

A92-5/1

TITLE: Computer Integrated Prototype to Enhance Demand Activated Manufacturing for the Domestic Apparel Industry

CODE: A92-5

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GOAL: The goal of the project A92-5, Computer Integrated Prototype to Enhance Demand Activated Manufacturing for the Domestic Apparel Industry, is to build and test a prototype of an on-line electronic sourcing system for textile and apparel product developers.

ABSTRACT:

This annual report includes information on three versions of an electronic sourcing system developed for apparel product developers. A textbased DOS version of Paradox ®, a MICROSOFTAccess ® version with more graphic capabilities and, and a Visual Basic mock-up implementing Human Computer Interface Baseline requirements as designed by Human Computer Interface engineers from Argonne and Pacific Northwest Labs are illustrated and discussed. Results of usability testing of two versions of the database, the Paradox ® version and the MICROSOFTAccess ® version, with apparel product developers from two major retailers are presented. Connectivity issues relative to a PC-based or networked access to the database are discussed.

BODY:

This report examines the focus of the project work for the National Textile Center project, A Computer Integrated Prototype to Enhance Demand Activated Manufacturing for the Domestic Industry. Project work is reported under three primary areas:

- 1) *Database refinement* where three versions of the database are discussed where each reflects a phase in the software engineering life cycle,
- 2) *Usability testing* where testing with apparel product developers at corporate headquarters for two major retailers is discussed. and
- 3) *Connectivity* issues where three potential interfaces with the database are discussed.

Database refinement

Paradox® Version

Prototype development in the first two project years involved interviewing apparel product developers in major apparel companies like Macy's, K-Mart, Wal-mart, Penney's and others. From these interviews, a database prototype utilizing a relational database concept and developed in the software package Paradox® was designed. The Paradox® database is a textbased system. The user interface is design to support both novice and expert users. The Paradox® database version consists of black text on an aqua field. A bar at the top of the field offers options. Help descriptions at the bottom of the screen are provided to alert the user to on screen controls. (See Fig. 1)

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Apparel Reports Exit
[+]##### Query Results #####]
Vendor #: 55
Vendor Name: NEW SITE MFG. CO.
Item #: 0021
Description: T-Shirts
Sewing Operators: 35
Manufacturer: N
Private Label: N
Contractor: Y
Capacity/week (units): 12000
Minimum (units): 0
Weight (oz): VARIES
Fiber(1=nat,2=syn,3=blnd): 1,2,3
Price Point: MODERATE, BETTER
Lead Time (days): 5-7
##### 15 of 34 #####
PgUp/PgDn To View, F2 For Options, ESC To Quit

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Figure 1

MICROSOFTAccess® Version

Published information on how apparel product developers might react different presentations of data comprising an electronic database did not exist. However, in a product development model Gaskill (1992) described functions of apparel product developers like analyzing markets that involved the use of textbased information. She also identified functions like fabrication selection and silhouette and style selection which involve the use of graphic information.

To attempt to understand the impact of the integration of graphics into the basic database information, data entered under the Paradox® based directory was converted to a program developed in MICROSOFTAccess®. This version supported the same data but presented the data in a Windows® like environment with more graphic capabilities. (See Figure 2)

Item #	Vendor #		
2	137		
Item description	Vendor name		
Men's & Boys' Sportscoats	ANNISTON SPORTSWEAR CORPORATION		
Sewing Operators	Manufactures	Private label	Contractor
361	Y	N	N
Capacity/wk(units)	Minimum units	Weight(oz)	Lead time(days)
20000			7-10
Fiber(1=rat_2=syn_3=bind)	Price points		
1,2,3	BETTER		

Figure 2

Opening screens of the MICROSOFTAccess® version consisted of sewn product images that had been scanned into the program. Additional screens were set in a Windows® like environment with the use of on screen buttons, bars and scrolling capability that was mouse controlled. (See Figure 3)

