



United States Government Printing Office

**Manufacturing Workflow System (MWS)
Concept of Operations Document
(CONOPS)**

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Preface

The Government Printing Office's (GPO) Plant Operations department is responsible for processing printing and binding jobs for the legislative branch, including overnight production of the Congressional Record, bills, reports, hearings, and other congressional documents. They also oversee select executive branch printing services, including the daily Federal Register, the Code of Federal Regulations, and U.S. Passports. GPO's Customer Services department (i.e., Congressional Publishing Services, Requisition Section) supports Plant Operations in fulfilling its mission through performing activities including accepting job requests, entering jobs, job management, address/distribution list management, and customer liaison functions. Plant Operations relies on the Production, Estimating, and Planning System (PEPS) to provide production estimating, scheduling, and tracking functions as well as a centralized point for data collection and record keeping for in-house production.

PEPS was developed on a mainframe platform in the 1980's to serve as an automated system to monitor day-to-day operations. Over several years, additional features were added to PEPS to increase its capabilities. Collection and dissemination of data is accomplished through mainframe inquiry and update transactions, subsystems, networked communications systems, program directed displays and/or printed screen and messages sent to designated terminals and printers, and batch reporting.

PEPS has become technologically unsound and presents a business risk. The system is built on a mainframe platform, the technical documentation of the program is limited, and PEPS domain experts have either retired or could leave GPO taking with them most of the system's critical knowledge. In addition, the application is presently supported at a minimal level by GPO IT&S staff. Accordingly, PEPS should be replaced primarily on grounds of its current dependence on obsolete hardware technology.

GPO desires to replace PEPS with a more modern and robust system. The replacement system, named the Manufacturing Workflow System (MWS), should provide the same functionality as the current system using a modern, open architecture, while enhancing specific elements and integrating with other GPO systems.

This Concept of Operations (Conops) document provides an overview of the proposed MWS. It is a living document that will evolve in collaboration with industry and GPO's stakeholders.

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CONCEPT OF OPERATIONS (CONOPS)

1. SCOPE

This document describes the desired characteristics of the Manufacturing Workflow System (MWS) from the user's viewpoint. The sections below identify the proposed system, provide an overview of the document, describe the approach used to generate the document, and provide a brief overview of the system.

1.1 IDENTIFICATION

The proposed MWS will encompass all of the associated equipment, facilities, material, software, hardware, policy and technical documentation, services, and personnel required for its operations and support.

1.2 DOCUMENT OVERVIEW

The MWS Conops serves as a vehicle to communicate the high-level system characteristics of the envisioned system to users, developers, and other stakeholders. The MWS Conops was developed in part from information contained within the MWS Program Plan and MWS As-Is Process Document. It will be used to generate high level system requirements that are captured in the MWS Requirements Document (RD). The MWS Conops should be reviewed together with the MWS Program Plan and MWS As-Is Process Document, as they contain additional information that has not been presented herein.

This document contains the following sections:

- **Section 1, Scope**, describes the approach used to develop this document.
- **Section 2, References**, lists the documentation that was used as a basis to create the document.
- **Section 3, Current GPO Situation**, describes existing GPO systems, operations, environment, and users.
- **Section 4, Justification For and Nature of Changes**, discusses the rationale for a Manufacturing Workflow System and the nature of the proposed changes.
- **Section 5, Concepts for the Proposed System**, discusses design and operational concepts.
- **Section 6, Operational Scenarios**, describes examples of potential use of the system.
- **Section 7, Summary of Impacts**, describes operational, organizational, and other outcomes that could be expected to occur in the development of the system.
- **Section 8, Analysis of the Proposed System**, presents detailed system capabilities and operations.

1.3 SYSTEM OVERVIEW

MWS will be composed of the necessary technology and business practices to enable GPO to replace its current Production, Estimating, and Planning System (PEPS). It will provide job entry, inquiry, scheduling, estimating, and tracking functionality for GPO Plant Operations and Customer Services for in-house publishing services. It will also integrate with evolving enterprise-wide systems including GPO's Federal Digital System (FDsys), Oracle Financials applications, Business Objects reporting tool applications, Pitney Bowes delivery tracking system, and the Address Distribution List Management System (ADMS).

MWS will be aligned with GPO's *Strategic Vision for a 21st Century* and the agency's enterprise architecture (EA).

2. REFERENCED DOCUMENTS

Standards, guidelines, and other documentation used to support the *Manufacturing Workflow System Conops* are described in Sections 2.1 – 2.3.

2.1 STANDARDS AND GUIDELINES

IEEE guide for information technology-system definition-concept of operations (Conops) document. IEEE Std. 1362-1998 New York: Institute of Electrical and Electronics Engineers, 1998.

2.2 GPO DOCUMENTATION

United States Government Printing Office. Manufacturing Workflow System Program Plan v1.1. 28 February 2008.

United States Government Printing Office. Manufacturing Workflow System As-Is Process Document v1.1. 4 April 2008.

United States Government Printing Office. Oracle Release 2 As-Is Process Documentation v1.0. 16 November 2007.

United States Government Printing Office. Oracle Release 2 To-Be Process Documentation v2.0. 4 February 2008.

United States Government Printing Office. Concept of Operations for the Future Digital System V2.0. 16 May 2005.
http://www.gpo.gov/projects/pdfs/FDsys_Conops_v2.0.pdf.

United States Government Printing Office. Federal Digital System Requirements Document for Public Release V3.2. 4 December 2007.
http://www.gpo.gov/projects/pdfs/FDsys_RD_v3.2.pdf

United States Government Printing Office. A Strategic Vision for the 21st Century. Washington: U.S. Government Printing Office, 2004.
<http://www.gpo.gov/congressional/pdfs/04strategicplan.pdf>

United States. Government Printing Office. Information Technology Security Program Statement of Policy: GPO Publication 825.33A. 12 December 2007.GPO.

3. CURRENT SITUATION

This section describes the background, objectives, and scope of the current situation at GPO and the systems in use; operational policies or constraints; current environment; modes of operation; user classes and other involved personnel; and the support environment.

3.1 BACKGROUND, OBJECTIVES, AND SCOPE OF THE CURRENT SITUATION

GPO's Plant Operations relies on PEPS to provide myriad production related information at both the management and shop floor levels.

PEPS was developed on a mainframe platform in the 1980's to serve as an automated system to monitor day-to-day operations. Over several years, additional features were added to PEPS to increase its capabilities. Collection and dissemination of data is accomplished through mainframe inquiry and update transactions, subsystems, networked communications systems, program directed displays and/or printed screen and messages sent to designated terminals and printers, and batch reporting.

PEPS transactions are primarily accomplished through mainframe entries, update transactions, and inquiries. PEPS uses two letter codes (e.g., CO, DQ, PM) to perform specific transactions. A majority of the PEPS transactions are available through a primary PEPS transaction menu. Once a transaction is entered users may, depending on the transaction selected, enter other transactions that are not available on the primary transaction menu. A transaction may also direct a user to a PEPS sub-system (e.g. Production Managers Subsystem, Federal Register Subsystem) which are specifically tailored to a specific product or function or interface with other external systems (e.g., MMPCS). In addition, there are some transactions that aren't visible on the PEPS transaction menu that may be accessed by entering a two letter code.

Every product that Plant Operations produces utilizes PEPS transactions. However, specific products may use transactions specifically developed for them, follow a different workflow, or skip transactions steps altogether. This document is organized around how Plant Operations utilizes PEPS to plan and track a wide variety of products. Every product category generally uses the same transactions and follows the same process steps. The products can be categorized as follows:

- **Congressional Jobs:** Various publications produced for the Congress of the United States. They include, but are not limited to: Bills, Hearings, Calendars, Private Laws, Public Laws, Reports, U.S. Code, and Statutes at Large.
- **Departmental Jobs:** Various publications produced for any Federal agency. They include, but are not limited to: the Budget of the United States of America, Public Papers of the President, Code of Federal Regulations, and various Federal agency publications.
- **Congressional Record:** The official record of the proceedings and debates of the United States Congress. It is published daily when Congress is in session.

