of the major types of contracts may continue to be used with an Ada 95-based acquisition.

- *Fixed Price Contract* — A *fixed price* approach will introduce risk if a technological change is attempted at the same time. The PM Office should not attempt to use a fixed price vehicle *unless* the potential parties have already transitioned to Ada 95.

- *Incentive Fee or Award Fee Approach* — To offset the problems with fixed price contracts, the PM Office should consider using an incentive fee or award fee based approach, where the fee is tied, through evaluation factors, to the achievement of Ada 95 related acquisition goals. A draft RFP should be used to elicit industry comments on risk factors associated with the procurement effort.

Budgeting and Funding

If the PEO and PM Office haven't already conducted pilot projects and prototype efforts (to bound the transition costs), then, to account for the learning curve, the PM Office must include additional funding in the development. These funds will be needed to cover the costs of the learning curve and tool-up efforts.

*For details on budget issues and how to **handle** them, see the previous sections on* Project Planning Impacts of the Transition to Ada 95, Technology Transfer, *and* Tools and Environment *in Chapter 3.*

Schedule

If the PEO and PM Office haven't already conducted pilot projects and prototype efforts (to bound the transition costs), then to account for the learning curve, the PM Office must allot additional time in the development plan project schedule. This time will be needed to allow for the learning curve and tool-up efforts.

*For details on budget issues and how to **handle** them, see the previous sections on* Project Planning Impacts of the Transition to Ada 95, Technology Transfer, *and* Tools and Environment *in Chapter 3.*

Evaluation Criteria

The PM Office must enhance the proposal evaluation criteria to examine several factors that affect schedule and cost in software development testing and maintenance. These factors are:

- Amount of Ada 95 experience;

- Amount of previous Ada 83 experience;

- Current level of commitment to adopting Ada 95;

- Demonstrated evidence of Ada 95 adoption plans and actions;

- Amount of attention on secondary transition areas such as software development methods, software engineering environments, affected standards, risk management practice, or process improvement; and

- Evidence of risk analysis and mitigation of Ada 95 adoption risks.

Software Procurement

PEOs and PMs must properly account for acquisition planning issues during procurement. This includes:

- Staffing the source selection organization with individuals who can judge Ada criteria, and

- Surveying the potential bidders to accurately determine their ability to perform and the status of their Ada 95 adoption.

The adoption of Ada 95 will only slightly change the software procurement process (including issuing the RFP, evaluating the RFP, and awarding the contract). The major issues that must be accounted for during this process involve the:

- Source Selection Organization,

- Mailing List,

- Evaluation, and

- Pre-award Survey.

Detailed issues and actions on each of these topics are given in the following subsections.

Source Selection Organization (SSO)

PEOs and PMs must be prepared to supplement the SSO staff. When PMs adopt Ada 95 as part of the procurement, they must add at least one software engineer with Ada 95 language and adoption experience to the source selection board. This person will be responsible for evaluating the Ada 95-related aspects of the proposal, as well as evaluating the Ada 95 adoption effort of the bidder. The expert may come from a supporting RDEC or from an FFRDC.

Mailing List

PEOs and PMs must include Ada 95 capable bidders in the process. The list of prospective bidders will be affected by the sources that are available and the amount of competition that is present. The impacts that were accounted for during the acquisition strategy planning and preparation phase will spill over into this phase. The PM Office must ensure that the mailing list includes potential qualified contractors that meet the Ada 95 requirements.

Evaluation

PEOs and PMs must ensure that bidders can perform as promised. Make sure that the bidder's Ada 95 experts are bid and locked in as key personnel, or use incentives to reward contractors who provide high quality.

Pre-award Survey

PEOs and PMs must ensure that the bidders can perform as promised. The PM Office should conduct a pre-award survey prior to the final award. The emphasis in the on-site survey should be on verification and demonstration of Ada 95 and related capabilities.