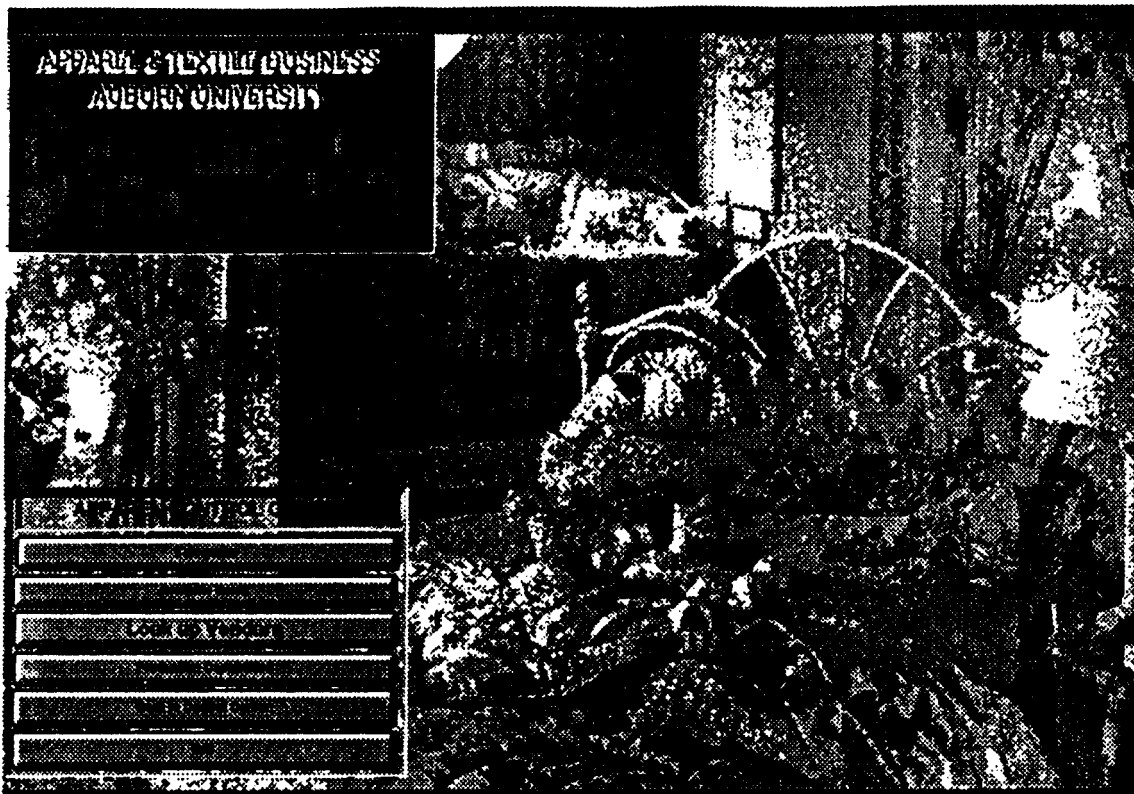


Figure 3

Visual Basic Version

Under the AMTEX-DAMA initiative human computer interface engineers developed a third database integrating user-to-computer interface (UCI) guidelines in the development process. Issues of organization, consistency, labeling, and feedback were addressed in structuring this WINDOWS® like version. Usability testing with Target will provide feedback on this version of the database. This version of the database will be demonstrated under the AMTEX-DAMA initiative at the 1994 Bobbin Show. The human computer interface version is designed to minimize training and the need for manuals. Navigation is meant to be easier for a novice but to hold the attention of a veteran computer user. More on-screen help features are built into the database. (See Figure 4)