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- **Congressional Record (Index):** Serves as the index to the Congressional Record. When Congress is in session, the Joint Committee on Printing publishes between 12 and 20 volumes of the Congressional Record Index per year.
- **Federal Register (Daily Issue):** Published by the Office of the Federal Register, the Federal Register is the official daily publication for rules, proposed rules, and notices of Federal agencies and organizations, as well as executive orders and other presidential documents.
- **Federal Register (Unified Agenda):** A compilation of select rules, proposed rules, and notices of Federal agencies and organizations from the Office of the Federal Register that is produced twice a year.
- **Federal Register (Index):** Serves as the index to the Federal Register. The Office of the Federal Register publishes the Federal Register Index once a month.
- **Blank Paper & Miscellaneous Items:** Provides the ability for Congress and Federal agencies to purchase paper from GPO. The three types of blank paper jobs are mill shipment, ship direct from inventory, and cut & wrap. It also includes the ability to purchase miscellaneous items and services from GPO. These include ink, glue and adhesives, and knife sharpening services.

3.2 OPERATIONAL POLICIES AND CONSTRAINTS

PEPS operates in an environment of ever-growing limitations and constraints. Though it has served users' needs for several decades, it is not completely integrated with other GPO systems. In addition, since it is built upon a mainframe platform it does not have the conveniences and capabilities of a modern PC based system.

Staff is required to maintain and support PEPS continuously (24 x 7). Since there is no backup system, PEPS becoming inoperable would have a major impact on GPO and its customers. Also, several PEPS subject matter experts have left GPO and there are no immediate plans to train additional support staff. GPO's Information Technology & Systems (IT&S) group no longer enhances or upgrades PEPS, although basic application support is still provided.

3.3 DESCRIPTION OF THE CURRENT ENVIRONMENT

The detailed current-state documentation is based on the PEPS Context Diagram depicted in Figure 1, which describes the functionality provided by the current system and its interfaces with legacy systems.

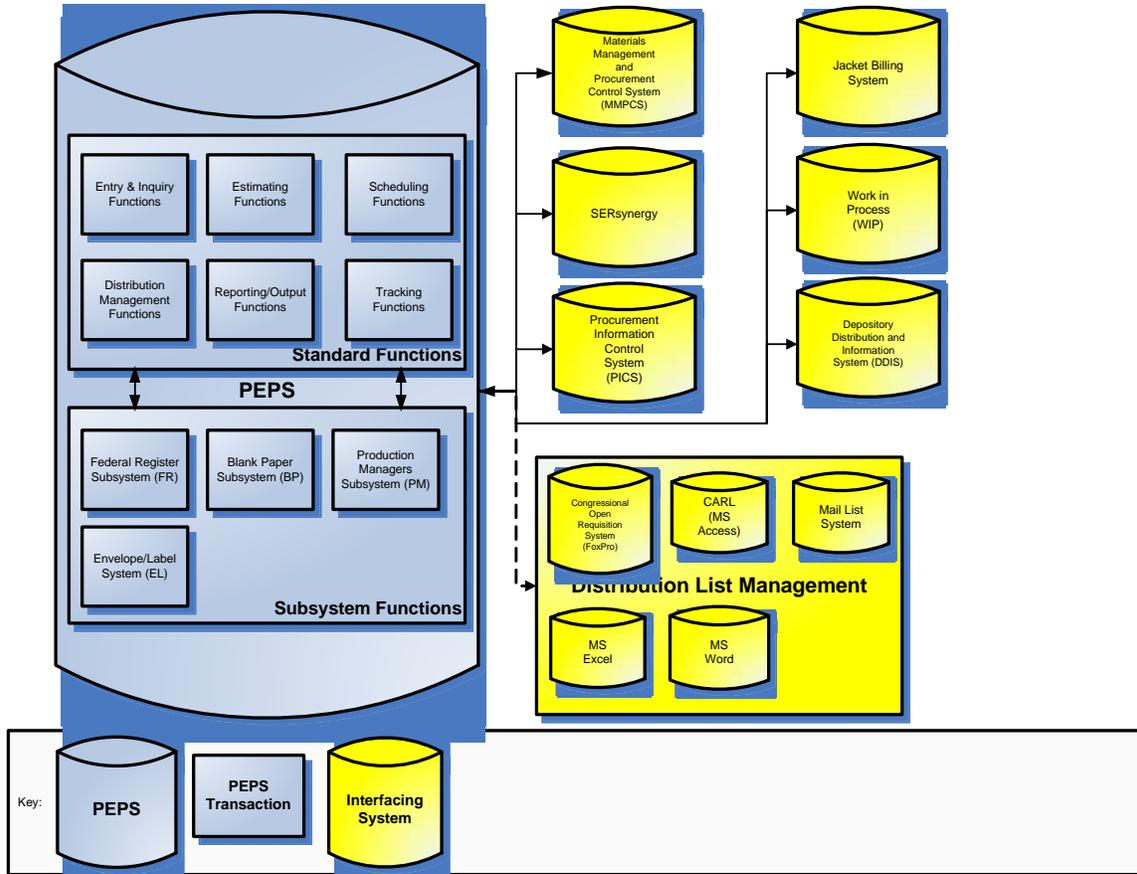


Figure 1: PEPS Context Diagram

PEPS transactions are designed to fulfill the needs of the Plant Operations production process and can be categorized into the following functional areas:

- **Entry & Inquiry:** The ability to create, accept, manage, and view business process information (BPI) for all Plant Operations jobs.
- **Estimating:** The ability to estimate and manage job costs based upon historical GPO cost data (including cost centers, human resources, and material costs).
- **Scheduling:** The ability to plan, schedule, and prioritize jobs to Plant Operations divisions and equipment.
- **Tracking:** The ability to manually enter and view job status throughout the Plant Operation process.
- **Distribution Management:** The ability to enter and upload distribution lists from legacy systems and print delivery labels and receipts.
- **Reporting/Output:** The ability to print job jackets and specifications.
- **Miscellaneous Transactions:** The ability to access transaction menus and

perform system administration functions.

The purpose of each interfacing system is as follows:

- **Materials Management and Procurement Control System (MMPCS):** Supply Chain Management at the GPO is handled mainly by MMPCS. This system is responsible for purchase requests, purchase orders, receiving, issue of materials, Inter-Inventory transfers, returns to stores, discarding of materials of no value, and returns to vendor. Inventory information in MMPCS is utilized by PEPS in the production planning and estimating process.
- **SERsynergy:** Produces e-form reports from PEPS and any Mainframe system.
- **Jacket Billing System:** Manages product code and billing address code information. Job information from PEPS is utilized by the Jacketing Billing System. Jobs are billed based on established page rages, firm estimates, or charges entered into the Probe system.
- **Work in Process (WIP):** Accumulates job (jacket) costs from Probe system from jobs created in PEPS.
- **Procurement Information Control System (PICS):** Manages and tracks processes for procuring printing services from third-party commercial print vendors. PICS interfaces with PEPS for job inquiry purposes.
- **Depository Distribution and Information System (DDIS):** Manages delivery quantities for the Congressional Record, Congressional Record Index, Federal Register (Daily Issue), Federal Register (Index), and Federal Register (Unified Agenda). DDIS interfaces with PEPS to provide final delivery quantities for these products.
- **Distribution Management Systems/Applications:**
 - **Congressional Open Requisition System (FoxPro):** Manages distribution lists for select congressional jobs and GPO customers.
 - Note: PEPS has the ability to upload FoxPro files to print delivery and shipping receipts and labels.
 - **Customer Agency Request Log (CARL):** Manages distribution lists for select departmental jobs.
 - Note: PEPS has the ability to upload CARL files to print delivery and shipping receipts and labels.
 - **Mail List System:** Manages distribution lists for Congressional Record jobs.
 - **Microsoft Excel:** Manages distribution lists for various congressional and departmental jobs and GPO customers.
 - Note: Distribution lists managed in Microsoft Excel must be manually imported into a PEPS Access System in order to print

delivery and shipping labels.

