DOCUMENTATION STANDARDS AND PROCEDURES FOR ONLINE SYSTEMS

EDITED BY

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VAN NOSTRAND REINHOLD COMPANY
NEW YORK CINCINNATI TORONTO LONDON MELBOURNE

Library of Congress Catalog Card Number: 78-14038
ISBN: 0-442-80042-8

Manufactured in the United States of America

Published by Van Nostrand Reinhold Company Inc.
135 West 50th Street, New York, N.Y. 10020

Van Nostrand Reinhold Publishing
1410 Birchmount Road
Scarborough, Ontario M1P 2E7, Canada

Van Nostrand Reinhold
480 Latrobe Street
Melbourne, Victoria 3000, Australia

Van Nostrand Reinhold Company Limited
Molly Millars Lane
Wokingham, Berkshire, England

15 14 13 12 11 10 9 8 7 6

Library of Congress Cataloging in Publication Data

Main entry under title:

Documentation standards and procedures for online systems.

Includes index.
1. On-line data processing–Standards.
I. Rubin, Martin L. II. Knetsch, Marilyn.
QA76.55.S7 001.6'4404 78-14038
ISNB 0-442-80042-8

DOCUMENTATION STANDARDS AND PROCEDURES FOR ONLINE SYSTEMS

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In memory of

MARILYN B. KNETSCH

Her life was one of dedication, love, and inspiration. She always strove for perfection in everything she did. This marked her efforts as technical editor of this and previous works. She was a ceaseless worker and dedicated to all who knew her.

PREFACE

This book is the culmination of many years' work in the conceptualization and development of standards and procedures for modern online systems. It represents the combined thinking and work of a number of individuals, companies, and organizations, all of whom contributed to the work. It is a first step in the development of a comprehensive set of procedures for online system development and operation. However, it is a significant leap forward from current standards and procedures which are based on a batch orientation. We anticipate that you and your organization will make many modifications to these procedures as you adapt them to your unique environment and organization.

We solicit and encourage the readers of this book to submit to the editor, Martin L. Rubin, extensions and modifications of these procedures, for use in an update scheduled for Spring, 1982. Acknowledgment will be made of the author of any materials published, with sub-royalties possible. Please mail the original of such materials to Martin L. Rubin, 121 Bay Colony Drive, Virginia Beach. Va. 23451.

The editor of this book would like to especially acknowledge the contribution of Synoptic Systems Corporation, Falls Church, Va.* This corporation developed for the Federal Trade Commission a number of ideas in the areas of structured design and documentation, as well as simplification of computer operations and procedures, which have been incorporated into this book. Dick Thomas, Vice President of Synoptic Systems Corporation, offered support, guidance, and directions in the formulation of standards for use by the Federal Trade Commission, which was instrumental in developing these standards.

The work of Jerome Gitomer, who was one of the initial participants in the conceptualization of this work, is gratefully acknowledged.

The participation of Beverly Hunter, who contributed to the development of standards for man-machine dialogues, is gratefully acknowledged.

Leila Spevak and Ida Pearson, Assistant Technical Editors, were superb in their response to the call of editing the final manuscript in a short time frame to meet publisher deadlines.

MARTIN L. RUBIN

*We would also like to acknowledge the contribution of American Management Systems, Inc. for their ideas on standards planning guidelines in hardware resource estimation and cost-benefit analysis.

Note: Data Correlation and Documentation System and Job Control Language Standards, beginning on page 119 and running through page 144, are taken from a software package called DCD II which is proprietary to and marketed by CGA Software Products Group, Inc. Further information may be obtained by writing CGA Software Products Group, Inc., 1370 Piccard Drive, Rockville, MD 20850.

INTRODUCTION

The standards and procedures contained in this work are organized in a manner that facilitates their use. We have found through research that standards which are in one inseparable document are difficult to use by the standards' holder. These standards are designed so that the user may refer to the particular subject which he will reference on that day; e.g., documentation guideline or job control procedures.