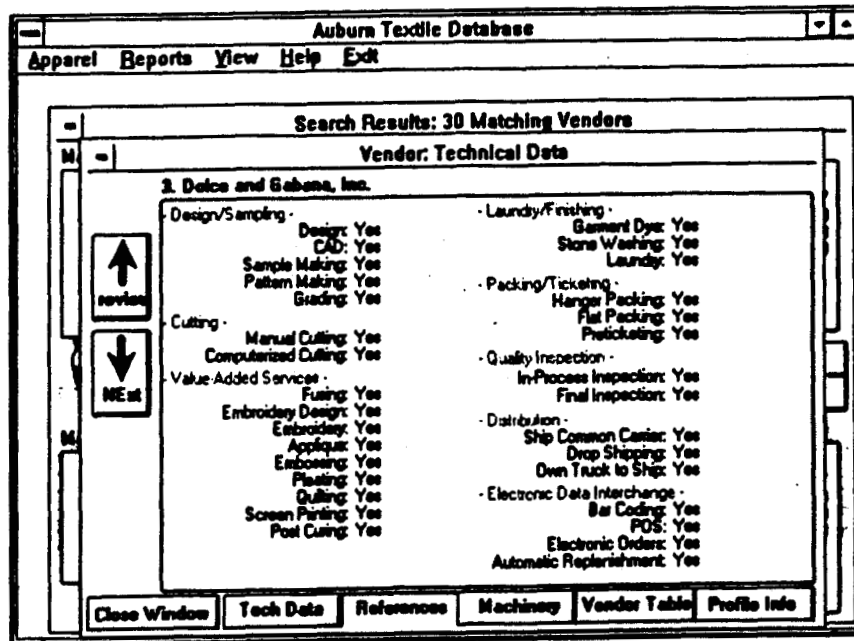


Figure 4

Usability Testing

Two of the databases, the Paradox® version and the MICROSOFTAccess version, were tested in usability tests with actual apparel product developers (AD). Seventeen apparel product developers from two major retailers were asked to respond to a survey instrument and react to the databases using a case study approach. Interviews were recorded to capture verbal reactions. Participants were asked to use each version of the database to respond to sourcing questions posed in two different case studies. After interaction with both databases, participants were asked to select from the two database versions the one they preferred to use to accomplish a third search.

Evaluations of the data from the study are in progress. Observations and early analysis have lead researchers to important understandings in restructuring the Vendor survey form and redesigning the visual structure of the database.

- 1) Demographics indicate that fifty-two percent of the apparel product developers were under 35 years of age.
 - 2) Fifty-two percent had over ten years of related job experience.
 - 3) Ninety-four percent of the APD had access to a computer.
 - 4) Eighty-eight percent had on-the-job training computer training.
- Survey information indicated that a majority of these apparel product developers

were below the age of thirty-five, experienced in their jobs, and had access to computer hardware. Observations, however, from interactions with the case studies indicated that a number of the APD were unfamiliar with and somewhat reluctant as self-starters in interacting with a computerized database. Only a few APD seemed very comfortable with their initial interaction with the system. Observations indicated that few of the APDs actually recognized that there were on screen helps for system navigation.

Connectivity

Structuring the information into a usable database is one part of the development of this on-line electronic sourcing system. Computer access from one terminal to a second raises a whole different set of questions. For the short term, the communications package, Norton's PCAnywhere®, is being used to allow access to a database search in the Paradox ® version of the database. Long range the AMTEX-DAMA initiative is working to develop the engines and interfaces to allow user-friendly access to the database through Internet. The intermediate process to allow a broader access to the database is the use of Clemson's Apparel Manufacturing Information System (AMIS) to connect the user to the database.

SUMMARY:

Three versions of a database using information pertinent to sourcing products manufactured by Alabama textile and apparel producers have been developed. These databases have been subjected to usability testing with Mercantile, Nordstrom and Target apparel product developers. Connectivity is currently managed through Norton's PCAnywhere ® package. Plans for housing the database through the Clemson Apparel Research Center are evolving. Options for Internet connectivity are being explored.

REFERENCES:

Gaskill, L.R. Toward a Model of Retail Product Development: A Case Study Analysis. *Clothing and Textiles Research Journal*, Volume 10, #4, Summer, 1992.

PUBLICATIONS/PRESENTATIONS:

Anderson, L.J., Cheatham, R.L., Peskin, A.M. 1994. *AMTEX: A University, Government, Industry Partnership*. In *Proceeding of the American Society for Engineering Education*, June 5-7.

GRADUATE STUDENT PROJECTS

Kim, M.W. 1994. Development of MICROSOFTAccess® version of the Apparel Sourcing Database. M.B.A. thesis, Auburn University.

Peacock, D.P. 1994. Factors Affecting the Acceptance of an Electronic Sourcing Database Prototype by Apparel Product Developers in Two Specialty Retail Stores. M.S. thesis, Auburn University.

RETAIL CONTACTS CONTRIBUTING TO DATABASE:

Mercantile, Cincinnati
Nordstrom, Seattle
Target, Minneapolis

Spiegel, Chicago
K-Mart, Miami

Macy's, New York
Penney's, Dallas

