Life Cycle Logistics Planning Comes of Age

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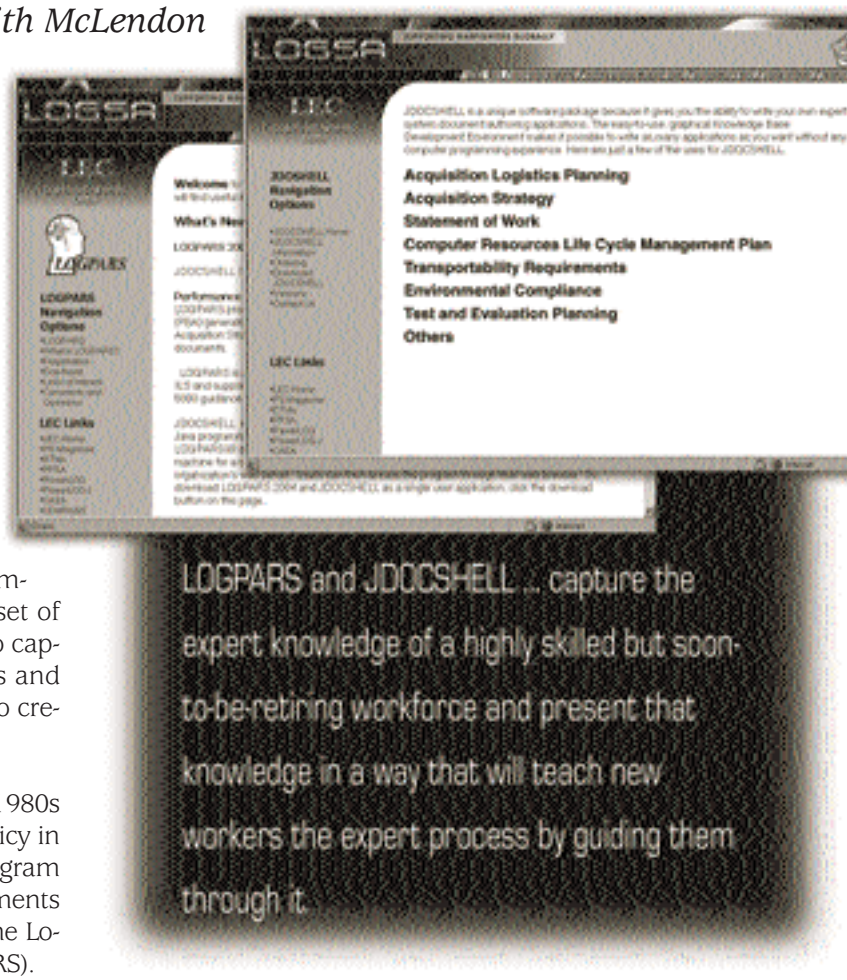

In the days of soaring defense budgets of the 1980s, acquisition costs were hard to estimate and even harder to control. Bad as this was, support costs for weapon systems were even more out of control. Weapon systems were primarily designed for low acquisition costs, without regard to the impending support cost disaster. The Government Accountability (then General Accounting) Office studied the problem and found that while the U.S. Army had the best integrated logistics support (ILS) policy, it also had the worst execution of that policy.

The Army materiel developers knew that they were supposed to design supportability into new weapon systems, but they didn't quite know how to accomplish it. The new field of Expert Systems as a subset of Artificial Intelligence was, and still is, a great way to capture expert knowledge of complicated procedures and present it to the user in an easy-to-follow manner to create a consistent and high-quality planning process.

The Army developed an ILS Expert System in the late 1980s to help program managers plan and execute ILS policy in a comprehensive and repeatable manner. This program was first named the Logistics Planning and Requirements Simplification System and was later shortened to the Logistics Planning and Requirements System (LOGPARS).

While Army and defense acquisition policies have changed radically since the original LOGPARS was fielded, computer technology and applications have changed even more. The challenge to maintain and update LOGPARS has been twofold: first, keeping the existing documents and expert knowledge base up to date; and second, adapting to new operating systems and programming languages. LOGPARS has kept pace with each new generation of computer technology while adding new document modules and program functionality.

In The Beginning

The first version of LOGPARS was fielded in 1989. That version created an integrated logistics support plan and a warranty advisor. Written in a combination of the C and Prolog programming languages, this initial LOGPARS system was very complex, and even minor changes in documentation output required highly specialized programming knowledge of several different file formats.