- **Microsoft Word:** Manages distribution lists for various congressional jobs.
 - Note: Distribution lists managed in Microsoft Word must be manually entered into PEPS in order to print delivery and shipping receipts.

3.3.1 AS-IS FUNCTIONALITY & WORKFLOWS

For additional, detailed information about PEPS functionality and how it is used to support the production of specific products, please reference the MWS As-Is Process Document.

3.3.2 OPERATIONAL ENVIRONMENT

The current operating environment consists of the PEPS mainframe application which is accessible through hundreds of personal computers on the GPO network. All equipment is located at the main GPO facility in Washington, DC. Roughly 450 users utilize 300 Windows 2000, Windows XP, and Windows 98 workstations located throughout Plant Operations and Customer Services. File backups, documentation, and PEPS are maintained by GPO personnel.

3.3.3 COST OF SYSTEM OPERATIONS

Information regarding the cost of current system operations is not available.

3.4 MODES OF OPERATION

Current practices provide limited automation for entering, scheduling, estimating, tracking, and managing jobs, requiring human intervention at many steps in the process. In the normal operational environment, all production using the PEPS system is at the main GPO facility in Washington, D.C. GPO has an alternate site for limited production located within 50 miles of Washington, D.C. where PEPS is not utilized. PEPS data is backed up PEPS and sent to a data archiving service provider.

3.5 USER CLASSES AND OTHER INVOLVED PERSONNEL

3.5.1 PROFILES OF USER CLASSES

- **GPO Customer Services**
 - Congressional Publishing Services: Accepts job orders and content from Congressional customers, assigns jacket numbers, manages distribution lists and addresses, enters jobs, forwards work to Plant Operations, and resolves any problems or queries with work during production and delivery.
 - Requisition Section: Accepts job orders and content from Federal agency customers, assigns jacket numbers, manages distribution lists and addresses, enters jobs, and forwards work to Plant Operations and Agency Strategic Teams.

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- Agency Strategic Teams: Works with Requisition Section to fulfill Federal agency job orders produced by Plant Operations. Also is responsible for procuring publishing services for Federal agencies through external contractors.
- **GPO Plant Operations**
 - **Production Manager's Office:** Establishes department policy and directs in-house production operations.
 - **Production Planning & Control Division**
 - Production Control Center: Establishes job schedules and pre-press internal routing processes for in-house production jobs.
 - Production Planning & Scheduling Committee: Develop production plans and schedules.
 - Paper & Materials Control Section: Establishes paper and paper-related product inventory and process blank paper jobs.
 - Estimating & Jacket Preparation Section: Prepare estimates and work jacket instructions.
 - Internal Printing Management Section: Responsible for managing internal GPO printing requests.
 - Office of the Superintendent: Directs and oversees the entire Production Planning & Control Division.
 - **Pre-Press Division**
 - Digital Pre-Press Section: Scan and prepare materials for Press Division.
 - Postscript Service Section: Responsible for electronic file preparation and management. Prepares electronic files for plate making and color proofs.
 - Bill End Section: Enter and schedule all Congressional Bills jobs.
 - Proof Room Section: Provides markup, proofing, and editing services.
 - Video Keyboard Section: Keys and tags content using composition applications.
 - Text Processing Section: Typesets content using composition applications.
 - Electronic Job Room: Performs all EPD related functions for select, small, unique job work.
 - **Press Division:** Responsible for all printing related services.
 - Offset Press Section
 - Web Press Section
 - Sheetfed Press Section
 - Job Press Section
 - Security Printing
 - **Binding Division**
 - Pamphlet Section: Performs cut, fold, and saddle bindery operations.

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- Pamphlet Section, Record Room: Performs large, adhesive bound operations.
 - Blank Section: Performs case binding, sewing, and adhesive bindery operations.
 - Bindery Passports: Performs bindery operations for Passport production.
 - Library Binding: Performs hand-binding operations.
 - Digital Print Center: Provides digital printing services (Xerox, IGEN, Océ produced work).
- **Delivery Section:** Responsible for making local deliveries (within a 50 mile radius of Washington, DC) for jobs produced in-house.
 - **Transportation Operations:** Responsible for arranging out-of-town shipments.

3.5.2 INTERACTIONS AMONG USER CLASSES

The interactions of user classes with the current system are highlighted in MWS As-Is Process Document.

3.5.3 OTHER INVOLVED PERSONNEL

- **Information Technology and Systems (IT&S)**
 - Data Center: Maintains mainframe applications
 - Infrastructure: Maintains and administers servers and network connections.
 - User Support: Provides user support/help desk operations.
 - Application Support: Provides PEPS program maintenance

3.6 SUPPORT ENVIRONMENT

PEPS is supported by in-house developers. The current system would be cost prohibitive to upgrade or modify and it would not provide a viable system foundation on which to build upon in the future; thus the following information is omitted from this document:

- Identification of the support concepts
- Identification of the support environment for the current system, including:
 - Support agency or agencies
 - Facilities
 - Equipment
 - Support software
 - Repair or replacement criteria
 - Maintenance levels and cycles
 - Storage
 - Distribution
 - Supply Levels

4. JUSTIFICATION FOR AND NATURE OF CHANGES

The following subsections present justification for changes, the nature of the desired

changes, priorities among changes, alternatives considered, and assumptions and constraints associated with building the system.

4.1 JUSTIFICATION FOR CHANGES

Several factors drive the desire to replace the current production estimating and planning system. These include GPO's desire to utilize a modern system with enhanced functionality, use customizable GUIs, leverage advances in technology to improve the workflow processes within Plant Operations, and the need to interface with external systems and applications.

PEPS has fulfilled Plant Operations needs for several decades, but it has become technologically unsound and presents a business risk. The system is built on a mainframe platform, the technical documentation of the program is limited, and PEPS domain experts have either retired or could leave GPO taking with them most of the system's critical knowledge. In addition, the application is presently supported at a minimal level by GPO IT&S staff. Accordingly, PEPS should be replaced primarily on grounds of its current dependence on obsolete hardware technology.

A replacement system will provide GPO with the means to better meet the needs of Congressional and Federal agency customers and end users. The new system should provide the same functionality as the current system using a modern, open architecture, while enhancing specific elements and integrating with other GPO systems.

4.2 DESCRIPTION OF DESIRED CHANGES/CAPABILITIES

The system will be built on a modern platform with GUIs. The system will align with GPO's EA and interface with select enterprise systems. It will have the capability to create and manage jobs through various workflow processes as it passes through various functions. These workflows will have the capability to be product specific.

4.2.1 PROPOSED SYSTEM ATTRIBUTES

The system should possess the following attributes:

- **Modularity:** Ability to use plug-in components that can be replaced with minimal impact to remaining components as workload and technology change. Also facilitates the development of a modular architecture and allow for affordable intra-operability.
- **Scalability:** Capable of accommodating increasing volumes of resources and users.
- **Extensibility:** Ability to handle changes to business processes or technology over time and also enable technology insertion as currently available commercial products mature and new commercial products become available in the future.
- **Comprehensiveness:** Ability to meet program sponsor/owner expectations and provide affordable support.
- **Flexibility:** Ensure that the system design is sufficiently flexible and robust to

accommodate changing technology, requirements, and allows GPO to implement progressive improvements over time. Also facilitates integration with other open architecture systems (e.g., Oracle Financials, Federal Digital System (FDsys)) and use of commercial products from multiple sources both in the initial design and in future enhancements.

