Mayo Clinic Forms Management Database

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The Mayo Forms program began in 1946 and was a paper-based, paper-file intensive operation. Early record keeping for inventory control was recorded on the traveling requisition. The publishing analyst would complete the card, route it to purchasing, where the purchase order was issued and then the card would be sent back to the publishing analyst in Systems and Procedures. In the years 1989-1993, the forms analyst would pull up the item record to check with on the request for quote (RFQ). In 1993, it was apparent that it was crucial to have access to the request for quote information. Better purchasing decisions could easily pay for the development of a database system. And so the 4D project began.

The database application referred to as 4D is a customized inventory management program used to manage materials, both print and electronic. While it has much in common with other versions of 4D running on the Mayo Clinic campus, it has been customized to meet the specific needs of printing, publishing and inventory management. There are two versions of 4D actively used within the section of Publishing Media Technology Services (PMTS). These are referred to as 4D, used by most PMTS staff and Patient Education 4D, and used solely for the management of patient education materials.

Inventory Record

The creation of inventory records is central to all other functions in 4D. All inventory information, quotation and purchase order history are based upon the information contained in the inventory record. The inventory record contains information about the item specifications, usage, and location. There are four main sections to the inventory input screen:

- Item Information
- Item Locations
- Background Information

Item Information provides a general description of the item. Fields within the item information section include:

- Item Code. Item Code MC1234 This is the permanent inventory code of an item. The number consists of two or three alpha characters (MC, MCJ, or MCS) along with a four or five digit base number. The number may be followed by four alphanumeric characters.

- Extension. ▼ Extension This is a drop down menu which add a two-letter foreign language extension to designate items translated into foreign languages. For example, GE ▼ Extension German , would be displayed if the item were printed in German.

- Description. Description Mayo Clinic Store Brochure The description is the specific item name and may consist of up to 45 characters.

- Specification Text Field. This is an open text field and contains the product specifications for an item. If the item is not physically produced, such as a web or electronic form, the field may be blank.

- Yellow Alert Symbol. ⚠ This symbol indicates the item requires further review prior to any action being taken.

- New. ☐ New This check box is pre-selected by the database if a new item is being created.

- Status. Status Active ▼ This is a drop down field used to indicate if a form is Active, Reserved or Discontinued. A status of Discontinued is used to discontinue items which are no longer in use.

- Revision. Revision 0604 This field indicates the revision currently in use or in production. It is represented in the database as a four digit number representing the month and year of the revision. In this example, 0604 would indicate a revision of June 2004.

- Packaging. Packaging The packaging field is populated by warehouse personnel upon receipt of stock and indicates the individual packaging quantity.

- Physical Dt. Physical Dt 09/13/96 The Physical Date field represents the date the record was created.

Item Locations

The Item Locations section provides information about where the item is stored. Fields within the Item Locations section include:

- Stock.

    Stock will be selected if stock is maintained at the Forms Tock Warehouse. **Order Qty** displays the last quantity ordered. **Bin Loc** is completed by the warehouse personnel at stock check -in and indicates the bin location assigned. **Reorder Pt** displays the inventory level at which analysts will be alerted to reorder or replenish stock. Initially, this is pre-filled with a value of 30 percent of the value in the **Order Qty** field. **Parstock** indicates the item has been determined to be under automatic inventory control by Material Management staff on specific work units. **AMU** is the average monthly usage and is the average quantity distributed by the forms warehouse; the number is based on the quantity used during the past 12-month interval. **QOH** is the quantity on hand and represents the current quantity in inventory in the Mayo Materials Management inventory system. **Max QTY and Pallet Qty** relate to warehouse spacing issues and are populated by the warehouse personnel.

- Vendor

    Vendor is selected if stock is stored off-campus by the vendor. The fields in this section are completed by a purchasing agent or print buyer for purposes of manually monitoring and adjusting the inventory levels at multiple warehouse locations. **Order Qty** displays the last quantity ordered. **Bin Loc** will contain an abbreviated name representing the vendor currently storing the item. **Reorder Pt, QOH, Max Qty, Pallet Qty** are manually entered and monitored by the purchasing agent or print buyer.

- Non-stock

    Non-stock is selected if the item is a user item. Items designated as user items are stored by the work unit that will be using them. **Order Qty** is the quantity of the last order.

