



西安电子科技大学
XIDIAN UNIVERSITY

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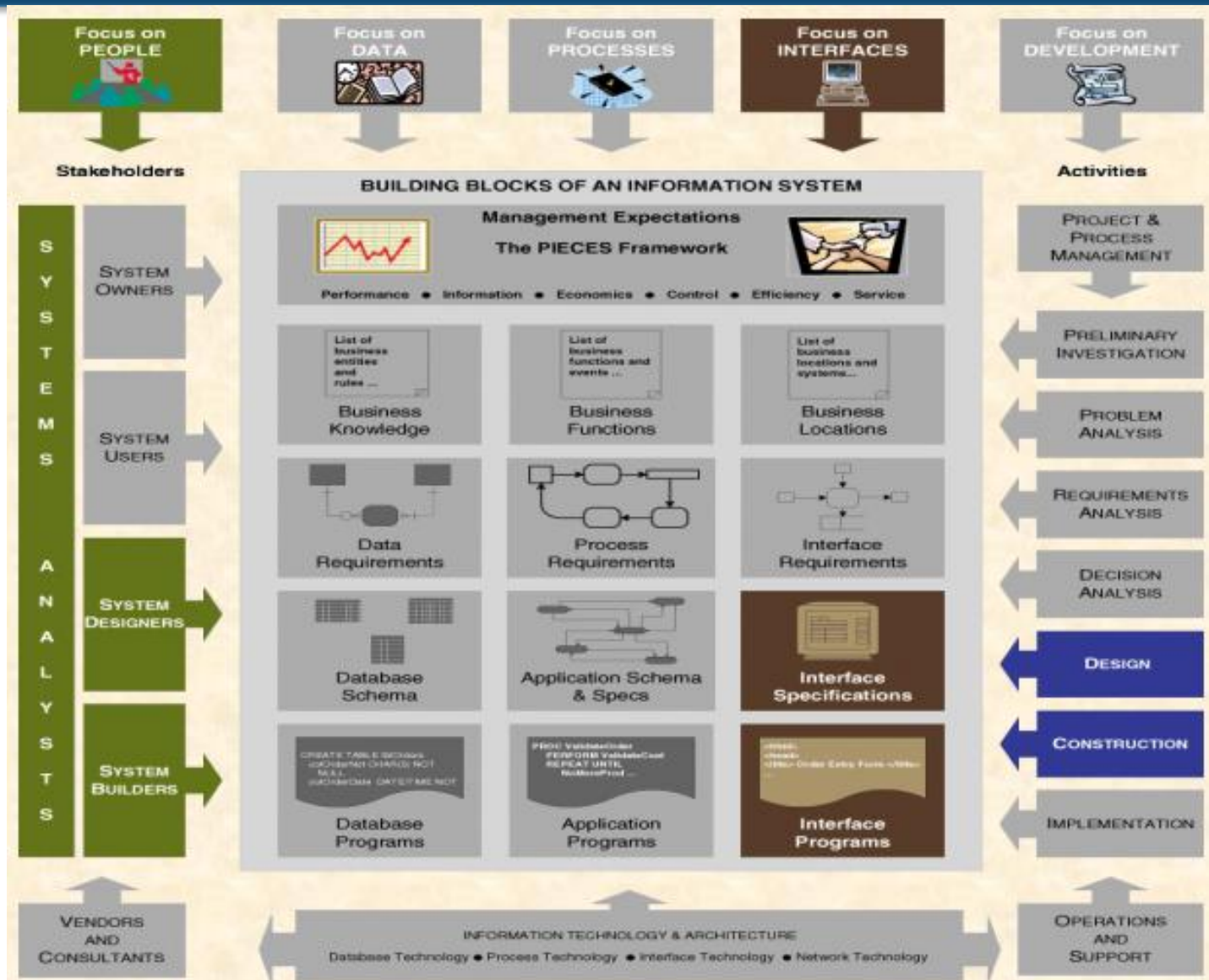
系统分析与设计 (SYSTEM ANALYSIS AND DESIGN)

Output Design and Prototyping

Content Structure

- ✿ Output Design Concepts and Guidelines
- ✿ How to Design and Prototype Outputs?
 - 工具；原则；设计过程；与互联网和 Web 相关的输出设计。

Chapter Map





Output Design Concepts and Guidelines



Outputs

- ❁ Outputs present information to system users.
- ❁ Outputs are most visible component of a working information system.
- ❁ Outputs are often the basis for the users' and management's final assessment of the system's value.

Internal Outputs

- ✿ Internal outputs are intended for the internal system owners and system users within an organization.
 - Detailed reports present information with little or no filtering.
 - Summary reports categorize information for managers who do not want to wade through details.
 - Increasingly presented in graphical formats using charts.
 - Exception reports filter detailed information before presenting it.
 - Only include exceptions to some condition or standard.

Detailed Report

SoundStage Entertainment Club Detailed				
PRODUCTS ORDERED ON 1/25/2000				
P.O. Number	Product Number	Product Type	Quantity In Stock	Quantity On Order
112312	102774	Merchandise	232	43
	232322	Title	23	43
	232332	Title	2	3
121212	222332	Merchandise	115	132
	546566	Title	667	1
	232554	Title	11,234	343
	200992	Title	54,321	1
232323	1212343	Title	1,324	11
	3434434	Merchandise	6,561	55
	4343434	Merchandise	112	111
	3434344	Title	3	232
<div>Return to SummaryClose</div>				

Summary Report

SoundStage Entertainment Club Summary			
PRODUCT SALES SUMMARY			
AS OF 1/25/2000			
Product Type	Product Category	Current Month's Unit Sales	Current Year Unit Sales
Merchandise	Clothing	784	4,312
	Media Accessory	541	2,079
	Total:	1,325	6,391
Title	Audio	667	20,439
	Game Title	11,234	12,445
	Video Title	54,321	998,872
	Total:	66,222	1,031,756
View Additional Reports			
Close			

Exception Report

 SoundStage Entertainment Club Exception



DELINQUENT MEMBER ACCOUNTS AS OF 1/25/2000

<i>Number</i>	<i>Name</i>	<i>Area Code</i>	<i>Phone</i>	<i>Balance Due</i>
112312	Joe Dunn	323	459-6565	\$ 58.56
112121	Bob Fischer	232	878-4554	\$ 1.56
323232	Mary Slatter	234	136-5445	\$ 789.36
121212	Harold Martin	561	895-4784	\$ 45.63
232112	Kevin Dittman	623	985-5587	\$ 29.95
232321	Rick Carlina	787	985-5548	\$ 15.22
767676	Barb Kitts	454	966-5586	\$ 7.56
232323	Kenny Bum	454	789-5589	\$ 11.00

Return to Summary

Close

External Outputs

- ✿ External outputs leave an organization.
 - Intended for customers, suppliers, partners, or regulatory agencies.
 - Turnaround (回转) documents are external outputs that eventually re-enter the system as inputs
 - Most “bills” and invoices include a stub (存根) to be returned by the customer with payment.

External Document



SoundStage Entertainment Club
Fax 317-494-5222

**PURCHASE
ORDER**

The following number must appear on all related correspondence,
shipping papers, and invoices:

P.O. NUMBER: 712812

To:

CBS Fox Video Distribution
26253 Rodeo DR
Hollywood, CA

Ship To:

SoundStage Entertainment Club
Shipping/Receiving Station
Building A
2630 Darwin Drive
Indianapolis, IN 45213

P.O. DATE	REQUISITIONER	SHIP VIA	F.O.B. POINT	TERMS
5-3-01	LDB	UPS		Net 30

QTY	DESCRIPTION	UNIT PRICE	TOTAL
20000	Star Wars: The Phantom Menace (VHS)	15.99	319,800.00
3000	Star Wars: The Phantom Menace (DVD Dolby Digital)	19.99	59,970.00
500	Star Wars: The Phantom Menace (DVD DTS)	24.99	12,495.00
8000	Star Wars: The Phantom Menace (PlayStation II)	16.99	135,920.00
400	Star Wars: The Phantom Menace Soundtrack (CD)	16.99	6,796.00
600	Star Wars: The Phantom Menace Theater Poster	4.99	2,994.00
Subtotal			537,975.00
Tax			37,658.25
Total			575,633.25

- Please send two copies of your invoice.
- Enter this order in accordance with the prices, terms, delivery method, and specifications listed above.
- Please notify us immediately if you are unable to ship as specified.