- **Accessibility:** Employ software compliant with Section 508 of the Rehabilitation Act of 1973 that utilizes graphic user interfaces (GUI) for all system operations.

4.2.2 PROPOSED SYSTEM CAPABILITIES

To meet strategic objectives, MWS must be able to perform the following functions:

- Schedule and plan jobs
- Provide the ability to enter, manage, and retrieve job information
- Estimate jobs based upon historical cost data
- Dynamically schedule and plan jobs according to job specifications and available resources
- Scale in order to meet system performance requirements
- Provide end-to-end workflow processes that streamlines the production processes
- Support end-to-end tracking of all jobs throughout the production process
- Maintain system security
- Provide audit trails of system activity
- Provide role based access to system data and functions
- Leverage existing GPO system capabilities where required
- Make job information accessible in perpetuity

4.2.3 PROPOSED SYSTEM INTERFACES

GPO's enterprise systems architecture is being established in alignment with GPO's strategic plan to meet the needs of all business units by concentrating the agency's portfolio management to create systems for business information, digital production, and content management. MWS falls within the digital production systems portfolio.

MWS must interface with the following external GPO applications and systems within the portfolios:

- **Digital Production Systems Portfolio**
 - GPO's Address Distribution List Management System (ADMS)
 - Responsible for distribution list management and receipt, labels, and other delivery documents generation
 - GPO's Pitney Bowes Delivery Tracking System
 - Responsible for tracking goods (post press operations) thru delivery for select products (e.g., Congressional Publications).
- **Content Management Systems Portfolio**
 - GPO's Federal Digital System (FDsys)
 - Responsible for content management and job submission

- **Business Information Systems Portfolio**
 - GPO's Oracle Financials Applications
 - Oracle Financials Project Costing
 - Integrating with Probe for cost accumulation
 - Responsible for managing GPO cost rates
 - Oracle Financials Inventory
 - Replacing MMPCS for inventory management and obligation

- **GPO Information Technology Infrastructure (e.g., hardware, software, and network)**
 - GPO's Business Objects Reporting Tools
 - Responsible for enterprise reporting functions

Please note that this is not an extensive list of all interfacing applications or systems. In addition, the scope of MWS is not to enhance any of the functionality of any of these interfacing systems and all interfaces will be via an Enterprise Service Bus (ESB) when possible.

Figure 2 describes the to-be system interfaces for MWS.

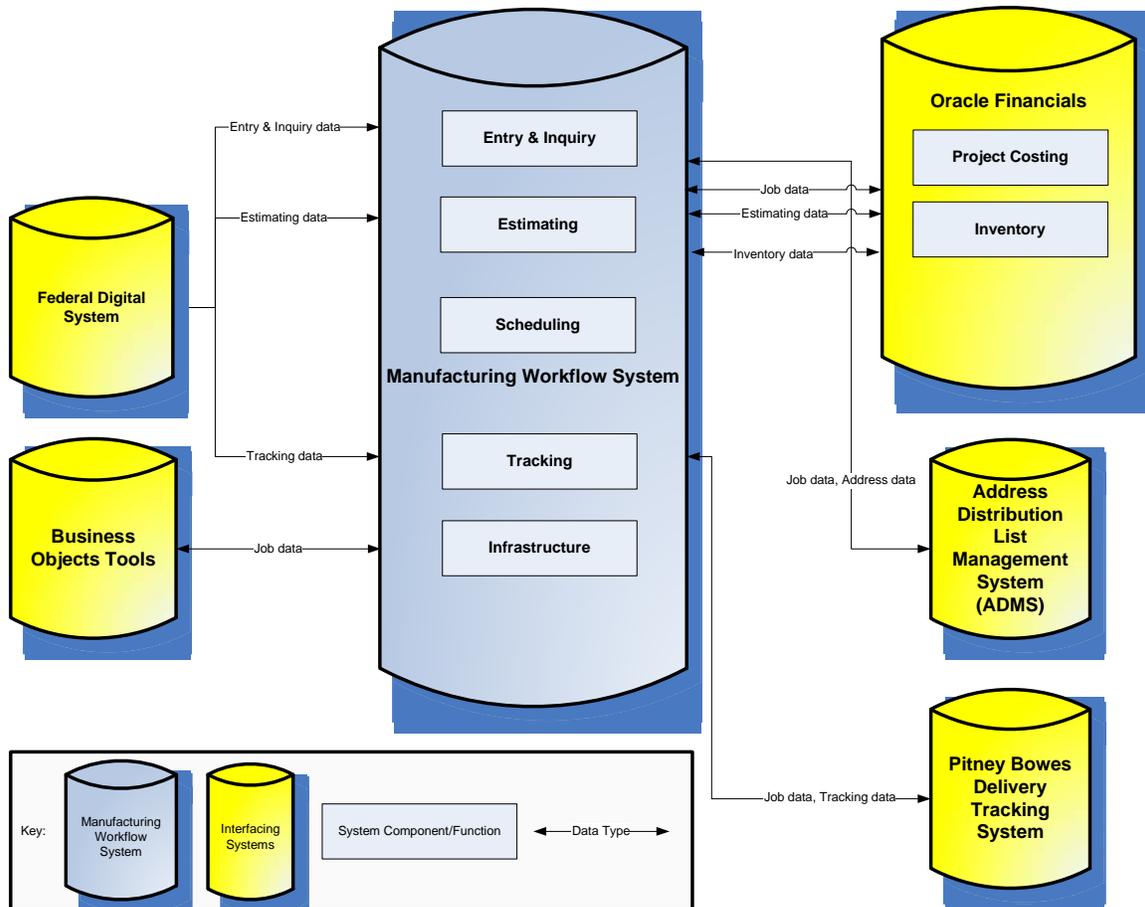


Figure 2 – Manufacturing Workflow System To-Be System Interfaces

4.3 PRIORITIES AMONG CHANGES

MWS must be able to perform all the major functional areas (entry & inquiry, estimating, scheduling, tracking, infrastructure) and interface with Oracle Financials, Business Objects Tools, and the Address Distribution List Management System upon initial system deployment. Interfaces with the Federal Digital System and the Pitney Bowes Delivery Tracking System aren't the first priorities for the initial deployment.

4.4 CHANGES CONSIDERED BUT NOT INCLUDED

See Section 8.3 Alternatives and Tradeoffs for a summary of alternatives to Composition System Replacement and changes considered.

4.5 ASSUMPTIONS

Table 1 identifies assumptions made regarding MWS.

Ref	Assumption	Possible Impact
1	MWS will require standardization and reengineering of existing Production processes.	Specific publication job entry and tracking functionality may be eliminated.
2	Appropriate Oracle Financial applications from Oracle Release 2 implementation will be operational at the time of MWS development.	Cost accumulation, integration to financial systems, and inventory allocation functionality will not be operational and alternate strategies will have to be developed.
3	Address/Distribution List Management and Print System will be operational at the time of MWS development.	Contingency plans will have to be developed to support distribution list and printing capabilities. This includes maintaining legacy applications including FoxPro, CARL, and select PEPS delivery receipt applications.
4	Business Objects will be operational at the time of MWS development.	MWS will require out of the box reporting functionality to meet stakeholder needs.
5	Pitney Bowes Delivery Tracking System will be operational at the time of MWS development.	MWS will not have the capability to view delivery tracking information for select products (e.g., Congressional Publications).
6	The system will meet system attributes and capabilities.	Program sponsor and stakeholder expectations are not met.
7	MWS implementation will require extensive training of GPO users.	Stakeholders are required to learn new processes and systems.
8	Tools and processes may include human interactions into the foreseeable future.	