The standards are organized as follows: There are major standards groupings and individual stand-alone standards within each grouping. Each practice has a complete title and identification.

Nearly every organization that uses this book will have some standards in one form or another. Therefore, a choice will have to be made as to whether to convert existing standards into the organizational format of this work, or to select individual groupings and standards within this work, for adaptation to the format of existing standards. We recommend the former approach since it will force the organization to review all existing standards as they are converted into the new organization.

The single major word of caution is the problem of whether the standards will be enforced and used by the data processing organization personnel. We have found that many organizations pay lip service to standards and procedures and the manual gathers dust on people's desks.

In the development of this work, a special effort was made to pay attention to the practicality of the standards contained herein:

- Are they workable?
- Will the staff be willing to use them?
- What will it cost in staff time to adhere to these standards?

The best approach is to solicit the opinion of key personnel about the proposed standards. Then, in the final analysis, management must decide the importance of enforcing particular procedures.

In developing these standards, one of our major difficulties was the problem of whether we could provide specific procedures or general guidelines for conducting work activities. In our earliest attempt, our approach was to be as detailed as possible in all areas. This was found to be not feasible since the specific hardware and software environment and staff organization will determine the exact nature of the standards and procedures that are required.

After decisions have been made regarding the format to be used, a review must be made of each set of practices contained in this work for possible adoption in the company procedures. Secondly, a review should be made of changes in individual standards that will make them suitable for your

organization's use. This review may include the decision to adopt only the concepts of the standard or a portion of the content, or to expand the current content with specific detail.

We consider this book a starting point in the development of standards which are tailored to online systems. We hope that it will inspire organizations to review their existing standards and procedures, and initiate major revisions. We hope that this process of change will be shared with future readers in the update of this work, as we have noted in the Preface.

The standards contained in this book assume an IBM 360/370 hardware and software environment. We realize that many readers will have a variety of new generation hardware and software produced by many different vendors. We would greatly appreciate receiving, and will be pleased to consider for publication, any procedures developed by readers for other hardware/software environments.

COMPARING BATCH AND ONLINE SYSTEM STANDARDS

Standards written for batch systems are inappropriate for online applications. From a systems viewpoint there is a fundamental differnece between the online real time system and the conventional batch system. The online system's operator interacts with the computer as events take place, while the batch system reports on events that have already transpired. Thus, the standards for each system must be completely different.

Major conceptual differences between the two types of systems are:

CHARACTERISTIC	ONLINE	BATCH
Basic processing unit	Transaction	Group of related transactions
Availability	Continuous	Scheduled time only
Input source stream	Unrelated types	Related groups only
Input controller	User	Computer program control
Input data rate	Unpredictable	Constant
Input presentation	Parallel	Serial
Response time	Seconds	Hours
Basic process objective	Complete transaction	Process group
Optimized for	User	Central processor
Environment	Dynamic	Static
System control	Multi-level	Single level
Input sources	Many	Few
Reliability	Critical	Less critical

The basic processing unit of the online system is the transaction, often called the message. The online system processes one transaction at a time through a series of functions required to complete it. In contrast, the batch system processes an entire set of transactions, one function at a time.

An online system must be readily available to users at any time of day or night. A batch system output is available to the users on a scheduled basis. The output for the online system is controlled by the user and is presented

to the system by the user, who is not under the control of the data processing department. By contrast, the input to the batch system is controlled by the computer operator, who can present it to the system at the time which best suits the convenience of the data processing operations staff.

The online system must be designed so that the processing required for any given transaction cannot be determined until after it has been submitted by the user, and examined by the system. In the batch system, the operator accumulates groups, or batches, of related transactions and presents them to the system. The online system must therefore have a control structure for calling in appropriate modules, while the batch system need only have the logic necessary to recognize that the transactions are in the correct format for acceptance by a program.