Madge Worthy₄₋₀₁
Authorized by _____ Date _____

Turnaround Document



SoundStage Entertainment Club

2630 Darwin Drive - Bldg B
Indianapolis, IN 45213
317 496 0998 fax 317 494 0999

Invoice No. 301231

INVOICE

Customer

Name KATRINA SMITH
Address 3019 DURAC DR
City LITTLE ROCK State AR ZIP 42653
Phone 502-430-4545

Due Date 2/24/01
Order No. 346910

Payment Amt

Detach and return top portion with payment

Qty	Description	Unit Price	TOTAL
1	EAGLES HELL FREEZES OVER (DVD DD)	\$19.99	\$19.99
1	THE GRAMMY BOX (CD) ***COUNTS AS 3 CREDITS	\$21.99	\$21.99
1	GONE WITH THE WIND DIRECTORS CUT (DVD DS)	\$17.99	\$17.99
1	SIXTH SENSE (VHS)	FREE SS CR	\$0.00
1	A BUG'S LIFE (VHS)	FREE SS CR	\$0.00
1	NASCAR 2000 (VHS) *** CLOSEOUT (NO SS CR)	\$9.99	\$9.99
10 SOUNDSTAGE CREDITS WERE USED TO PAY FOR PART OF THIS PURCHASE			
WE APPRECIATE THE FINE MANNER IN WHICH YOU HAVE PAID ON YOUR ACCOUNT. IN APPRECIATION WE HAVE ADDED 7 SOUNDSTAGE CREDITS TO YOUR ACCOUNT			
YOU CAN EARN 7 CREDITS BY PAYING THIS INVOICE BY THE DUE DATE			

SubTotal \$69.96

Shipping & Handling \$7.00

Taxes \$2.95

TOTAL \$79.91

Payment Details

- ☐ Cash
☐ Check
☐ Credit Card

Name _____
CC # _____
Expires _____

Office Use Only

Please return top portion invoice with payment. Make checks payable to:
SoundStage Entertainment Club.

RETURN TOP PORTION WITH PAYMENT

Taxonomy (分类) for Computer-Generated Outputs

Distribution Delivery	Internal Output (reporting)	Turnaround Output (external; then internal)	External Output (transactions)
Printer	<p>Detailed, summary, or exception information printed on hardcopy reports for internal business use.</p> <p>Common examples: management reports</p>	<p>Business transactions printed on business forms that will eventually be returned as input business transactions.</p> <p>Common examples: phone bills and credit card bills</p>	<p>Business transactions printed on business forms that conclude the business transactions.</p> <p>Common examples: paychecks and bank statements.</p>
Screen	<p>Detailed, summary, or exception information displayed on monitors for internal business use.</p> <p>Reports may be tabular or graphical.</p> <p>Examples: on-line management reports and responses to inquiries</p>	<p>Business transactions displayed on monitors in forms or windows that will also be used to input other data to initiate a related transaction.</p> <p>Examples: web-based display of stock prices with the point-and-click purchase option.</p>	<p>Business transactions displayed on business forms that conclude the business transactions.</p> <p>Examples: web-based report detailing banking transactions</p>
Point-of-Sale Terminals	<p>Information printed or displayed on a special purpose terminals dedicated to specific internal business functions.</p> <p>Includes wireless communication information transmission.</p> <p>Examples: end-of-shift cash register balancing report.</p>	<p>Information printed or displayed on a special purpose terminal for the purpose of initiating a follow -up business transaction.</p> <p>Examples: Grocery store monitor that allows customer to monitor scanned prices to be followed by input of debit or credit card payment authorization.</p>	<p>Information printed or displayed on a special purpose terminals dedicated to customers.</p> <p>Examples: Account balances display at an ATM machine or printout of lottery tickets. Also, account information displayed via television over cable or satellite.</p>

Taxonomy for Computer-Generated Outputs (concluded)

Distribution Delivery	Internal Output (reporting)	Turnaround Output (external; then internal)	External Output (transactions)
Multimedia (audio or video)	<p>Information transformed into speech for internal users.</p> <p>Not commonly implemented for</p>	<p>Information transformed into speech for external users who respond with speech or tone input data.</p>	<p>Information transformed into speech for external users.</p> <p>Examples: movie trailer for prospective on-line</p>
E-mail	<p>Displayed messages related to internal business information.</p> <p>Examples: e-mail messages announcing availability of new on-line business report.</p>	<p>Displayed messages intended to initiate business transaction.</p> <p>Examples: e-mail messages whose responses are required to continue processing a business transaction.</p>	<p>Messages related to Business transactions.</p> <p>Examples: e-mail message confirmations of business transactions conducted via e-commerce on the Web.</p>
Hyperlinks	<p>Web-based links to internal information that is enabled via HTML or XML formats.</p> <p>Examples: Integration of all information system reports into a Web-based archival system for on-line archival access.</p>	<p>Web-based links incorporated into Web-based input pages to provide users with access to additional information.</p> <p>Examples: On a Web auction page, hyperlinks into a seller's performance history with an invitation to add a new comment.</p>	<p>Web-based links incorporated into Web-based transactions.</p> <p>Examples: hyperlinks to privacy policy or an explanation as to how to interpret or respond to information in a report or transaction.</p>
Microfiche	<p>Archival of internal management reports to microfilm that requires minimal physical storage space.</p> <p>Examples: Computer output on microfilm (COM)</p>	<p>Not applicable unless there is an internal need to archive turnaround documents.</p> <p>Examples: Computer output on microfilm (COM)</p>	<p>Not applicable unless there is an internal need for copies of external reports.</p> <p>Examples: Computer output on microfilm (COM)</p>

Output Implementation Methods

- ✿ Printed output
 - Tabular output presents information in columns.
 - Zoned output places text and numbers into designated “areas”
- ✿ Screen output
 - Graphic output is the use of pictorial charts to convey information in ways that demonstrate trends and relationships that cannot be easily seen in tabular formats.

Chart Types

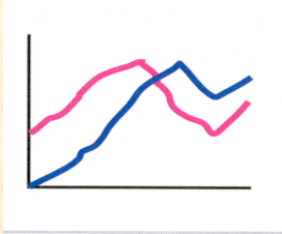
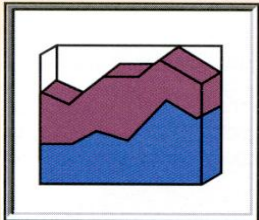
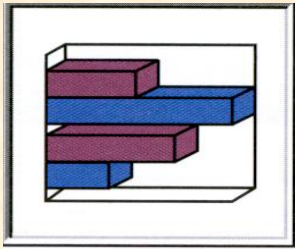
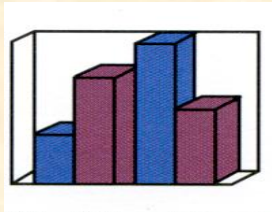

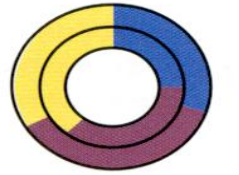
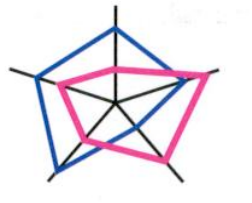
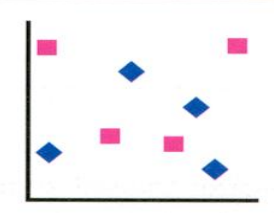
	Sample	Selection Criteria
Line Chart		Line charts show one or more series of data over a period of time. They are useful for summarizing and showing data at regular intervals. Each line represents one series or category of data.
Area Chart		Area charts are similar to line charts except that the focus is on the area under the line. That area is useful for summarizing and showing the change in data over time. Each line represents one series or category of data.
Bar Chart		Bar charts are useful for comparing series or categories of data. Each bar represents one series or category of data.
Column Chart		Column charts are similar to bar charts except that the bars are vertical. Also, a series of column charts may be used to compare the same categories at different times or time intervals. Each bar represents one series or category of data.

