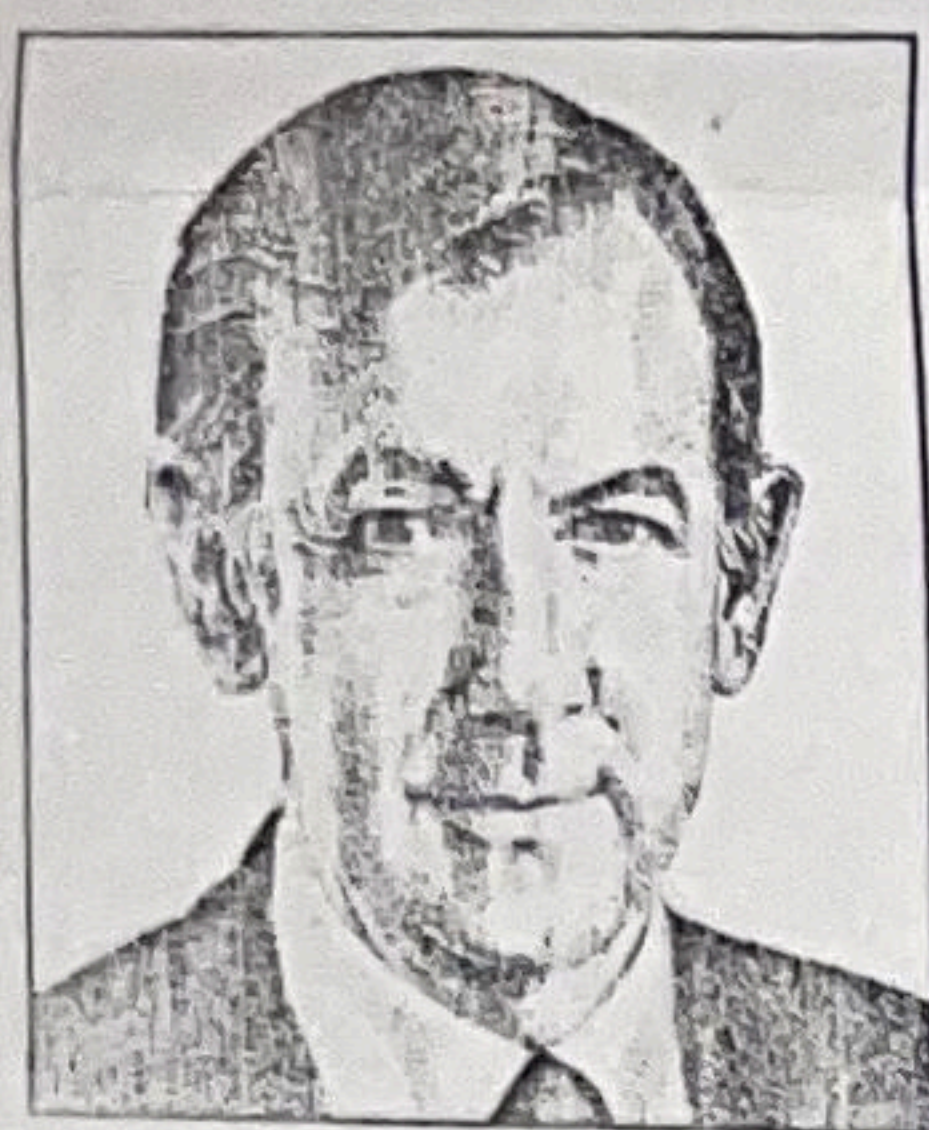


APPLIED INTELLIGENCE

Complex RAD Cycle Can Be Distilled to Manageable Phases



JAMES MARTIN

This is the seventh in a series on rapid applications development (RAD), a methodology designed to give much faster results than the traditional life cycle.

The RAD life cycle is attractive because it can be used to develop complex,

high-quality applications within tight budget and time constraints. The life-cycle process incorporates significant improvements in the use of personnel, tools, development methodology and management techniques.

RAD is based on the use of Joint Application Design (JAD) workshops, integrated computer-aided software engineering (I-CASE) tools, small teams of highly trained analysts, a development methodology that defines the steps required to achieve high-speed development, and management techniques aimed at cutting through bureaucratic obstacles. The RAD life cycle integrates these familiar concepts and provides a proven framework for developing applications much faster.

As shown in the figure, the RAD life cycle has four phases: requirements planning, user design, construction and cutover.

