ACCESS ‹‹‹‹‹‹

By Patricia Cox

The Master Budget Project: Communicating the Design

Happy New Year! After wrapping up the Analysis Phase of the Master Budget Project last month, we are ready to begin the Design Phase. For that, we will take a look at design documents that create a record of and communicate the design. These documents will be used in the Development Phase of the project, possibly by a variety of people. When doing data analysis in spreadsheets, like in Excel, projects are often limited to one or maybe two people creating the file. With a database, the projects are frequently more complex and involve data, relationships, and processes that need to be communicated to technical people so they can create the reports.

Entity-Relationship Diagram

An Entity-Relationship diagram, commonly referred to as an E-R diagram, shows the main things (or entities) that have a collection of related data elements (fields) we want to store and the relationships between these entities. This is a high-level diagram. Some people like to refer to it as the view from 30,000 feet up. (See the April and May 2009 columns for additional detail about relationships.)

At the beginning of a design process, you conceptualize the tables and data elements and picture how they relate in a project. In the October 2010 column, we talked about three related tables—Product, Material, and Part tables—and showed a potential list of fields and content, but not the overall connection between the tables. The E-R diagram does this (see Figure 1). Note that this diagram shows only the main data tables in the project and not the temporary tables used for reporting.

Schema

The schema is the next level of detail in documenting the data design. Like the E-R diagram, it also shows the tables and their relationships. The difference is that it also includes the field names and indicates the fields that will be primary and foreign keys as well as the relationships between the fields in the tables (see Figure 2). Both the schema and the E-R diagram are often shown on one page.

Data Dictionary

The data dictionary details the tables. Each table is on a separate page that lists the field names, the data types for each field, and the primary and foreign keys that allow you to connect the data. Table 1 is the data dictionary entry for the Materials table. Sometimes a data dictionary will also have process notes that discuss the transformations of data elements (or calculations) that are used to create reports. Other times, this information is recorded in separate process diagrams.

Process Diagrams

Process diagrams show the process needed to transform the data into information on the reports and will document the use of temporary tables, if appropriate. We will create a process diagram when we are working on the reports.
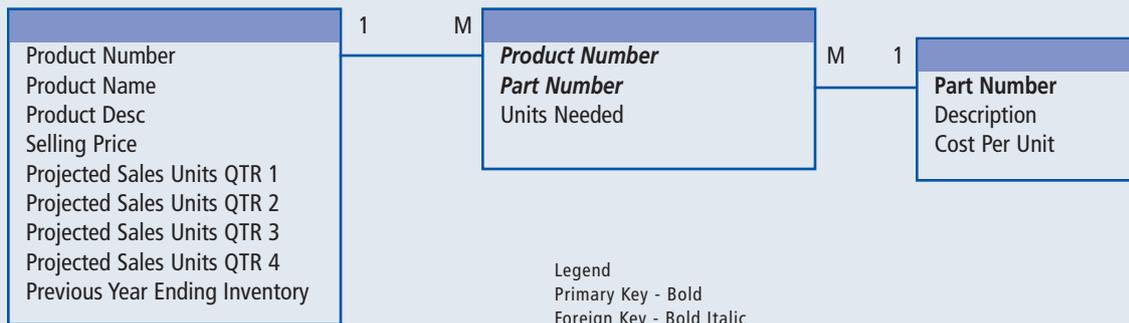
Software Design Tools

People use a variety of tools to document the design. There are some that are specialized for this process, but I will use Word, Excel, and PowerPoint since many of you have those tools at your disposal. The files will be made available in the *LinkUp IMA* Reference Workspace mentioned last month, or I can e-mail you a copy if you prefer.

With these design documents com-

Figure 1. Entity-Relationship Diagram

| Product |—1———M—⟨ has ⟩—M——⟨ Material ⟩——M—⟨ has ⟩—1——| Part |

Figure 2. Schema

| | 1   M | | M   1 | |
|Product Number| |*Product Number*| |Part Number|
|Product Name| |*Part Number*| |Description|
|Product Desc| |Units Needed| |Cost Per Unit|
|Selling Price|
|Projected Sales Units QTR 1|
|Projected Sales Units QTR 2|
|Projected Sales Units QTR 3|
|Projected Sales Units QTR 4|
|Previous Year Ending Inventory|

Legend
Primary Key - Bold
Foreign Key - Bold Italic

Table 1. Data Dictionary: Material Table

Field Name	Data Type	Description Notes:
Part Number	Autonumber	Primary Key
Description	Text – 50 characters	
Cost per Unit	Currency	

pleted, we will move forward next month with starting to create the database itself. The time that we have spent in this process will pay us back because we'll have already answered most of the questions we will encounter while creating the tables and reports. This will allow us to create the database components more quickly. The amount of design time spent before working in the software is one definitive difference between using Excel vs. Access. **SF**

Patricia Cox has taught Excel and Access to management accounting students and other college majors and has consulted with local area businesses to create database reporting systems since 1998. She is also a member of IMA's Greater Milwaukee Chapter. To send Patricia a question to address in the Access column, e-mail her at kathrynmann@tds.net.