Chart Types (concluded)

	Sample	Selection Criteria
Pie Chart		Pie charts show the relationship of parts to a whole. They are useful for summarizing percentages of a whole within a single series of data. Each slice represents one item in that series of data.
Donut Chart		Donut charts are similar to pie charts except that they can show multiple series or categories of data, each as its own concentric ring. Within each ring, a slice of that ring represents one item in that series of data.
Radar Chart		Radar charts are useful for comparing different aspects of more than one series or category of data. Each data series is represented as a geometric shape around a central point. Multiple series are overlaid so that can be compared.
Scatter Chart		Scatter charts are useful for showing the relationship between two or more series or categories of data measured at uneven intervals of time. Each series is represented by data points using either different colors or bullets.

Output Implementation Methods (concluded)

✿ Printed output

- Tabular (表格式的) output presents information in columns.
- Zoned (分区式的) output places text and numbers into designated “areas”

✿ Screen output

- Graphic output is the use of pictorial charts to convey information in ways that demonstrate trends and relationships that cannot be easily seen in tabular formats.

✿ Point-of-sale terminals (POS)

✿ Multimedia

✿ E-mail

✿ Hyperlinks

✿ Microfilm (缩微胶卷)

- Or microfiche (缩微胶片)



How to Design and Prototype Outputs?

Automated Tools

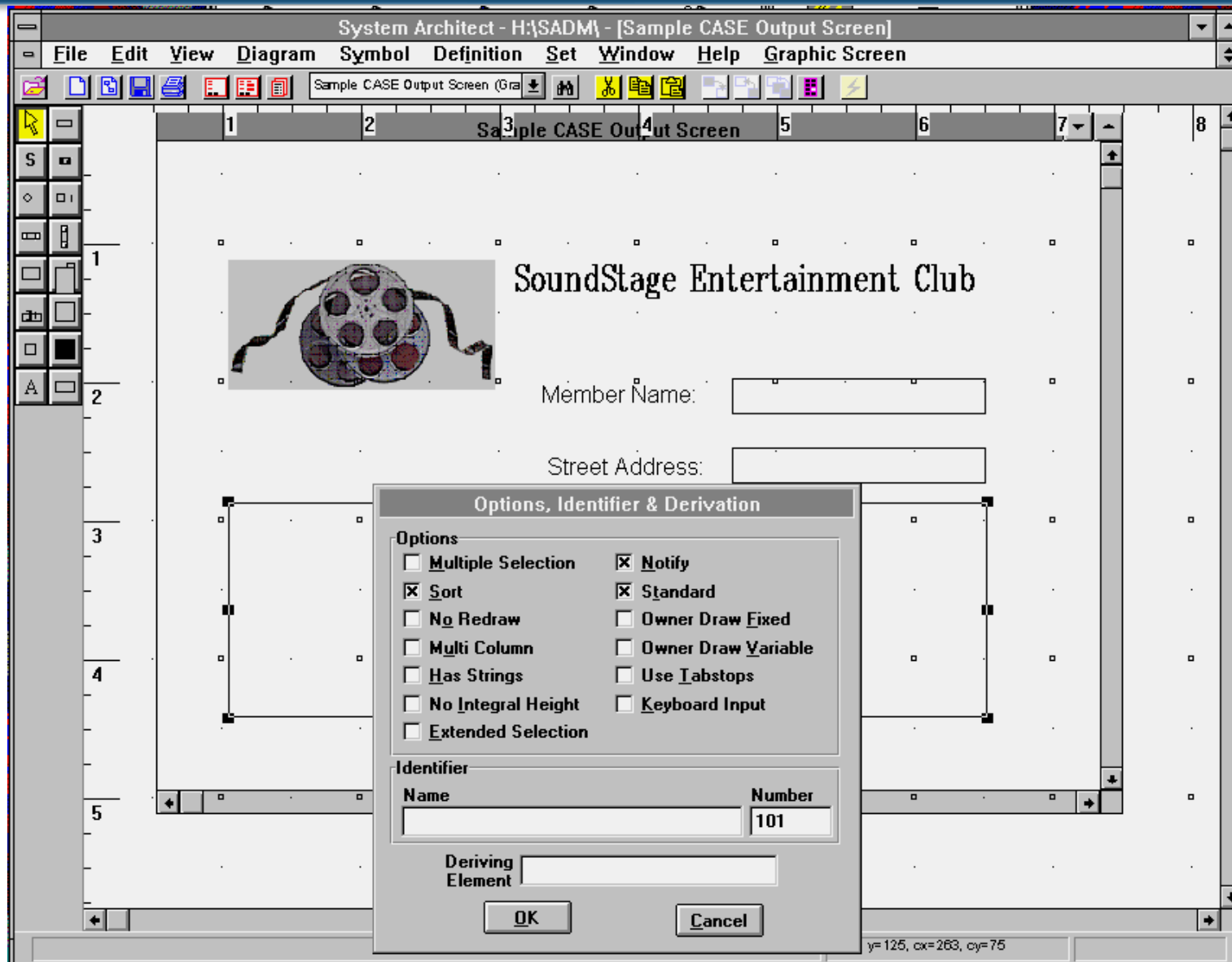
- ✿ Printer space charts.

[illegible]

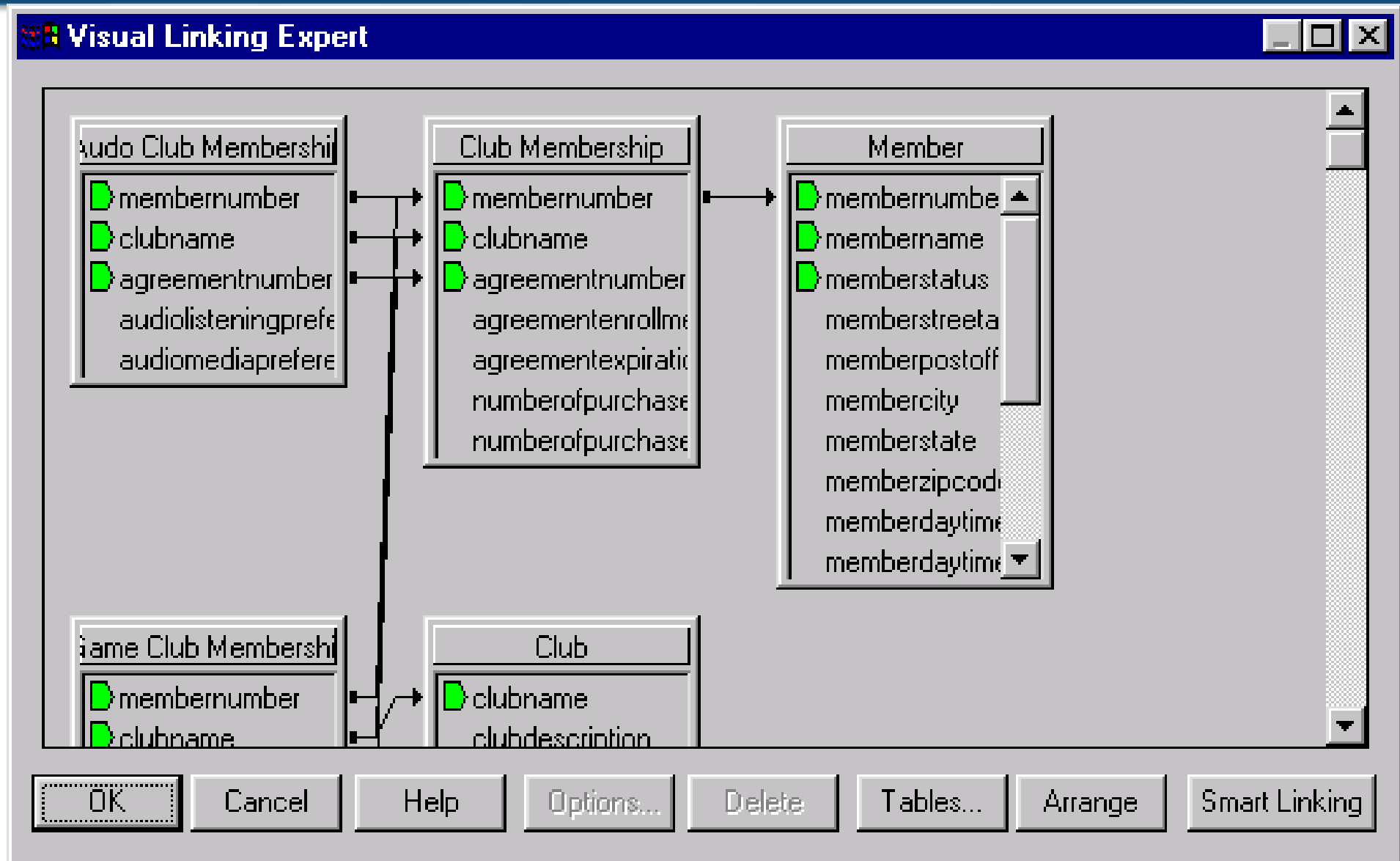
Automated Tools (concluded)