Workshops are used in the requirements-planning and user-design phases to involve executives and end users in the specification process. The workshops provide a highly structured environment in which small teams of end users and analysts work together to define requirements and design the system from the user's perspective. I-CASE tools are used to capture and analyze design specifications for the application.

During the construction phase, a team of analysts, highly trained in the use of the CASE tool, develops a prototype of the application in close communication with end users. The prototype evolves into the final production system within a tightly constrained time frame. Cutover of the production system requires close interaction between end users and information-systems (IS) analysts.

Each phase should be approved by the user executive who's spending the money. This is the executive owner, as shown in the figure.

The requirements-planning phase requires that high-level or knowledgeable end users determine the functions of the system. These planning functions are performed with the guidance of IS professionals. Requirements planning is usually best done in a workshop with well-structured procedures.

Key executives and users are selected to participate in workshops in which a requirements document is created. The workshop progresses through a planned set of steps under the guidance of a skilled Joint Requirements Planning (JRP) leader, who is usually the same leader who will conduct a follow-on

JAD session, as described below.

At the start of the workshop, the users are encouraged to do most of the talking. IS professionals transfer the end users' requirements to the CASE tool's repository and attempt to create a pragmatic representation of system functions that will make the system as valuable as possible.

The user-design phase requires that end users participate strongly in the non-technical design of the system under the guidance of IS professionals. User design is done in a JAD workshop similar to the JRP workshop.

JAD is a technique for harnessing end users in the requirements analysis,

are created. Particularly important in the RAD life cycle, the design is created in the repository of an I-CASE tool that coordinates the design with other information in the repository. The resulting design can be used directly in the construction phase. As much as possible, the IS staff attempts to reuse existing data and process modules contained in the repository of the I-CASE tool.

For a smooth transition, some of the users in the planning workshop should be involved in the design workshop.

In these first two phases, application users and user executives should play a larger role than IS professionals. Planning and user design should be done, to

relationship between design and coding. A design is built on the screen of an I-CASE tool, and code is automatically generated from it.

During the RAD construction phase, IS professionals perform the detailed design and automatic code generation of one transaction after another, using the I-CASE tool set. They may show each transaction, as it is built, to end users and make adjustments to it. The computerized coordination of the I-CASE tool set integrates the separate transactions.

End users are closely involved during the construction phase. They validate the screens and design of each transaction as it is built.

Construction proceeds quickly with ongoing user involvement to ensure that the delivered product meets the needs of the users when it is cut over. There should be no surprises for the users when the system is installed, because they have participated in every step of its construction.

The I-CASE tool set should generate the coded database descriptions, as well as executable program code. It should also generate technical documentation, thus ensuring that the documentation precisely describes the generated system.

A final stage of the construction phase may be to perform database optimization and use a code optimizer to enhance the run-time performance of the code. When this is done, good code generators give about the same run-time performance as skilled programmers.

