**CMstat Industry White Paper**

**Eliminating the Migration & Integration Headache: Rapid and Successful Software Implementations**

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Have you purchased new software system(s) to perform Configuration Management (CM), Product Data Management (PDM), or Document Management? Or are you considering it? In either case, the data that you have stored in another application or a legacy system is usually a major concern. Typically, there are two choices: 1) Place the old system in an “archive mode” making it available on an as-need basis, or 2) Migrate or integrate the old data into the new application. This article addresses the second option and describes in general a methodology, in a light technical tone, that has been successful in many migrations and integrations of the CMstat Configuration Management System. We have designed and named CMstat’s methodology the System Integration Roadmap Template (SIRT).

“So, How Do I Get All That Legacy Data Moved?” The answer is not to take two aspirin and call me in the morning, but to follow this proven CMstat methodology. Many enterprise applications fail or barely meet the desired business objectives because data migration or integration is not thoroughly understood. Moving data is not just field-to-field mapping; good enterprise applications have built-in business rules or processes for making database information useful. These rules need to be understood in order to move data properly. In addition, the end user, the real customer, must perform their work better than before. If both objectives are not met, the system may “die on the vine”. So, if data migration is in your plans, you need to be prepared and follow proven steps for success.

What do you mean: “be prepared?” In order to make the data migration process highly successful, functionality and system setup training cannot be ignored. Training before migration enables a System Administrator to optimize the system to improve and maximum user functionality. CMstat highly recommends that you do not by-pass this step. Most systems that “take longer than expected” to implement can usually be attributed to not taking this advice to heart.

To begin our discussion of a data migration process, a common input screen of a legacy system is shown in the following example for reference. At CMstat, our methodology is to ask customers to indicate the required data elements and briefly explain their function. The selected data elements are entered into the CMstat System until the customer agrees with the content and intended functionality. This process is called “Screen Mapping”. All input screens from the legacy system are handled in the same manner, until all elements have been captured, and all required functionality is proven.

Sample Legacy System Screen Data
Screen shots of all required input screens are prepared from both the legacy system and CMstat System.

The next step in the process starts with assigning a Reference Designator to the Drawing/Document Number such as “A1”, on both screens shots, then assigning “A2” to the Drawing/Document Type, and so on until all required fields have been assigned a Reference Designator. The legacy system input screens are called “Source” and the CMstat screens are the “Targets”. Each screen shot is cross-referenced to each other. For example, “Source 001” and “Target dwgmast1.doc” are cross-referenced. All screen shots are captured in an electronic file for future reference and validation purposes.

**SOURCE:**

<table>
<thead>
<tr>
<th>DOCUMENT</th>
<th>INQUIRY</th>
<th>IDENT</th>
<th>GROUP/UNIT</th>
<th>TYPE</th>
<th>STATUS</th>
<th>SECURITY</th>
<th>REV</th>
<th>SIZE</th>
<th>PAGES</th>
<th>ORIG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A4</td>
<td>43999</td>
<td>280-078</td>
<td>DLE</td>
<td>C</td>
<td>A</td>
<td>007</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TARGET:**

Sample Legacy Screen Data with Reference Designators

CMstat Screen Mapped with Sample Data and Reference Designators

After all data elements have been mapped and the system has been configured for users, we start filling out the System Integration Roadmap Template (SIRT) for the CMstat product. This is the requirement document that the customer must use to build the flat file or table layout. The file is a fixed length, delimited format (this is not a mistake, it is the key to maintaining data consistency across many types of migrations).
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The highly organized methodology. Much of this effort is based on the skill of the person doing the extraction and creativity at this point is wonderful.

Sample of CMstat System Integration Roadmap Template (SIRT)

If rules for specific fields are required, they are listed in CMstat Migration File Format Rules. These rules define how the data is to be put into the SIRT, they are the heart and start of storing data in a manner acceptable to configuration management practices, and the minimum standard for CMstat to hold a document record. For example, every drawing must have the following elements: drawing number, type of drawing, revision or iteration, and CAGE or unique identifier.

Example of a Migration File Format Rule by CMstat.

The next step involves a system configuration module called, “CMsetup”. This step warrants proper training by CMstat before starting a data migration or integration effort. In CMsetup, field labels are changed to match the end user preferences, defaults are set up to speed up data entry, contracts and projects are established, and users are identified and given secured rights and privileges.

In the following step flat files are created. These files are normally generated by the customer IT organization and are delivered either by FTP, tape or CD. Together, we move all the customer data to “working tables.” Migration and validation scripts are run against each working table. If the data does not meet the requirements as set forth in the System Integration Roadmap Template, those records or individual rows of data are rejected. The rejected data is returned to the customer with the reason for the rejection. The reason could be missing mandatory data, improper data format, or records received for a table that was not supported by a parent table. For example, we might have received data for drawing pages without a supporting drawing number, type, rev and CAGE in the drawing master.

Now, as those of us who work with data know, most databases are not clean. No matter how we strive to have a perfect database, we introduce errors in the mere attempt to clean the data. The hardest part of the migration, or integration, is for a customer to produce a complete and accurate flat file. When the programmer gets to the meat of the data, they quite possibly will find records and data elements that are not discernable. The procedure will also highlight missing data, and there may be left-over records that need line by line analysis. On the positive side, this is your chance to get your data right using a clear and highly organized methodology. Much of this effort is based on the skill of the person doing the extraction and creativity at this point is wonderful.

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It is always recommended that the customer run proven reports from the legacy system; e.g., baselines, outstanding changes, hierarchical structures (reports that show a good representation of the data). We know where the data elements will be in CMstat, but did the extraction gather all the correct data? One way to ensure this is to compare reports from CMstat to the legacy system reports. If our comparison checks are accurate, the installation moves to the final step: a live trial. A sample of knowledgeable users should test the system under real world, or near real world, conditions. You are ready for production if their testing validates the accuracy of the data migration or integration.

The CMstat Configuration Management System has been successfully implemented in many industries for over 14 years. **These data migration and integration methodologies, combined with CMstat’s in-depth “out of the box” functionality, gives us the ability to implement complete migrated production systems in as little as 60 days.** The results have met the business objectives of our customers, providing them a value many times greater than the cost of the system through improved product integrity, savings in human effort (intervention resources) and improved process control.

**About CMstat Corporation**
CMstat's configuration management software helps companies effectively manage change and complex data relationships. CMstat is the developer of a comprehensive suite of software applications as well as configuration management components, which manage all forms of product data, processes, and asset information throughout the product life cycle. CMstat’s customers include Lockheed Martin, Boeing, Raytheon, General Dynamics, ITT, DoD, Northrop Grumman, Thales, and numerous other enterprises that make, or manage, complex technical products.

For information, visit our website at [www.cmstat.com](http://www.cmstat.com), or call us at 760 731-6205.