- ✿ Printer space charts.
- ✿ Common spreadsheets (as a prototyping tool), e.g., Lotus 1-2-3 and Microsoft Excel.
- ✿ PC database application development environment, e.g., Microsoft Access.
- ✿ CASE tools, e.g., System Architect 2001 and IBM VisualAge.

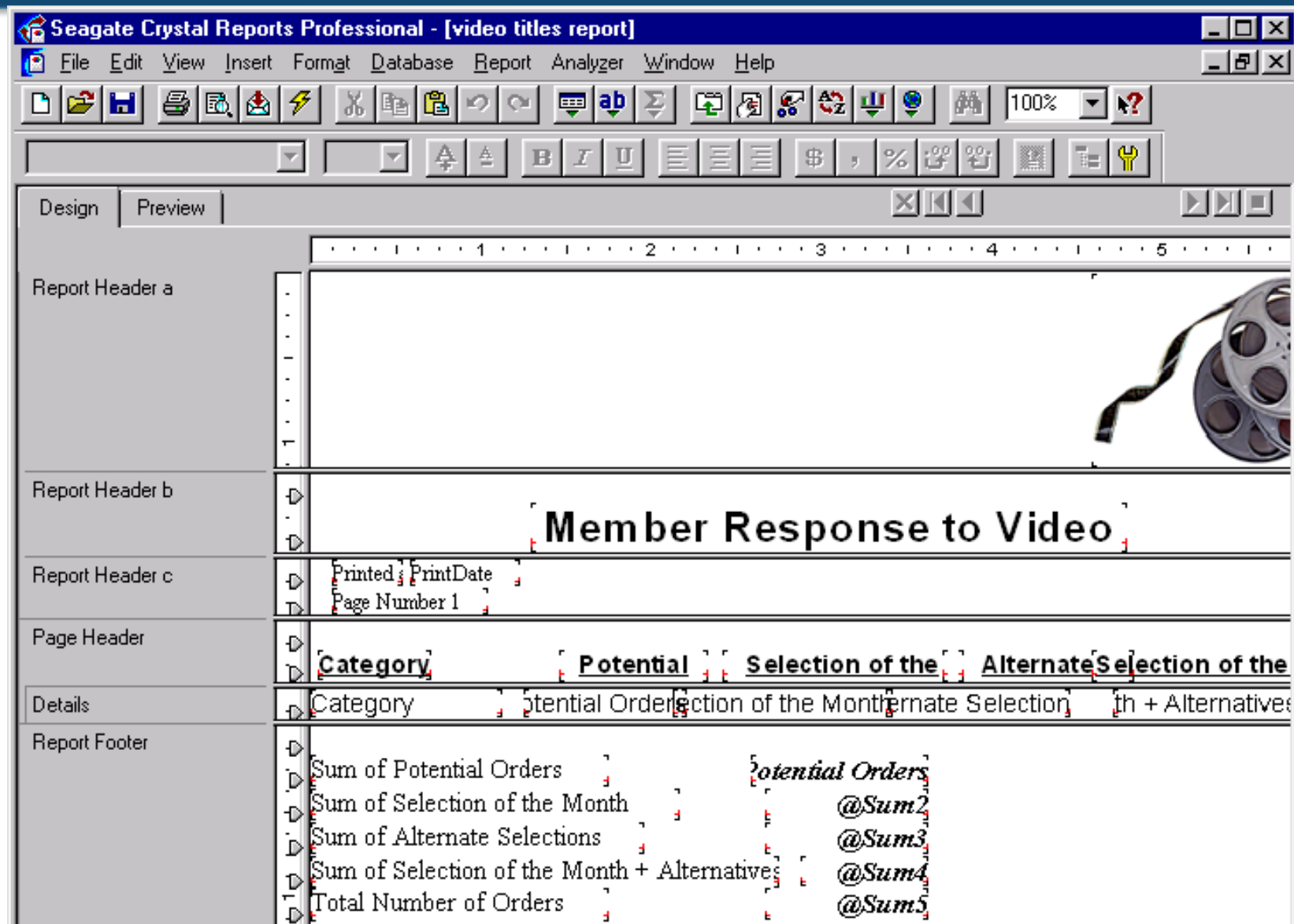
CASE Tool for Output Design



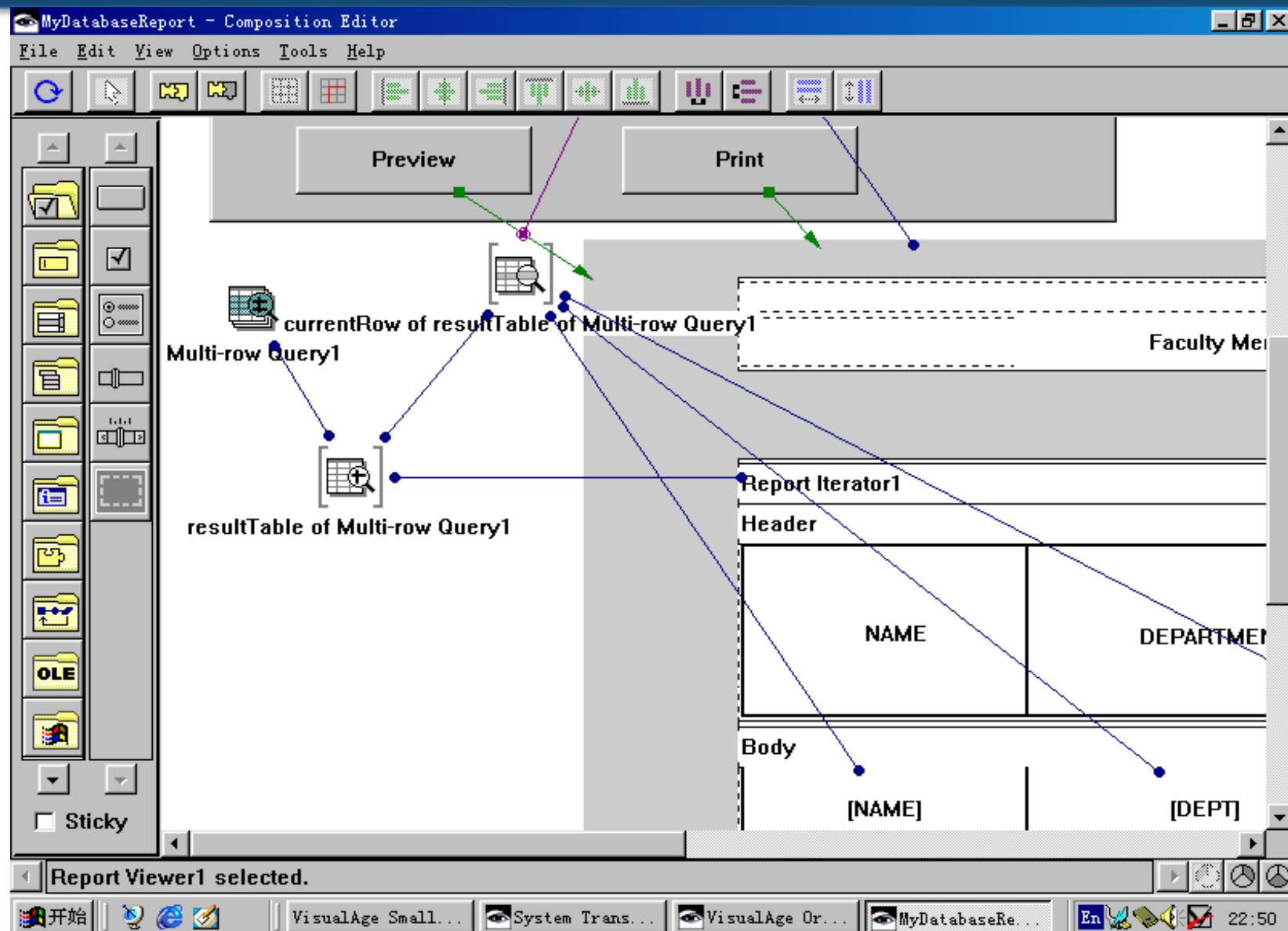
Report Writer Tool



Report Writer Tool (continued)



A Chinese Report Design Tool (Developed by XDSEI)



Output Design Guidelines

- ✿ Outputs should be simple to read and interpret.
 - Every output must have a title.
 - Every output should time and date stamped (时标) .
 - Reports and screens should include headings.
 - Fields and columns should be clearly labeled.
 - Reports should include legends (图例) for all abbreviations (缩写) .
 - Use information hiding to expand and contract information.
 - Information should never have to be manually edited to become useful.
 - Information should be balanced across the page or screen.
 - Provide for easy navigation within information.
 - Avoid computer jargon and most error messages.
- ✿ The timing of outputs is important.
- ✿ The distribution of (or access to) outputs must be sufficient to assist all relevant users.
- ✿ Outputs must be acceptable to the system users who will receive them.

Output Design Process

- ✿ Identify system outputs and review logical requirements.
- ✿ Specify physical output requirements.
- ✿ As necessary, design any preprinted forms.
- ✿ Design, validate and test outputs using some combination of:
 - Layout tools (e.g., hand sketches, spacing charts, or CASE tools).
 - Prototyping tools (e.g., spreadsheet, PC DBMS, 4GL)
 - Code generating tools (e.g., report writer)

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A Logical Data Structure for Output Requirements

```
INVOICE = INVOICE NUMBER
+ INVOICE DATE
+ CUSTOMER NUMBER
+ CUSTOMER NAME
+ CUSTOMER BILLING ADDRESS = ADDRESS >
+ 1 { SERVICE DATE +
      SERVICE PROVIDED +
      SERVICE CHARGE } n
+ PREVIOUS BALANCE DUE
+ PAYMENTS RECEIVED
+ TOTAL NEW SERVICE CHARGES
+ INTEREST CHARGES
+ NEW BALANCE DUE
+ MINIMUM PAYMENT DUE
+ PAYMENT DUE DATE
+ ( DEFAULT CREDIT CARD NUMBER )
+ ( [ CREDIT MESSAGE, PAYMENT MESSAGE ] )

ADDRESS = ( POST OFFICE BOX NUMBER )
+ STREET ADDRESS
+ CITY
+ STATE
+ POSTAL ZONE
```

Output Design Process

✿ Identify system outputs and review logical requirements.

✿ Specify physical output requirements.

✿ As necessary, de

✿ Design, validate

- Layout tools (CASE tools.

- Prototyping tool

- Code generation

- **Decisions:**

- ◆ Types and purpose of the output.
- ◆ Operational, technical, and economic feasibility.

- **Design issues:**

- ◆ Implementation method - report format, type of form or paper, user's display device limitations, etc.
- ◆ Output frequency - on demand, scheduled, etc.
- ◆ Pages of a single copy.
- ◆ Multiple copies?
- ◆ Distribution (*printed output*) / access (*on-line output*) controls?

Output Design Process

- ✿ Identify system outputs and review logical requirements.
- ✿ Specify physical output requirements.
- ✿ As necessary, design any preprinted forms.

- ✿ Design, validation

- Layout tools
- CASE tools.
- Prototyping tools
- Code generation

- **Design issues:**

- ◆ Preprinted information.
- ◆ For mailing or not.
- ◆ How many forms for printing each day / week / month / year?
- ◆ Format size.
- ◆ As a turnaround document?
- ◆ Legends, policies, and instructions to be printed.
- ◆ Colors.

Output Design Process