9	Need to maintain a dual system (PEPS & MWS) until all in-process jobs are complete.	Loss of job data and information.
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Figure 1 – MWS Assumptions

4.6 ADVERSE EFFECTS

The risks of not proceeding with MWS include:

- PEPS will become inoperable and GPO will have to revert to manual processes
- Management of the production process would be severely impacted if PEPS became inoperable
- Insight into the production process would be severely impacted if PEPS became inoperable
- GPO would have difficulty in fulfilling its mission if PEPS became inoperable
- Inability to implement industry technology advances and best practices
- Eventual inability to repair or develop workarounds for production workflows
- Inability to integrate PEPS with current GPO strategic initiatives (e.g., FDsys, Oracle Financials)
- Continued loss of institutional support and programming resources for PEPS will leave GPO with inadequate application support
- GPO will not be positioned to provide adequate guidance, assistance, or services to customers

5. CONCEPTS FOR THE PROPOSED SYSTEM

The following subsections describe the proposed system attributes with respect to background, objectives, and scope; describe applicable operational policies and constraints; describe the proposed system; describe user classes and other involved personnel; and describe the support environment.

5.1 BACKGROUND, OBJECTIVES, AND SCOPE

A high level system overview has been provided in Section 1.3 - System Overview and Section 4.2 - Description of Desired Changes/Capabilities.

5.1.1 BUSINESS OBJECTIVES

The objectives of the new system are:

- Replace the PEPS system with a modern, modular system that meets program sponsor/owner expectations

- Develop the appropriate documentation that supports system development
- Interface with select GPO systems where necessary
- Implement a system that utilizes technical and industry best practices
- To continue to support Plant Operations processes and methodology as necessary
- To support a flexible, consolidated, extensible, scalable, and efficient Production workflow
- To allow necessary updates or to incorporate changes to workflow processes on an as-needed basis as they are developed and implemented
- To achieve alignment with GPO IT strategy and enterprise-wide endeavors such as the FDsys, GPO EA, the GPO Oracle Program, and other Digital Production Systems
- To provide training for GPO and agency users on the new system
- To minimize disruption of customer and GPO processes

5.1.2 SCOPE

This system is expected to replace GPO's PEPS legacy system to meet the evolving needs of GPO and leverage new technology. The replacement system, MWS, will provide functionality in the following, interrelated areas: job entry and inquiry, estimating, scheduling, tracking, and infrastructure. The new system will comprise a complete, end-to-end production planning and estimating application. MWS will integrate with several external systems as described in Section 4.2.3 – Proposed System Interfaces.

5.2 OPERATIONAL POLICIES AND CONSTRAINTS

MWS will support GPO operational policies as well as future changes to policy.

Constraints that may have an impact on system design are:

- The system design and implementation is flexible and adaptable to changes in hardware, software, communication technology, processes, policy, personnel, locations, etc.
- MWS must interface with all systems as outlined in Section 4.2.3 – Proposed System Interfaces.
- System must be designed and implemented in accordance with the strategic technology and architecture decisions of the GPO EA
- Implementation of MWS will need to be consistent with the GPO's Information Technology Security Program Statement of Policy (GPO Publication 825.33),

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with special consideration given to the operational access to system data to various GPO personnel.

- The system will be implemented within current funding and resource allocations.
- MWS will adhere to all applicable laws and regulations (e.g., Section 508)
- The system design may be a balance of Commercial Off the Shelf (COTS) and developed software
- The system is responsive to policy, but is not policy-constrained
- The system will adhere to GPO privacy, security, accessibility policies.

5.3 DESCRIPTION OF THE PROPOSED SYSTEM

MWS will be the enterprise resource planning system for the GPO's Plant Operations department. It will be responsible for collecting, maintaining, and managing all applicable job information that Plant Operations produces. It will have the capability to exchange job information with select external systems. To meet strategic objectives, MWS must address the needs in the following, interrelated functional areas:

- **Entry & Inquiry:** The ability to accept, create, manage, search, view, and output BPI for all Plant Operation jobs including select Security & Intelligent Documents business unit products, regardless of contract type, including blank paper. This includes the capability to maintain the current job identifiers, and create and copy job templates. It also includes integration with FDsys to accept job information and Oracle Financials Project Costing to create a project (jacket). The ability to have specialized job entry capabilities depending on the job or publication is also within scope. This does not include the ability to manage or print job distribution list information.
- **Estimating:** The ability to estimate and manage (e.g. discount) job costs based upon BPI production operations, available resources, and historical data (including cost centers, human resources, and material costs). It also includes the integration with Oracle Financials Project Costing to retrieve GPO scale of price rates to create job estimates and to also view accumulated job costs.
- **Scheduling:** The ability to manage the job scheduling process in conjunction with Plant Operation resources (e.g., available production equipment, time available, personnel). It must be able to manage and determine resource utilization and have the ability to dynamically adjust the schedule based upon job status (e.g., escalate, suspend, and reprioritize jobs). It should also support scenario operations and be able to schedule reoccurring jobs. It also includes the integration with Oracle Financials Inventory to obligate inventory to jobs.
- **Tracking:** The ability to manually manage job status throughout the Plant Operation process and inquire about their live status on the production floor (e.g., track when jobs leave one cost center and enter another one). This capability should be able to flag jobs with a particular status (e.g., job on hold) and support

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the ability to skip job steps in the workflow process if they are not entered. It also includes the ability to have specialized job tracking capabilities depending on the job or publication. This includes the integration with FDsys to exchange job tracking data and GPO's Pitney Bowes system to track deliveries of select products (e.g., Congressional publications).

- **Infrastructure:** The ability to fulfill system foundation attributes in several areas. This includes the integration with GPO Information Technology Infrastructure (e.g., hardware, software, and network) where applicable. The key infrastructure functional areas are:
 - **Workflow:** Workflows will be utilized in MWS to define, execute, and automate business processes. The system will provide capabilities to define, execute, and monitor the workflows at various granularity levels. MWS will have the capability to create and manage jobs through various workflow processes as it passes through various functions. These workflows will have the capability to be product specific. Various user classes will be involved throughout the process and the functions that they will be able to perform will depend on their role. The system will provide GUI tools for users to perform workflow management tasks.
 - **Storage Management:** Storage management will provide and coordinate access, backup, and archiving of MWS information as well as ensure data reliability. Storage management will consist of facilities that are scalable and support increasing and changing storage requirements.
 - **Security:** The security functional element provides the appropriate confidentiality, integrity, and availability functions for MWS data and processes. It also governs access to system data (both authentication and authorization), user registration, assigning user rights and roles (authorization), and maintaining system security (administration and auditing). Finally, the security element provides mechanisms for the necessary technical, operational, and management controls for MWS, including interfaces that it will have with other systems.
 - **Enterprise Service Bus:** The concept of the Enterprise Service Bus is the preferred approach and shall be employed to facilitate flexible and scalable integrations between MWS and external systems. The system shall provide the capability to plug-in services or applications deployed in different hardware and software platforms.
 - **Reporting/Output:** Reporting/output consists of the tools and processes for the extraction, analysis, and presentation of BPI. This includes the ability to extract and analyze information from all GPO systems. Business Objects will be utilized to perform this functionality in MWS.
 - **User Interface:** The user interface functional element will allow for the management of user interactions with the system. GUIs and workbenches (sets of available tools) are key components of this functional area. A workbench will be created for each user class and

GUIs will be created for each functional element as required in accordance. Workbenches must allow users to access toolsets and perform authorized functions.

- **System Performance:** Includes the ability to meet GPO system availability and performance needs
- **System Operations & Support:** Includes system testing, system/software upgrades, and system backup/restore functionality.

The nominal process for jobs to be produced is described in Figure 3.