Contract Performance Monitoring and Evaluation

During the contract's performance, the PEO and PM Office must employ additional effort to ensure that the contractor is properly using Ada 95 and has transitioned well, if this is their first Ada 95 effort. Since most planning will have been completed before award of the contract, Ada 95 will only slightly change the general Contract Performance Monitoring and Evaluation process. However, many actions that were planned in early steps in the organization's Ada 95 Transition Planning Guide will be executed during this time. The PM Office should be aware of the following issues that may impact the process:

- Contract Monitoring, and

- Joint Transition.

Detailed issues and actions on each of these topics are given in the following subsections.

Contract Monitoring

To lower the probability of technical error, additional Ada 95 experts should be employed, especially if this project represents the PM office's first Ada 95 effort. The PM should employ a SETA group to assist in the evaluation of the contractor's performance. This will be in addition to any IV&V group used on the contract whose role is typically limited to the later stages of the software development life-cycle.

Joint Transition

PEOs and PMs who have not transitioned to Ada 95 before this project must participate in the transition with the contractor as a team. If the contractor is initiating the Ada 95 adoption as part of the project, the PM Office must participate jointly with the contractor in all courses, mentoring and technology transfer. This will ensure that both parties receive the same explanation of the technology and its impact on the project, so they will all benefit from the Ada 95 technology transfer.

IN-HOUSE DEVELOPMENT

This section informs the PEO and PM how to tailor their software development processes if Ada 95 is adopted by their organization. It introduces the general issues associated with each major step of the software development process. *PEOs and PMs should refer to the* Ada 95 Transition Planning Guide *for additional information.*

Development Planning

PEOs and PMs will find that some software development planning activities will need to be modified when Ada 95 is adopted. However, these changes will be mostly technical in nature and, therefore, beyond the scope of this handbook. Assistance can be found from a number of sources including an RDEC, FFRDC or a SETA contractor. ***PEOs and PM Offices who have managed the development of Ada 83 software will find the changes to be much smaller than those whose first Ada development is Ada 95.***

The PM staff must account for two major non-technical issues when tailoring a software development plan for Ada 95. Assistance for this effort should come from the supporting RDEC. The major issues are:

- Budgeting and Funding, and

- Schedule.

Detailed issues and actions on each of these topics are given in the following subsections.

Budgeting and Funding

If the PEO and PM Office haven't already conducted pilot projects and prototype efforts *(in order to bound the transition costs),* ***then, to account for the learning curve, the PM Office must include additional funding in the development plan.*** These funds will be needed to cover the costs of the learning curve and tool-up efforts.

*For details on budget issues and how to **resolve** them, see the previous sections on* Project Planning Impacts of the Transition to Ada 95, Technology Transfer, *and* Tools and Environment *in Chapter 3.*

Schedule

If the PEO and PM Office haven't already conducted pilot projects and prototype efforts *(in order to bound the transition costs),* ***then, to account for the learning curve, the PM Office must allot additional time in the development plan project schedule.*** This time will be needed to cover the learning curve and tool-up efforts.

*For details on budget issues and how to **resolve** them, see the previous sections on* Project Planning Impacts of the Transition to Ada 95, Technology Transfer, *and* Tools and Environment *in Chapter 3.*

Software Development

During the software development itself, the PEO and PM Office must employ additional efforts to ensure that the developers are properly using Ada 95 and have transitioned well — if this is their first Ada 95 effort. Since most planning will have been completed before the start of development, Ada 95 will only slightly change the general Software Development process *at a non-technical level*. However, many of the actions that were planned in early steps in the organization's Ada 95 Transition Planning Guide will be executed during this time. The PM Office should be aware of the issues surrounding performance monitoring that may affect the process.

Performance Monitoring

To lower the probability of technical error, additional Ada 95 experts should be employed, especially if this project represents the PM Office's first Ada 95 effort. The PM should employ a SETA group to help mentor the development staff through their first Ada 95 project.