- ✿ Identify system outputs and review logical requirements.
- ✿ Specify physical output requirements.
- ✿ As necessary, design any preprinted forms.
- ✿ Design, validate and test outputs using some combination of:
 - Layout tools (e.g., hand sketches, spacing charts, or CASE tools.
 - Prototyping tools (e.g., spreadsheet, PC DBMS, 4GL)
 - Code generating tools (e.g., report writer)

Tabular Report Design Principles

Design Issue	Design Guideline	Examples
Page Size	At one time, most reports were printed on oversized paper. This required special binding and storage. Today, the page sizes of choice are standard (8 ½” x 11”) and legal (8 ½” x 14”). These sizes are compatible with the predominance of laser printers in the modern business.	Not applicable.
Page Orientation	Page orientation is the width and length of a page as it is rotated. The <i>portrait</i> orientation (e.g., 8 ½ W x 11 L) is often preferred because it is oriented the way we orient most books and reports; however, (e.g., 11 W x 8 ½L) is often necessitated for tabular reports because more columns can be printed.	<div><div>Portrait</div><div>Landscape</div></div>
Page Headings	Page headers should appear on every page. At a minimum, they should include a recognizable report title, date and time, and page numbers. Headers may be consolidated into one line or use multiple lines.	<div>JAN 4, 2001</div> <div>OVERSUBSCRIPTIONS BY COURSE</div>
Report Legends	<p>A legend is an explanation of abbreviations, colors, or codes used in a report.</p> <p>In a printed report, a legend can be printed on only the first page, or on every page.</p> <p>On a display screen, a legend can</p>	<div>REPORT LEGEND:</div> <div><div>SEATS</div><div>LIM</div><div>REQ</div><div>RES</div><div>USED</div><div>AVL</div><div>OVR</div><div>NUMBER OF SEATS IN THE CLASSROOM</div><div>COURSE ENROLLMENT LIMIT</div><div>NUMBER OF SEATS REQUESTED BY DEPARTMENT</div><div>NUMBER OF RESERVED FOR DEPARTMENT</div><div>NUMBER OF SEATS USED BY DEPARTMENT</div><div>NUMBER OF SEATS AVAILABLE FOR DEPARTMENT</div><div>NUMBER OF OVERSUBSCRIPTIONS FOR DEPARTMENT</div></div>

Tabular Report Design Principles (concluded)

Design Issue	Design Guideline	Examples
Column Headings	Column headings should be short and descriptive. If possible, avoid abbreviations. Unfortunately, this is not always possible. If abbreviations are used, include a legend (see above).	Self-explanatory.
Heading Alignments	<p>The relationship of column headings to the actual column data under those headings can greatly affect readability. Alignment should be tested with users for preferences with a special emphasis on the risk of misinterpretation of the information.</p> <p>See examples for possibilities (that can be combined)</p>	<p>Left justification (good for longer and variable length fields)</p> <pre> NAME ===== XXXXXXXXX X XXXXXXXX XXXXX </pre> <p>Right justification (good for some numeric fields; especially monetary fields). Be sure to align decimal points.</p> <pre> AMOUNT ===== \$\$\$,\$\$\$.\$¢¢ </pre> <p>Center (good for fixed length fields and some moderate length fields)</p> <pre> STATUS ===== XXXX XXXX </pre>
Column Spacing	The spacing between columns impacts readability. If the columns are too close, users may not properly differentiate between the columns. If they are spaced too far apart, the user may have difficulty following a single row all the way across a page. As a general rule of thumb, place 3-5 spaces between each column.	Self-explanatory.