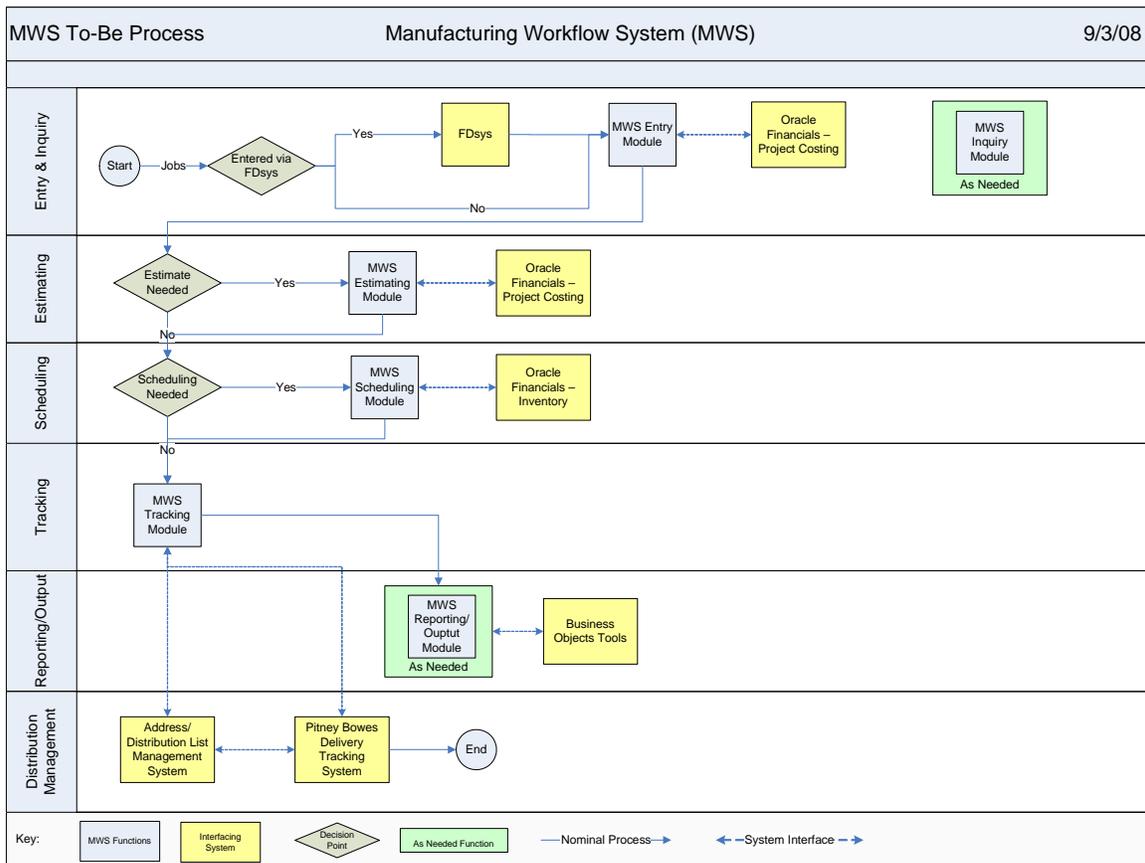


Figure 3: MWS To-Be Process

The to-be workflows for specific job processes are described in Figures 4 through 7.