The time period from 1989 to 1994 was marked by continuous enhancements to the existing document modules, as well as the addition of new documents based on feedback from the user community. A materiel fielding plan, transportability report, and the ILS portion of the contractual statement of work were added. During this time, the other military services used the core of the LOGPARS systems to develop their own logistics and program documentation generators.

In 1994, two major changes were introduced. First, LOGPARS was reprogrammed to run under Microsoft Win-

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dows® 3.1. The original system ran under MS-DOS, and the LOGPARS user community wanted an updated interface. Second, the document-generating shell (DOCSHELL) and the LOGPARS knowledge base were split into separate products. DOCSHELL is the expert system interpreter that can be used for any planning process to produce any type of document. The LOGPARS knowledge base is the set of logistics support questions and expert knowledge procedures that create the specific logistics and acquisition planning documents.

The split allowed for the creation of non-logistics processes and documents independent of the logistics knowledge contained in LOGPARS. The Federal Aviation Administration, NASA, and even the Department of Agriculture, for example, used DOCSHELL to produce their own planning documents.

Between 1994 and now, LOGPARS and DOCSHELL have been continually modified. The LOGPARS knowledge base changed drastically when acquisition reform was instituted. It is constantly being updated, from changes to names of organizations to large-scale changes such as the current performance-based logistics policy and guidance. Technical updates have facilitated multi-user support and a Web-enabled version.

LOGPARS Today ...

LOGPARS is a great time- and money-saving tool. It produces high quality planning documents that eliminate costly requirements duplication. Another benefit is that it reduces requirements omission through its expert recommendations. This is enough of a benefit to justify its use, but another important benefit is that it ensures a standard planning process. Without the help of an expert system, most programs will find an existing planning document used for a different program and modify it to match their system. That does not lead to a well-planned and executed strategy for weapon system support.

LOGPARS has an impressive array of document generation modules. The current version of LOGPARS will assist in the preparation of the following documents:

- Acquisition strategy (AS)
- Supportability strategy (SS)
- Performance-based logistics (PBL) strategy
- Performance-based agreement (PBA)
- ILS statement of work (SOW)
- ILS performance specification
- Materiel fielding plan (MFP)
- Provisioning plan
- Transportability report
- Warranty advisor
- Life cycle schedule generator.

Most of the above are plans and key management documents that guide program managers in the acquisition and support of their programs. For example, the warranty advisor walks the PM through a series of questions and then recommends if a warranty is in the best interest of the government and, if so, what kind of warranty should be implemented; and the life cycle schedule generator creates a milestone schedule with recommended tasks that can be imported into Microsoft Project.

And Tomorrow

We are constantly updating and improving the existing documents within LOGPARS to incorporate expert feedback and policy changes, and at the same time, we are also developing new documents, often in response to requests from the LOGPARS user community. The next version of LOGPARS will have a simulation support plan that will help programs adhere to the simulation and modeling for acquisition, requirements, and training policy. We will be also adding a business case analysis generator and are considering a test and evaluation master plan generator.

We have only scratched the surface of the amazing potential that a document-generating expert system can provide. Any form or document can be created with the JDOCSHELL tool (the updated version of DOCSHELL). For example, a time sheet generator was developed to automatically create and fill in employee time sheets originally executed in Microsoft Excel. The JDOCSHELL file output format can be either HTML or plain ASCII text. Since all Microsoft Office tools can save data in the latter format, it is easy to create files that can be imported into Word, Excel, or PowerPoint. The HTML can also be used to create XML, an industry standard for exchanging data.

LOGPARS and JDOCSHELL provide a way of standardizing and enforcing a planning process. They capture the expert knowledge of a highly skilled but soon-to-be-retiring workforce and present that knowledge in a way that will teach new workers the expert process by guiding them through it. They also provide a way to produce high quality documents and forms in a fraction of the time typically required.

As acquisition and supportability policy changes from lowest price contracts to performance-based contracts and beyond, and as computer programs become more distributed and integrated, LOGPARS is changing to let program managers and ILS managers do more high quality planning with fewer resources in a shorter time.

For additional information on LOGPARS, check the official LOGPARS Web site at <https://www.logsa.army.mil/alc/logpars> or e-mail logpars@logsa.army.mil.

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