Tabular Report Design Principles (concluded)

Design Issue	Design Guideline	Examples																																										
Row Headings	<p>The first one or two columns should serve as the identification data that differentiates each row.</p> <p>Rows should be sequenced in a fashion that supports their use. Frequently rows are sorted on a numerical key or alphabetically</p>	<p>By number:</p> <table><thead><tr><th>STUDENT ID</th><th>STUDENT NAME</th></tr><tr><th>=====</th><th>=====</th></tr></thead><tbody><tr><td>999-38-8476</td><td>MARY ELLEN KUKOW</td></tr><tr><td>999-39-5857</td><td></td></tr></tbody></table> <p>By alpha:</p> <table><thead><tr><th>SERVICE</th><th>CANCEL</th><th>SUBSCR</th><th>TOTAL</th></tr><tr><th>=====</th><th>=====</th><th>=====</th><th>=====</th></tr></thead><tbody><tr><td>HBO</td><td>45</td><td>345</td><td>7665</td></tr></tbody></table>	STUDENT ID	STUDENT NAME	=====	=====	999-38-8476	MARY ELLEN KUKOW	999-39-5857		SERVICE	CANCEL	SUBSCR	TOTAL	=====	=====	=====	=====	HBO	45	345	7665																						
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HBO	45	345	7665																																									
Formatting	Data is often stored without formatting characters to save storage space. Outputs should reformat that data to match the users' norms.	<table><thead><tr><th>As stored:</th><th>As output:</th></tr></thead><tbody><tr><td>307877262</td><td>307-87-7262</td></tr><tr><td>8004445454</td><td>(800) 444 -5454</td></tr><tr><td>02272000</td><td>Feb 27, 2000</td></tr></tbody></table>	As stored:	As output:	307877262	307-87-7262	8004445454	(800) 444 -5454	02272000	Feb 27, 2000																																		
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307877262	307-87-7262																																											
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Control Breaks	Frequently, rows represent groups of meaningful data. Those groups should be logically grouped in the report. The transition from group to the next is called a <i>control break</i> and is frequently followed by sub-totals for the group.	<table><thead><tr><th>RANK</th><th>NAME</th><th>SALARY</th></tr><tr><th>=====</th><th>=====</th><th>=====</th></tr></thead><tbody><tr><td>CPT</td><td>JANEWAY, K</td><td>175,000</td></tr><tr><td>CPT</td><td>KIRK, J</td><td>225,000</td></tr><tr><td>CPT</td><td>PICARD, J</td><td>200,000</td></tr><tr><td>CPT</td><td>SISKO, B</td><td>165,000</td></tr><tr><td></td><td></td><td>-----</td></tr><tr><td></td><td>CAPTAINS TOTAL</td><td>765,000 a control break</td></tr><tr><td>LTC</td><td>CHAKOTAY</td><td>110,000</td></tr><tr><td>LTC</td><td>DATA</td><td>125,000</td></tr><tr><td>LTC</td><td>RIKER, W</td><td>140,000</td></tr><tr><td>LTC</td><td>SPOCK, S</td><td>155,000</td></tr><tr><td></td><td></td><td>-----</td></tr><tr><td></td><td>EXEC OFFCR TOTAL</td><td>530,000</td></tr></tbody></table>	RANK	NAME	SALARY	=====	=====	=====	CPT	JANEWAY, K	175,000	CPT	KIRK, J	225,000	CPT	PICARD, J	200,000	CPT	SISKO, B	165,000			-----		CAPTAINS TOTAL	765,000 a control break	LTC	CHAKOTAY	110,000	LTC	DATA	125,000	LTC	RIKER, W	140,000	LTC	SPOCK, S	155,000			-----		EXEC OFFCR TOTAL	530,000
RANK	NAME	SALARY																																										
=====	=====	=====																																										
CPT	JANEWAY, K	175,000																																										
CPT	KIRK, J	225,000																																										
CPT	PICARD, J	200,000																																										
CPT	SISKO, B	165,000																																										

	CAPTAINS TOTAL	765,000 a control break																																										
LTC	CHAKOTAY	110,000																																										
LTC	DATA	125,000																																										
LTC	RIKER, W	140,000																																										
LTC	SPOCK, S	155,000																																										

	EXEC OFFCR TOTAL	530,000																																										
End of Report	The end of a report should be clearly indicated to ensure that users have the entire report.	*** END OF REPORT ***																																										

Screen Output Design Principles

Screen Design Consideration	Design Guidelines
Size	<p>Different displays support different resolutions. The designer should consider the “lowest Common denominator.”</p> <p>The default window size should be less than or equal to the worst resolution display in the user community. For instance, if some users will have only a 640 x 480 pixel resolution display, don't design windows to open at an 800 x 600 pixel resolution.</p>
Scrolling	<p>On-line outputs have the advantage of not being limited by the physical page. This can also be a disadvantage if important information such as column headings scrolls off the screen. If possible, freeze important headings at the top of a screen.</p>
Navigation	<p>Users should always have a sense of where they are in a network of-online screens. Given that, users also require the ability to navigate between screens.</p> <p>WINDOWS: Outputs appear in windows called <i>forms</i>. A form may display one record or many. The scroll bar should indicate where you are in the report. Buttons are frequently provided to move forward and backward through records in the report, and to exit The report.</p> <p>INTERNET: Outputs appear in windows called <i>pages</i>. A page may display one record or many. Buttons or hyperlinks may be used to navigate through records. Custom search engines can also be used to navigate to specific locations within a report.</p>
Partitioning	<p>WINDOWS: <i>Zones</i> are forms within forms. Each form is independent of the other but can be related. The zones can be independently scrollable. The Microsoft <i>Outlook</i> bar is one example. Zones can be used for legends or control breaks that take the user to different sections within a report.</p> <p>INTERNET: <i>Frames</i> are pages within pages. Users can scroll independently within pages. Frames can enhance reports in many ways. They can be used for a legend, table of contents, or summary information.</p>

Screen Output Design Principles (concluded)

Screen Design Consideration	Design Guidelines
Information Hiding	<p>On-line applications such as those that run under <i>Windows</i> or within an Internet browser offer capabilities to hide information until it is either needed or becomes important. Examples of such information hiding include:</p> <ul style="list-style-type: none">• Drill-down controls that show minimal information and provide readers with simple ways to expand or contract the level of detail displayed.<ul style="list-style-type: none">○ In <i>Windows</i> outputs the use of a small plus- or minus-sign in a small box to the left of a data record offers the option of expanding or contracting the record into more or less detail. All of this expansion and contraction occurs within the output's window.○ In <i>Intranet</i> applications, any given piece of summary information can be highlighted as a hyperlink to expand that information into greater detail. Typically, the expanded information is opened in a separate Window so the reader can use the browser's forward and backward buttons to switch between levels of detail.• Pop-up dialog boxes may be triggered by information
Highlighting	<p>Highlighting can be used in reports to call users' attention to erroneous data, exception data, or specific problems. Highlighting can also be a distraction if misused. On-going human factors research will continue to guide our future use of highlighting. Examples of highlighting include:</p> <ul style="list-style-type: none">• Color (avoid colors that the colorblind cannot distinguish)• Font and case (changing case can draw attention)• Justification (left, right, or centered)• Hyphenation (not recommended in reports)• Blinking (can draw attention or become annoying)• Reverse video
Printing	<p>For many users, there is still comfort in printed reports. Always provide users the option to print a permanent copy of the report. For Internet use, reports may need to be made available in industry standard formats such as Adobe <i>Acrobat</i>, which allows users to open and read those reports using free and widely available software.</p>

Report Customization

Report and Graph Options [?] [X]

Reports | Graphs

Report Type:

Pre-defined Reports:
Member Selection Summary ▼

☐ Custom Report

Custom Report Name:
 [Design]

Header Options:

<input checked="" type="checkbox"/> Current Date	<input type="checkbox"/> User Name
<input checked="" type="checkbox"/> Current Time	<input checked="" type="checkbox"/> Report Name
<input type="checkbox"/> Page Numbers	<input type="checkbox"/> Number of Records

Entertainment Categories:

☐ Audio
☒ Game
☒ Video
☐ All

Summary Information:

☒ Show Summations
☒ Show Maximums
☐ Show Minimums

[Cancel] [Create]

Tabular Report Prototype

Seagate Crystal Reports Professional - [video titles report]

File Edit View Insert Format Database Report Analyzer Window Help

11/4/96 15:39 1 of 1

Design Preview

RHb


RHc

PH

RF

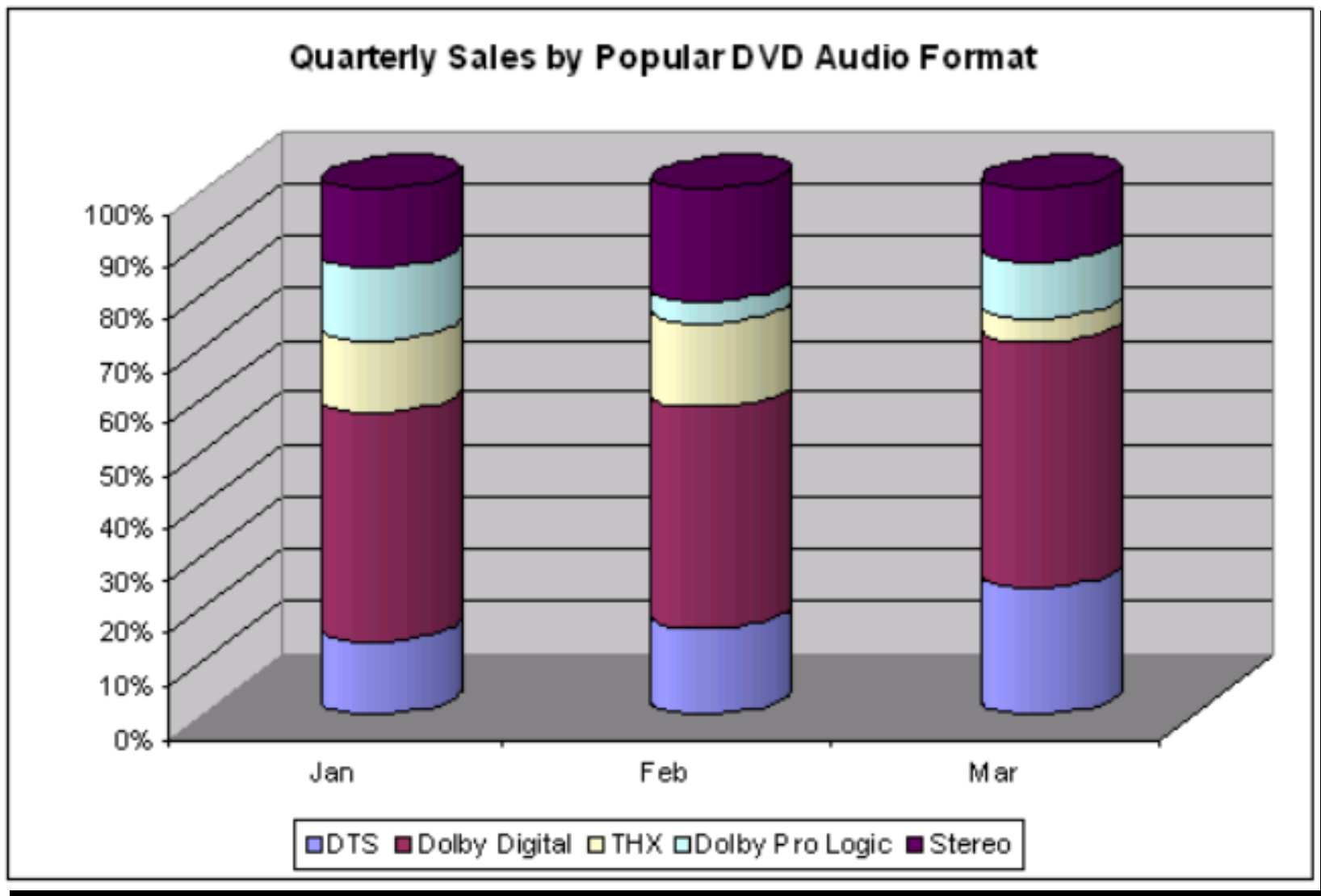
Printed at 2/23/2001
Page Number 1

**Member Response to Video
Title Selection of the Month**



<u>Category</u>	<u>Potential Orders</u>	<u>Selection of the Month</u>	<u>Alternate Selection</u>	<u>Selection of the Month + A Alternatives</u>	<u>Number of Orders</u>
D Action Adventure	6,342	2,410	824	241	2,867
D Animated	3,577	1,538	644	154	1,241
D Comedy	954	181	38	18	716
D Documentary	1,486	877	45	88	477
D Drama	540	389	54	39	58
D Western	104	9	54	1	40
D Horror	920	99	23	409	2,501
D Musical	209	40	78	289	103
D Science Fiction	4,590	2,011	899	2,200	5,329
D Sports	288	288	277	121	387
Sum of Potential Orders		19,010			
Sum of Selection of the Month		7,842			
Sum of Alternate Selections		2,936			
Sum of Selection of the Month + Alternatives		3,560			
Total Number of Orders		13,719			

Graphical Report Prototype



Single Record Output Prototype

Member Order Detail

Order Information: ①

Order Number:	Promotion Number:	Member Number:
1929921	2	10001
Club Name:	Order Date:	Order Fill Date:
V	1/15/00	1/30/00
Order Status:	Sales Tax:	Pre-Payment:
	\$ 4.92	\$ 0.00
Sub-Total	Shipping Fee:	Amount Due:
\$ 98.58	\$ 3.50	\$ 107.00

Shipping Information: ①

Ship to Name:
Joe Smith

Shipping Address:
4589 Johnson Drive

City: Lafayette State: IN Zip Code: 47867

Shipping Instruction:
none

Navigation Buttons: ②

- Previous Page (Left Arrow)
- Previous Record (Left Arrow with Double Line)
- Next Record (Right Arrow with Double Line)
- Next Page (Right Arrow)
- Refresh
- Print ③
- Close

Web Database C

Use frames to allow the user to focus separately on navigation and output.

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SoundStage Entertainment Club



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Director: [Andy Wachowski](#) [Larry Wachowski](#)

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Format: [DVD](#) **MPAA Rating:** [R](#) **Release Date:** 9/21/1999

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Matrix, The: Musical Score From The Motion Picture. Music by		BUY

Use hyperlinks to
provide navigation
through complex
menu structures.

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Matrix, The (with CD Soundtrack, Poster, Lobby Cards) (Special Edition)	VHS \$67.99	BUY
Matrix, The: Musical Score From The Motion Picture. Music by		BUY

Use hyperlinks to get additional information.

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Matrix, The (with CD Soundtrack, Poster, Lobby Cards) (Special Edition)	VHS \$67.99	BUY
Matrix, The: Musical Score From The Motion Picture. Music by		BUY

Shading is used to separate each detail line.

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A picture can be a selectable object.

Windows/Web Media Player Output Prototype

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The Matrix Preview

Preview Room - Microsoft Internet Explorer

Video player controls: Play, Pause, Stop, Previous, Next, Full Screen, Repeat, Shuffle

www.sndstage.com

Company Info | [Jobs](#)

Standard footers on screens to provide additional navigation.