The user controls the input. Nothing happens until he submits a transaction for processing. It is not possible to predict when, what, or where the user will submit input to the system. In the batch system, the operating system scheduler controls when the data will be processed and from which device.

Online systems must be able to handle more than one transaction at a time because there would be an unreasonable delay if transactions were processed serially. This requires that the system have a priority interrupt capability and queues to hold in-process transactions. The batch system (because the program controls the reading of data) handles one transaction at a time.

The response time of the online system is measured in seconds, or fractions of a second, because it interacts with a human operator who functions in real time. It accepts a message, places it in an input queue, retrieves it from the queue, determines its type, edits it, and responds to the user with another question, a format, error message, etc. When dealing with human operators, the response time must be compatible with their processing speed and reaction time.

The environment of the online system is a dynamic one: users request services and are constantly competing for the communications facilities. Therefore the workload cannot be fully predicted in advance, and the system must provide satisfactory response times during peak periods.

In additon to the more demanding nature of the online system, more hardware is required to support it: remote terminals, a communications network, controllers, modems, fast direct access storage, etc.

Online systems have a lower tolerance for failure than do batch systems. When a batch system fails, the schedule is disrupted and some deadlines are missed, but when an online system fails, the organization cannot process the incoming data, and many of the operating functions of the business are affected. Restart and recovery procedures therefore must allow users to pick up where they left off before the system crash. In some cases it is necessary to continue processing even with component failures.

The problem is to recognize the fundamental differences between batch

and online processing, and then to determine their impact on the organization's procedures, documentation requirements, etc.

The standards in this book have been especially devised to reflect the various aspects of an online system. A comparison of the elements of a batch, versus online standard manual, is shown below:

BATCH	ONLINE
Pre-processing	Transaction logic
Keypunch instructions	Man-machine dialogue
Program flowcharts	Screen formats
File definitions	Input codes
Record layouts	Command syntax
Program documentation	Module documentation
Console operator documentation (run book)	Data base organization
Input forms	Data base access method
Output forms	Communications queues
Report distribution lists	Security tables
	Communications line control
	File directories
	Communication network layouts
	Terminal specification
	Terminal operator instructions
	Transaction logs
	Linkage records

DOCUMENTATION STANDARDS AND PROCEDURES FOR ONLINE SYSTEMS

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SERIES 0100

project planning and review

PRACTICE 0100
USER REQUEST

CONTENTS

I. INTRODUCTION

A. GENERAL

This practice describes a form that is to be utilized in all service requests to the ADP organization.

B. PURPOSE

The service request form is a formal procedure for requesting ADP service, which briefly summarizes the work to be performed and information about that work.

II. USER REQUEST FORM

A user request for service is shown in Figure 1. On this form, the user briefly describes the computer application or other service desired.

Job No.

USER REQUEST

Do Not Fill In
Work Req. No.: ___ – ___
main sub

Problem Title: _____

Originator: _____

Dept./Sec.: _____ Ext.: _____

Date Submitted: ___/___/___ Date Required: ___/___/___

Manhours Authorized: _____ Machine Hrs. Authorized: _____

Authorized Signature: _____

Rec'd. by:

Person Assigned:

Dept./Sec. Assigned:

Date Rec'd.: / /

Date Closed: / /

NATURE OF WORK (check one):

- ☐ Feasibility Study
- ☐ New System Development
- ☐ New System Automation
- ☐ Complex System Modification
- ☐ Simple System Modification
- ☐ Emergency Program Maintenance
- ☐ Special Study
- ☐ Other: _____

WORK DESCRIPTION (Problem area, application, requirements, etc.):

INFORMATION AVAILABLE (List documents attached or available):

SPECIAL CONSIDERATIONS (Such as, new equipment, monetary limitations, priority needs, other comments):

Figure 1. User request.

Selected entries on the form are discussed below:

A. DATE SUBMITTED

Submit the User Request as far in advance as possible. The Automatic Data Processing (ADP) staff workload is highly variable and backlogs occur frequently—advance scheduling of new work is a must.