- Electronic Environment fields

    File Type. The choices available for file type are eForm, Excel, HTML, PDF, PowerPoint, or Word. **Location** choices are Internal or External. **PDF Type** offers the choices of Fillable, Printable, Special, or Stamped. URL fields appear to the right of each of the locations. The field is automatically populated with a URL address based on the time number; selecting the **Preview** icon will launch a web browser for viewing; selecting the **Information** icon will launch dialog displaying the number of times the PDF was downloaded. Selecting the **Do NOT create PDF for this item** stops the auto

generating of a PDF. Do NOT display item on Web blocks the item from being posted to the Forms Library.

Background Information
The Background Information section provides additional details regarding type of product, audience, proponents and contacts. Fields within the Background Information section include:
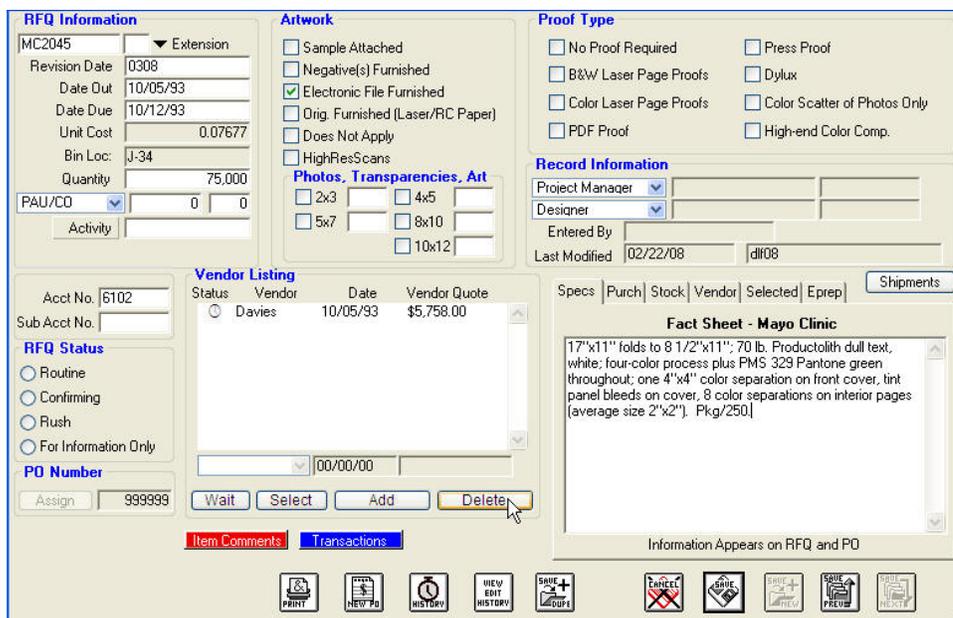

- The **PAU/CO** is the Posting Accounting Unit and Company of the group who may be financially responsible for production of the item.
- The **Charge** field refers to how the item will be ordered from the warehouse. If checked the end-user ordering the item from our Forms Warehouse will have to pay.
- The **Charge Back** drop-down lists four options of chargeback: 3 overhead accounts or PAU/CO which will then charge the PAU/CO listed above. This refers to the actual purchasing of the item from an external vendor.
- **Warehouse to Charge Per Issue**. When this option is selected, the client ordering from the warehouse will be charged for the item at order entry. When not selected, the originating cost center is charged when the inventory is received by the warehouse.
- **Forms Analyst**. This drop down menu lists PMTS users with database privileges followed by a field display the corresponding LAN ID. The Forms Analyst represents the individual responsible for a specific inventory item.
- **Stock Class**. Stock Class refers to the physical use and product type of the item. Selecting the Stock Class button open a window containing a series of pull-down menus, which when selected, will populate the Stock Class field with a corresponding 4-digit Stock Class code.
- **Audience**. The Audience field allows the user to select the appropriate audience for which the piece is intended.
- **Project Mgr**. The project manager is the overseer of the project, and considered the form owner.
- **Designer**. The Designer field indicates the person responsible for the design of the piece.
- **Old Reference No**. The Old Reference Number is any number corresponding to a form or publication which may be referenced at another time and may be needed for database searches.
- **RDO & AXE** are file formats in our print shop. If checked these values print out on the print ticket in our print shop so the operator knows electronic files already exist.
- **Logo**. Clicking on the Logo drop-down list displays a list of logo options.