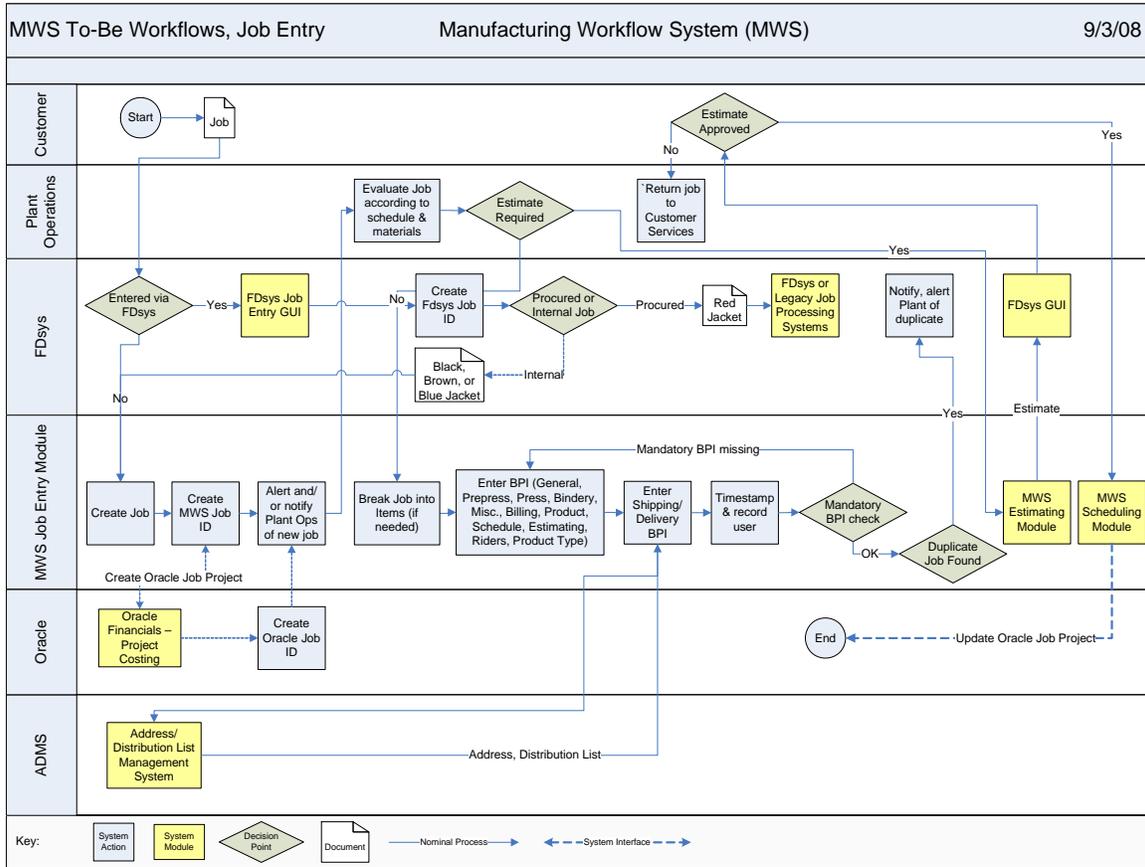


Figure 4: MWS To-Be Workflow, Job Entry

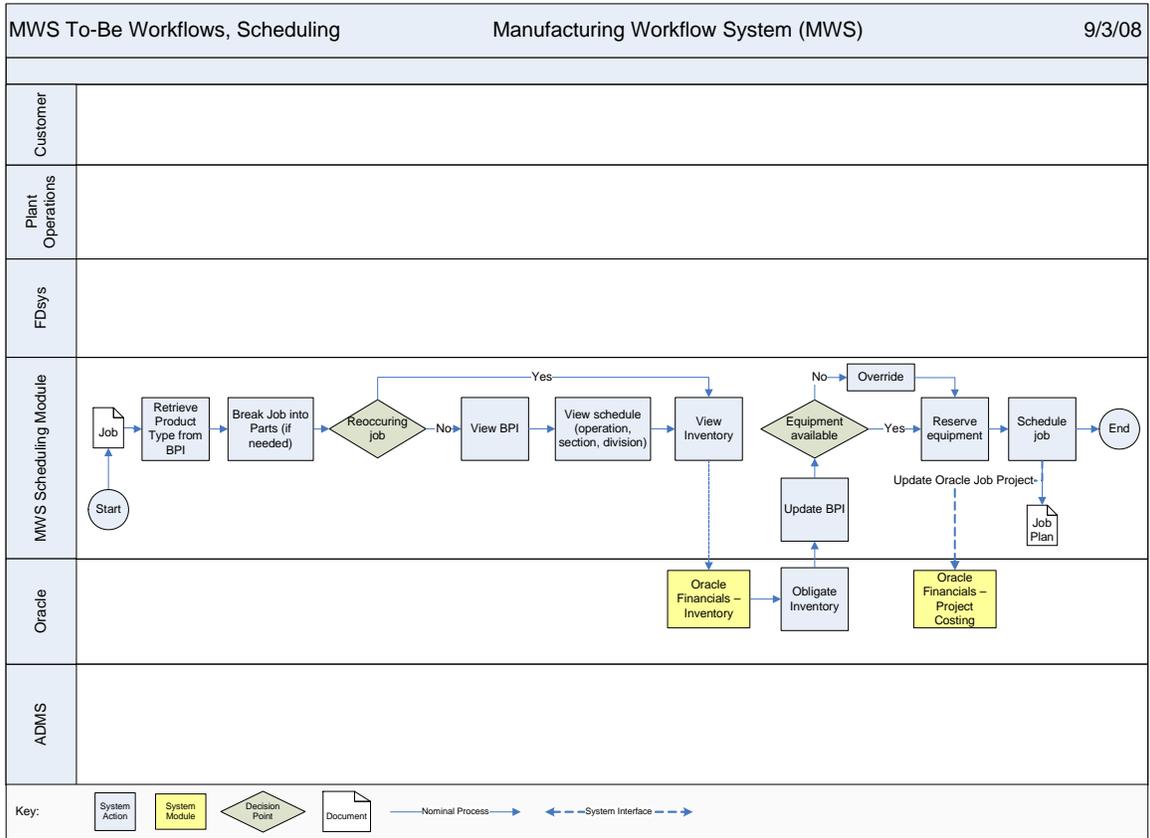


Figure 6: MWS To-Be Workflow, Scheduling

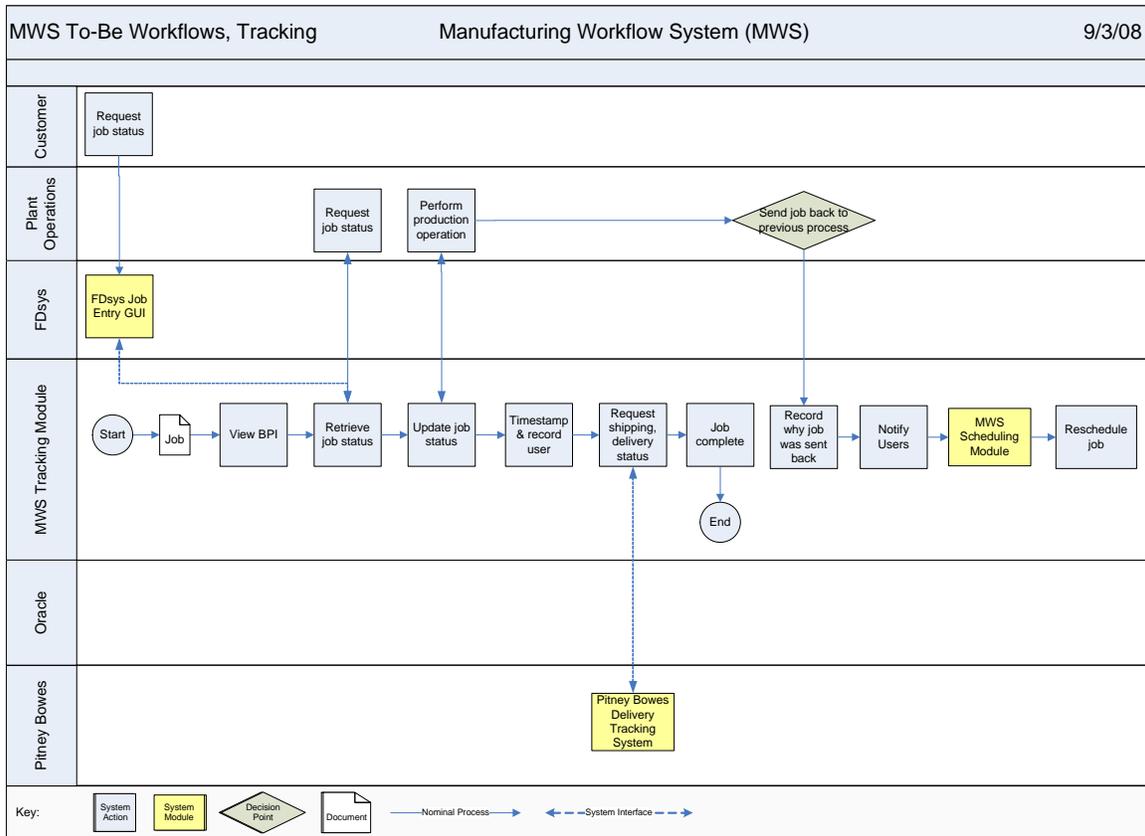


Figure 7: MWS To-Be Workflow, Tracking

5.4 MODES OF OPERATION

The modes of operation for the proposed system as currently known are:

- **Nominal:** Production of all products by Plant Operations will have the capability of using the MWS at the main GPO facilities in Washington, DC and the Secondary Production Facility (SPF, location is privileged information). The system would use both automated and manually initiated processes.
- **Maintenance:** Testing of system component upgrades, replacements, etc. would occur in a separate development and test environments available to users as needed.
- **Alternate site:** Implemented when one site has a failure. A disaster recovery alternate site should be operational with minimal delay following a primary site failure. This site would be in compliance with GPO's Continuity of Operations Plan (COOP).

5.5 USER CLASSES AND OTHER INVOLVED PERSONNEL

The following subsections describe the organizational structure and the classes of users, including user capabilities, which are associated with the proposed system.

5.5.1 CAPABILITIES

The capabilities for the primary functions performed by the user classes of the system are described in Section 5.3 - Description of Proposed System.

5.5.2 PROFILES OF USER CLASSES

The profiles of the proposed system user classes are identical to those outlined in Section 3.5.1 - Profiles of User Classes.

5.5.3 ADMINISTRATIVE AND SUPPORT PERSONNEL

The profiles of the proposed system user classes are identical to those outlined in Section 3.5.3 - Other Involved Personnel.

5.6 SUPPORT ENVIRONMENT

MWS will require continuous support (e.g., 24 x 7) for all users. The exact support environment will not be determined until completion of the system analysis and design phase (Phase 4b) of the MWS program. The MWS Conops will be updated as required.

5.6.1 SYSTEM ENVIRONMENT

MWS must be capable of aligning with GPO's current EA Technical Reference Model. In particular, it must be capable of utilizing the following platforms:

- Windows server
- LINUX
- UNIX
- PC desktop

6. OPERATIONAL SCENARIOS

The *Manufacturing Workflow System Conops* document expresses what users want and envision in the proposed system. Scenarios convey these needs in simple non-technical language. Overlap occurs between different scenarios as a result of interaction between different users or due to similarity between different activities. All of the scenarios represented in the following sections describe one example of how users may interact with the system. Scenarios have purposely been made to be far reaching in an attempt to include all possible actors within a designated class (of users), but the scenarios are not intended to identify all possible situations for any given user class. Additionally, the steps in the scenarios should not be interpreted as a fixed sequence of events; instead they should be interpreted as an illustration of capabilities the system will offer (any user class).