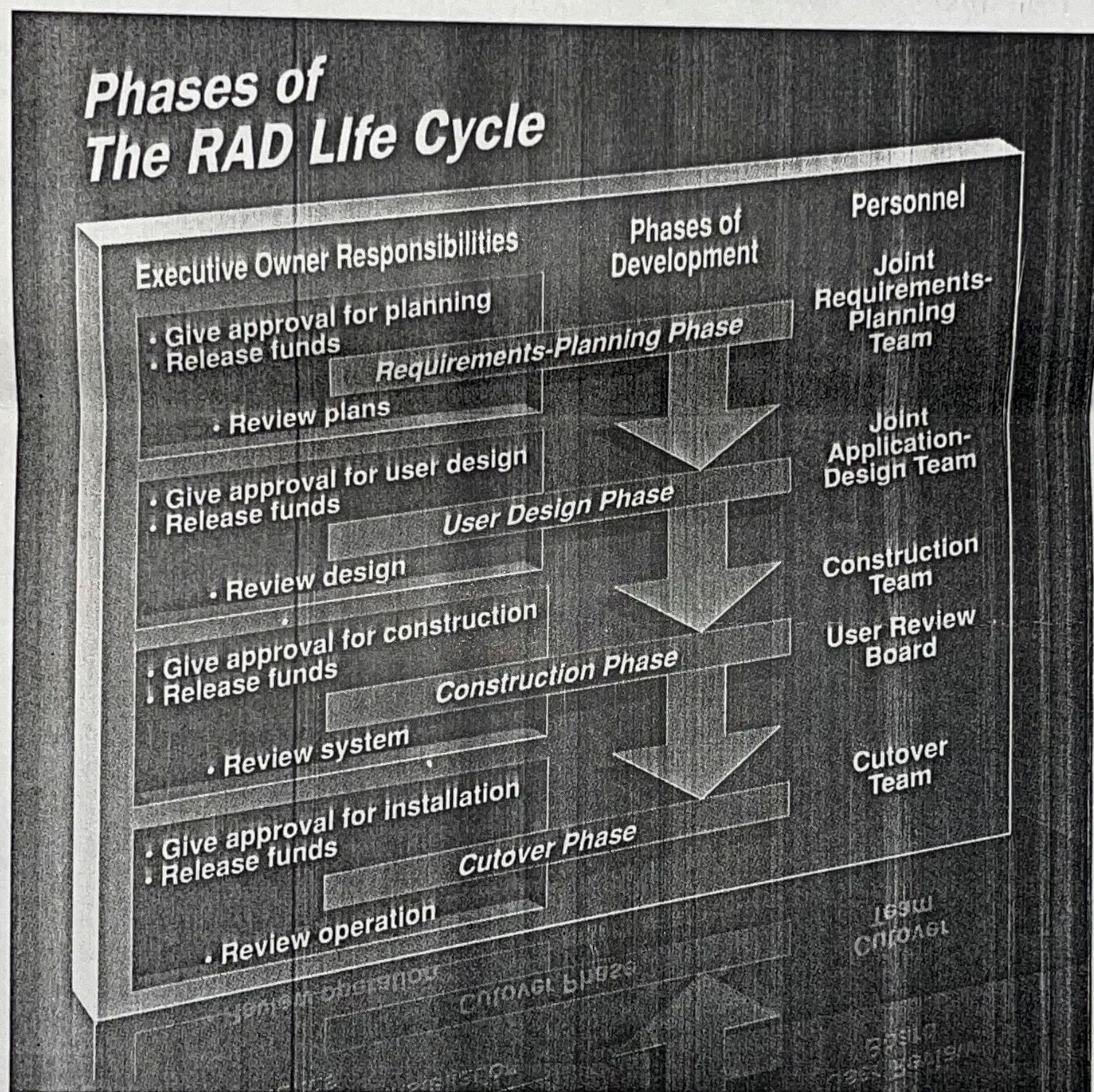
The Cutover Phase

When the system is cut over, a variety of actions are needed, including comprehensive testing, end-user training, organizational changes and tandem operation of the new and old systems until the new one settles in.

Because the construction phase is relatively rapid, planning and preparation for cutover must begin early. Preliminary planning is done in the requirements-planning phase and detailed preparation is begun in the user-design phase.

Steps to prepare for cutover include developing the conversion system, performing a quality audit, preparing for final testing, building the test libraries, carrying out the final testing, documenting the test results, planning and conducting the training program, evaluating the success of the training to determine if the user understands the operation of the system, refining the training materials and help screens, and conducting further training courses.

Next week, I will discuss the key players in the RAD life cycle. ■



John Avakian

Workshops provide a highly structured environment in which end users and analysts work together to define requirements and design the system from the user's perspective.

specification and design of systems. It is a highly successful technique when used correctly, resulting in high-quality design being created rapidly. Key end users are selected to participate in workshops in which the preliminary design of the system is created. The workshops progress through a planned set of steps, defined by the methodology.

As in the JRP workshop, the users are encouraged to do most of the talking. The IS staff in the session translates what the users want into structured specifications and design.

Along with the specifications, the relevant data model, screen designs, report designs and, possibly, rough prototypes

a large extent, by users, with IS providing firm guidance.

The users do not sign off on specifications. Instead, they sign off on a design represented in an I-CASE tool, which will be taken directly into the construction phase. The executive owner of the system releases funds for its construction on the basis of a review of the I-CASE design.

In the traditional development life cycle, detailed design is a separate phase from programming. First, specifications are written, then detailed design is done, then the code is written and, finally, the code is debugged.

The RAD life cycle changes the rela-

The concepts embodied in RAD are described in a new volume in the James Martin Report Series. For more information on this volume, please call (800) 242-1240. For information on seminars, please contact (in the United States and Canada) Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402 (213) 394-8305. In Europe, contact Savant, 2 New St., Carnforth, Lancs., LA5 9BX United Kingdom (0524) 734 505.