Windows/Web Media Player Output Prototype

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The Matrix Preview

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GET Windows Media Player

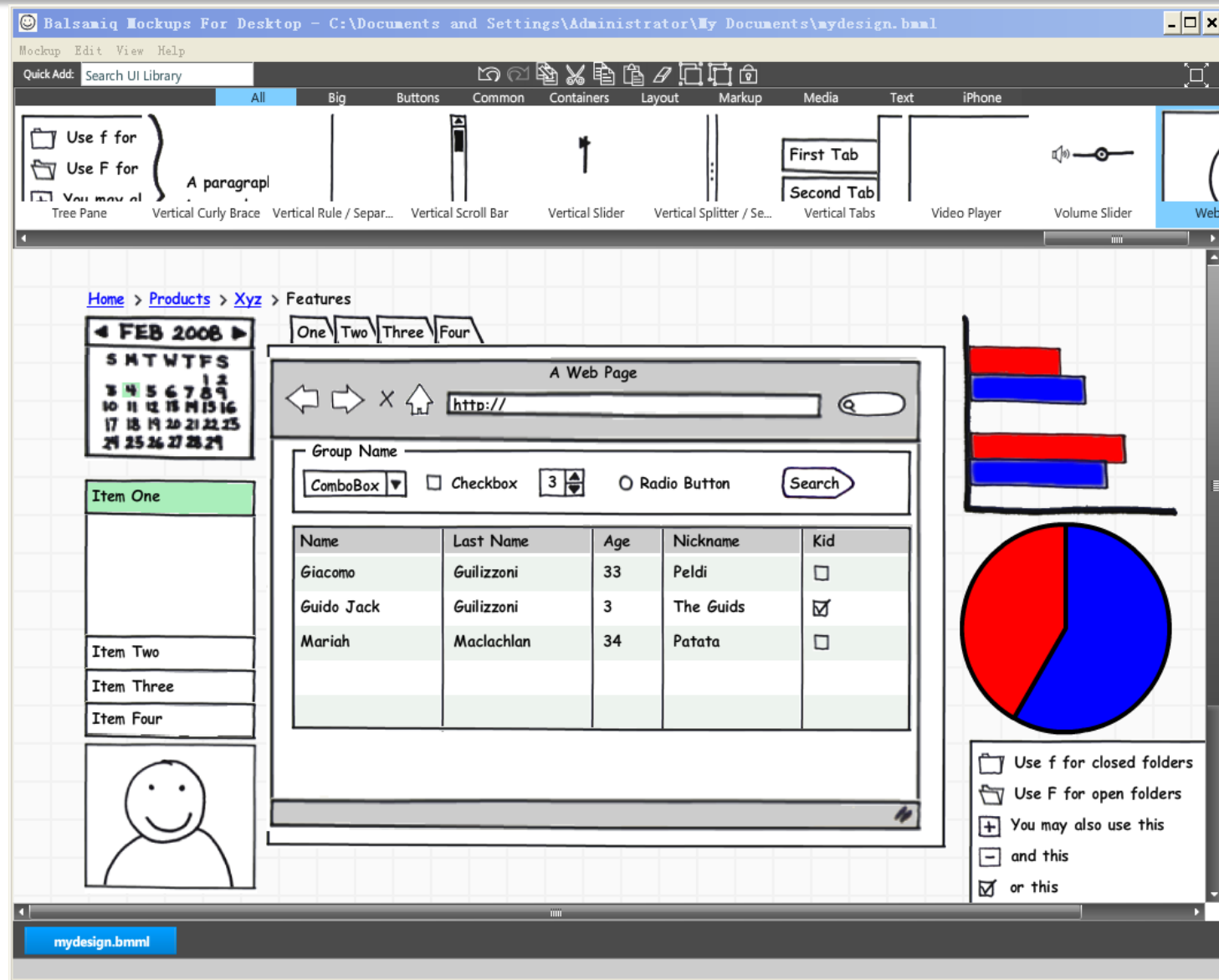
realplayer

Company Info | Jobs

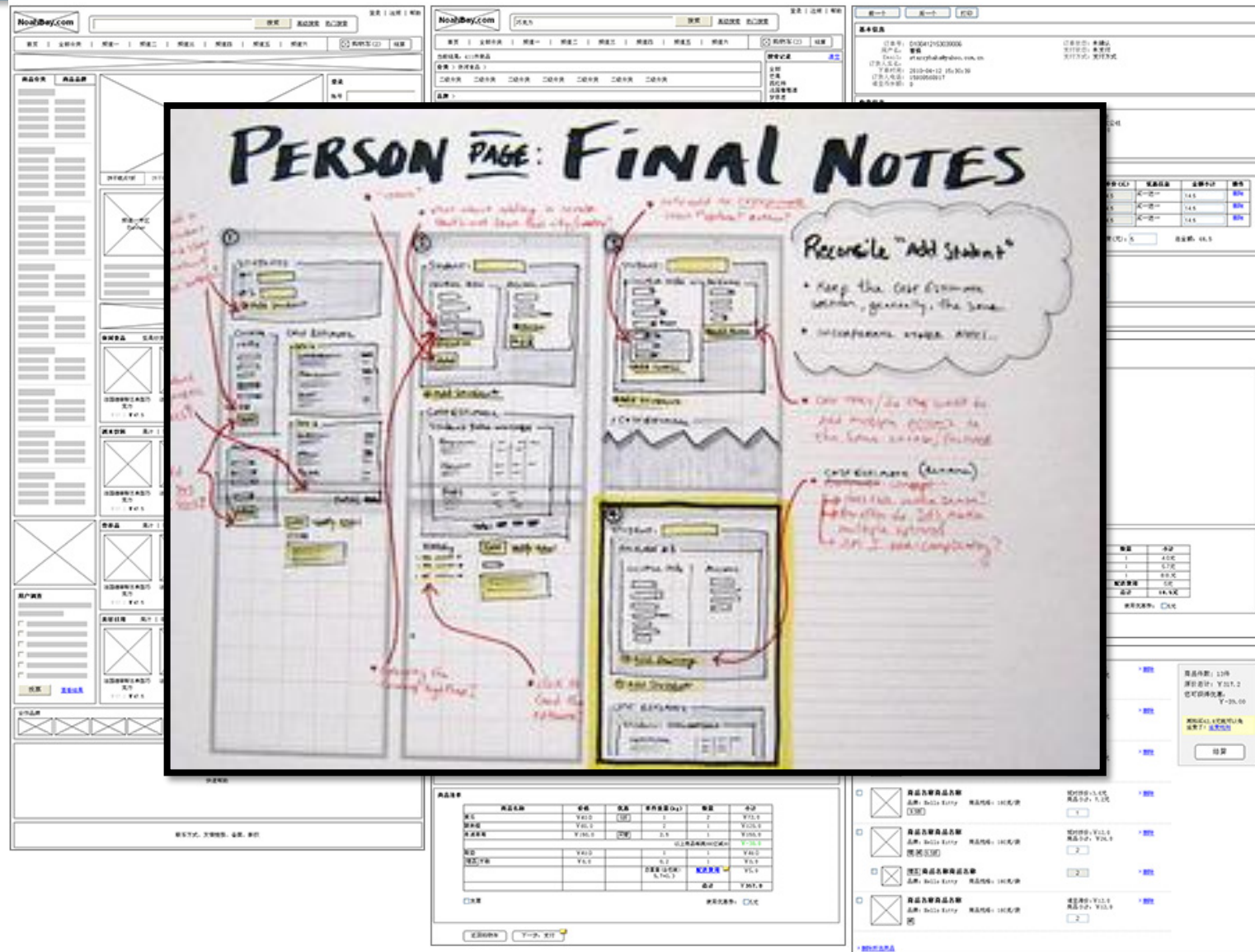
Format/Price:	Purchase:
DVD \$17.99	BUY
VHS \$14.49	BUY
VHS \$14.99	BUY
VHS \$67.99	BUY
Soundtrack \$11.99	BUY
Soundtrack \$12.99	BUY
Other \$25.99	BUY

Plug-ins to provide typical functions.

Output Prototype Design Samples



Output Prototype Design Samples



Output Prototype Design Samples



要点与引申

- ❁ 输出（特别是硬拷贝输出）是一个信息系统与它的用户接触时间最长的产品。
- ❁ 输出的设计，要充分考虑到用户使用的合理性、经济性与方便性。
- ❁ 输出的设计，注重的是将用户眼睛的焦点引导到应当注意的地方，而不是为了表现设计者的个性，使得用户感觉上很“灿烂”，实际上却无所适从。