Item History, Usage and Comments

These additional buttons activate pop-up screens which provide additional information about the item.

- **Medical Record.** Selecting Medical Record opens a window with detailed information about the item and its inclusion in the Mayo electronic record. This facilitates the mapping of the paper medical record to the electronic environment. This information is completed at the direction of a publishing analyst.

- **Graph Usage.** Selecting Graph Usage allows viewing of 3 types: Complete usage, Usage by Month, and Transaction History

- **RFQ History.** Selecting RFQ History, provides history of quotations on record in the database, including open quotes.

- **PO History** provides a history of purchase orders on record.

- **Inventory Bal.** Inventory Balances provides information regarding current inventory balances. The information is pulled directly from the Materials Management system.

- **Item Comments.** Item comments is a repository of information regarding an item. This information replaces many of the hand written notes previously stored in the paper folder. Examples of information found here include approvals, specifications, content, production notes or additional information as identified by the publishing analysts.

- **Note:** If the button is blue, there is no information available; if the button is red, there is information in Item Comments. The Yellow warning sign ⚠ is visible on the Inventory Screen if there are one or more unresolved notes in Item Comment.

RFQ –Request for Quote

The RFQ screen is a repository for vendor instructions to produce a price quotation. The information entered in the RFQ screen also provides information used to create the purchase order. Much of the information is pulled from the Inventory Record, reducing re-keying.

Fields specific to the RFQ include:

- **Date Out.** The date out field is the date the RFQ is completed and forwarded to print analysts, buyers or the vendors.

- **Date Due.** This is the date quotations are due to be returned from the vendors.

- **PO Number.** The system will assign with the next available PO number or a number can be manually assigned.

- **RFQ Status** refers to the type of RFQ generated. The Date Due field will be modified to correspond to the status and may be manually modified if necessary. There are 4 RFQ status used by Mayo.

  o **Routine –** a routine RFQ provides a standard turn requirement for vendors. Five business days is considered standard turn.

  o **Confirming –** is used to expedite a printing order when the selected vendor is known prior to receipt of pricing and production time is limited. The confirming PO assigns a PO number.

  o **Rush –** a Rush RFQ is used when pricing is needed in less than 5 day industry standard.

  o **For information-** is a type of quotation used for prospective projects which may or may not be produced.

- **Artwork.** The Artwork area indicates the type of artwork to be supplied to the quoting vendor.

- **Proof Type.** The Proof Type area is used to indicate the type of proof requested by the Project Manager.

- **RFQ Specific Information** is comprised of a fields containing information specific to a single production event.

RFQ –Request for Quote

A purchase order is created to:

  o Perform as a job ticket for the Mayo Print Shop
  o Provide production instructions and a tracking number to an external vendor

Inventory Management Reports

A set of inventory management reports is generated by the materials management system each workday by 8:00 am. These reports reflect quantity levels of stock in the warehouse, activity of a non-stock order item, and back orders. The items on the report are reviewed by a publishing analyst or someone working under their direction. Many other management reports can be generated to assist with the management of Mayo's form program.

Today the database is used to manage over 14,000 active items and interacts with the on-line Mayo Forms Library. With forms management as one of the key roles of the publishing analysts, this tool is a primary component enabling them to perform their responsibilities. The 4D database was custom built and is currently maintained by Mayo staff. In addition to providing the ordering and request for quoted process, the 4D System assists and facilitates the work of the publishing analysts. Ten key functional components comprise the backbone of the 4D system usage by the publishing analysts.

- Information for analysis of revised and new requests
- Historical information for tracking
- User trends
- Interacts with Mayo Forms Library
- Used for par stocking
- Push to internal/external web
- Real-time (almost)
- Connected to the Quarterly directory
- Medical record mapping
- Interacts with Materials Management system
- Multiple accesses allowed
- Used across the Division

Future initiatives

- **Auto-re-order**
- **Flags for frequent revisions**
- **Flag for auto-review**
- **Management reports**

Neither the basic information nor the workflow has changed measurably over time, but we do recognize that with any technology solution we are swimming in data. Our goal to improve inventory management was realized and the savings has been recouped many times over.