Scenario: GPO Customer - Congressional & Federal Agencies

- Submit and manage job and content to GPO through FDsys or through traditional methods
- Receive job information from FDsys or through traditional methods
- Receive printed product after it has been produced by Plant Operations
- Manage their address and distribution lists through Address/Distribution List Management System
- Generate reports as needed

Scenario: GPO Customer Services

- Receive and manage job and content via FDsys or via traditional methods
- Perform job management functions
- Determine if the job will be procured externally or produced by Plant Operations
- Enter job information into MWS if the job is produced by Plant Operations
- Pass the job onto the next appropriate section of Plant Operations
- Manage address and distribution lists for Congressional and Departmental customers through Address/Distribution List Management System
- Perform inquiries about jobs
- Generate reports as needed
- Create and output job jackets
- Prioritize jobs for Plant Operations
- Track jobs through MWS utilizing data from the Pitney Bowes Delivery Tracking System

Scenario: GPO Plant Operations – Production Manager’s Office

- Prioritize jobs for Plant Operations
- Generate lists in the form of reports for activities that must be accomplished in order to complete jobs
- Perform inquiries about jobs
- Generate reports as needed
- Track jobs through MWS utilizing data from the Pitney Bowes Delivery Tracking System

Scenario: GPO Plant Operations – Production Planning & Control Division

- Plan jobs for Plant Operations
- Manages paper and paper-related product inventory
- Manages blank paper jobs
- Obligates paper to jobs using Oracle Financials Inventory
- Generates estimates of jobs in MWS using business process information in Oracle Financials Project Costing
- Perform inquiries about jobs
- Pass the job onto the next appropriate section of Plant Operations
- Generate reports as needed
- Create and output job jackets
- Receive, submit, and manage jobs for internal (GPO) printing requests through FDsys or through traditional methods
- Track jobs through MWS utilizing data from the Pitney Bowes Delivery Tracking System

Scenario: GPO Plant Operations – Electronic Photocomposition Division

- Enter tracking related information for jobs
- Perform inquiries about jobs
- Will pass the job onto the next appropriate section of Plant Operations
- Generate reports as needed

Scenario: GPO Plant Operations – Press Division

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- Enter tracking related information for jobs
- Perform inquiries about jobs
- Pass the job onto the next appropriate section of Plant Operations
- Generate reports as needed

Scenario: GPO Plant Operations – Binding Division

- Enter tracking related information for jobs
- Perform inquiries about jobs
- Sends finished products to Delivery Section
- Deliver internal (GPO) jobs to GPO representative
- Enter BPI in Pitney Bowes Delivery Tracking System
- Generate reports as needed
- Track jobs through MWS utilizing data from the Pitney Bowes Delivery Tracking System

Scenario: GPO Plant Operations – Delivery Section & Transportation Operations

- Enter tracking related information for jobs
- Perform inquiries about jobs
- Deliver jobs utilizing the Pitney Bowes Delivery Tracking System
- Generate reports as needed
- Track jobs through MWS utilizing data from the Pitney Bowes Delivery Tracking System

Scenario: System Administrators

- Use MWS workflow tools to develop and modify publication specific automated workflows
- Manage testing and rollout/rollback of new system components
- MWS application support
- Generate reports as needed

Scenario: Information Technology & Systems (IT&S)

- Perform user support/help desk operations
- Change and configuration management
- Maintain and administer servers, network connections, and hardware

7. SUMMARY OF IMPACTS

Implementation of MWS will have wide ranging impact on both GPO and its customers. The subsections below identify potential operational, organizational, and development impacts that should be considered as GPO develops its plans.

7.1 OPERATIONAL IMPACTS

Until MWS undergoes systems analysis and design, operational impacts of the proposed system are not known. Possible operational impacts include:

- New interfaces with primary or alternate computer operating centers
- Interfaces and interoperability with legacy systems and applications
- Changes in processes and procedures

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- New modes of operation during emergency, disaster, or accident conditions
- Changes in operational budget
- Changes in operational risks
- Training of system users

It is anticipated that GPO will have to implement changes to the way it conducts business in order to achieve the agency's mission, goals, and objectives. The system will facilitate this endeavor.

7.2 ORGANIZATIONAL IMPACTS

GPO may have to develop or modify policies and business practices. The depth and breadth of the impact on number of personnel, skill levels, position identifiers, and locations of personnel is unknown at this time. The interaction of personnel with the system may require revision of position descriptions to reflect changes in GPO's business practices.

With this in mind, GPO has identified a number of possible organizational impacts:

- The commitment of resources (e.g., funding, time, staff) by GPO as the system is rolled out
- The development of education and increased training for system users
- System operation and maintenance
- Increased opportunities for career development for GPO staff

7.3 IMPACTS DURING DEVELOPMENT

The full extent of development impact will be discovered in the systems analysis and design phase. Factors considered thus far include:

- Articulation of business rules and other controls needed for operational implementation
- Development of training plan to be implemented incrementally
- Training necessary for each release
- Involvement in studies, meetings, and discussions prior to award of the contract
- User Support and involvement in reviews and demonstrations, evaluation of initial operating capabilities and evolving versions of the system, development or modification of databases, and required training
- Parallel operation of test systems without disruption of current processes
- Parallel operation of the new and existing systems
- Operational impacts during system testing of the proposed system

8. ANALYSIS OF THE PROPOSED SYSTEM

This section describes the improvements, disadvantages and limitations, and alternatives and tradeoffs considered.

8.1 SUMMARY OF IMPROVEMENTS

The system, when implemented, will include and enhance the existing functionality described in Section 4.2 and Section 5.3 and will also interface with external systems

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described in Section 4.2.3. The full extent of the capabilities will not be known until the completion of the systems analysis and design phase of the program and will be addressed at that time as required. It is anticipated, however, that the proposed system will offer numerous benefits to GPO such as:

- Improved job management processes
- Improved job tracking and inquiry operations
- Integration with back-office systems for financial and inventory management
- Streamlined workflow process
- Dynamic job scheduling and planning capabilities
- Increased responsiveness to GPO customers

8.2 DISADVANTAGES AND LIMITATIONS

Disadvantages and limitations related to developing MWS include:

- High development costs
- Staff apprehension brought about by new responsibilities or changes to work processes

8.3 ALTERNATIVES AND TRADE-OFFS CONSIDERED

Two alternatives have been outlined in the event that the selected approach is deemed unsuitable based on potential disadvantages or limitations of the selected approach.

Alternative 1: Acquire Mainframe Services from Third Party Data Center Provider

This approach is the recommended option for GPO's on-going Mainframe Migration project. With it, all GPO mainframe applications, including PEPS, would be outsourced to a data center provider. This approach is meant to be a temporary solution until all mainframe applications could be retired or migrated to new or existing systems.

Advantages to Alternative 1 include:

- PEPS functionality would remain the same
- Users would not have to learn a new system or process

Potential disadvantages and limitations to this alternative include:

- Not integrated to new or developing enterprise systems
- Reliance on the mainframe and outdated technology

Alternative 2: Hire or Contract In-House Mainframe Programming Staff

This approach would require GPO to hire or contract programming staff to maintain mainframe applications including PEPS.

Advantages to Alternative 1 include:

- PEPS functionality would remain the same
- Users would not have to learn a new system or process

Potential disadvantages and limitations to this alternative include:

- Not integrated to new or developing enterprise systems
- Reliance on the mainframe and outdated technology
- Increased personnel or contracting costs

APPENDIX 1: GLOSSARY

Business Process Information: Administrative, non-content-specific information that is used or created by a business process.

Job (Order): The business process information submitted by a user to request a product or service. It also includes the information concerning business and system processes to manage the request until fulfillment. Also referred to as an order.

Plan: The method in which the type(s) of production processes, equipment, and materials are determined for a particular job.

Schedule: The date when a job will be worked by a particular user class.

APPENDIX 2: ACRONYMS

ACF

Alternate Computing Facility

BPI

Business Process Information

CARL

Customer Agency Request Log

CONOPS

Concept of Operations

COOP

Continuity of Operations Plan

COTS

Commercial, Off the Shelf

EA

Enterprise Architecture

FDsys

Federal Digital System

GUI

Graphical User Interface

ESB

Enterprise Service Bus

IT&S

Information Technology and Systems

MMPCS

Materials Management and Procurement Control System

MWS

Manufacturing Workflow System

PC

Personal Computer

PEPS

Production, Estimating, and Planning System

SPF

Secondary Production Facility