

Task 1.

Preliminary Investigation Report

for

NORBRO TOOLS

6 February 2006

by Jane Jakeman

Introduction

We have been asked to conduct a Feasibility Study for the implementation of a website for Norbro Tools and will be using the TOES feasibility checks. The existing system is a manual system, supported by a database. The planned new system is a website and database combined.

Operational Feasibility

Norbro Tools will need to consider copyright issues in terms of photographs of items for sale. Releasing sensitive information such as prices on a website needs to be carefully considered. The website will not function without the prices, however, competitors will have ease of access to the pricing and therefore Norbro Tools need to take particular care over their Customer Service to retain loyalty and to continue to provide an efficient service throughout.

Users are likely to support the project provided they do not fear losing their jobs. Consultation throughout the company would increase user support and allay fears about job change although this may unsettle staff temporarily.

Training will be required for staff dealing with Sales and Accounts and Warehouse personnel.

The website is likely to improve the company image and increase goodwill as most trade and retail customers welcome the use of a website.

The existing phone and mail, mail order system will continue for people who do not or cannot use a computer.

Catalogues can be obtained through the website.

Technical Feasibility

A server will be required to host the website, as well as a back up server 'off site'. The server/s may be purchased and managed by the IT department. Alternatively, Norbro Tools can rent server space from a reliable company, for example, British Telecom. The Norbro network will be more heavily used when telephone and mail enquiries are dealt with by Norbro staff via the website. There may be additional call on the network if a lot of email enquiries are received via the website; minor upgrading to Accounts Department computers and/or network cable may be required. Operating a website with online payment facility is a tried and trusted option and technically feasible.

In the event of the website becoming successful there will be a facility to accommodate increased transactions, the server space can be increased, the computer hardware, network devices and media can be upgraded to provide adequate communication and the database can be expanded.

Thought needs to be given as to whether to incorporate a bar code reader, known as Radio Frequency Identification (RFID) which can keep track of physical objects.

The database which incorporates accounts and stock appears to work well and can be incorporated to the website, however there are some fields that will be required to be added to the existing accounts and stock management database, namely the weight of the item, a photograph and customers email addresses.

Further investigation of the existing database will be required with a view to establishing whether it will meet the future capabilities.

Training will be required for Accounts Staff and IT department so that they can manage the website once it is operational. Training is already given to staff so that they can carry out their job, therefore apart from the initial cost of training, it is likely that any further training requirement will be met from the existing training budget.

Approximate Technical Cost		
	£'s	Possible alternative
Servers	1,500	Web hosting and storage may be purchased
Domain name	10	
Upgrade network	1,000	
Upgrade computers	1,000	
Interpret database and add up to 3 necessary fields	1,000	Build new database, cost £10,000 plus.
Radio Frequency Identification (RFID)	7,500	This will cover the hardware and software
ESTIMATED TOTAL	£12,010	

Economic Feasibility

We envisage that staffing levels will remain constant because initially the mail order transactions via phone and post will continue and there will be a gradual changeover to website transactions. Once the website transactions are the main source of customer orders, stock levels will be managed by RFID and this, coupled with the efficiency of the website will mean that there will be reduced staffing costs. Email enquiries are expected to increase. Sales are expected to increase and with the new website staff will deal with transaction in at least half the time.

There will be an element of saving in postage, in that correspondence, billings and catalogues will be sent more by electronic means and less by physical means.

Tangible Benefits

We anticipate the following events occurring:

- 60% of trade and retail customers will deal direct with the web site reducing the time hours of Sales Staff – estimated saving 100% of one full time person
- there will be a 60% increase in electronic banking, reducing the need for Sales Staff and Accounts to process cheques from retail customers - estimate saving 20% of one full time person
- 60% of sales catalogues will be downloaded from the web site and printed off on customers own printer or viewed by customer on their own computer, saving postage and Sales Staff time in sending out the catalogues – estimated saving 25% of one full time person
- stock check will be carried out automatically, there will be no requirement for Sales Staff to check stock or reserve stock – estimated saving 7% of one full time person
- the order will be placed by sales staff direct to the internet, relieving accounts of 60% of order processing – estimated saving 75% of one full time person
- account and payment information will be available to customers online, reducing time on telephone and sending out of paper accounts – estimated 8% of one full time person
- orders may be placed automatically, using automated stock check levels and automatically raising an order for authorisation – estimated saving 10% of one full time person
- the RFID will identify goods in, to be checked automatically against the electronic order reducing warehouse hours in checking delivery note against order which we understand is conducted by the warehouse against the database – estimated saving 18% of one full time person
- goods location can be monitored at all times, saving time chasing progress – estimated saving 5% of one full time person

Intangible Benefits

- increased customer satisfaction in that they can obtain information at any time, day or night, on a product, its availability and its price, and order at that time.
- the website will enhance the company's image, making it appear modern and in touch with new technology
- staff will have increased confidence in the company's ability to move with the times
- staff will feel more secure in their jobs when orders increase via the website

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ESTIMATED TOTAL COST OF OWNERSHIP	£'s	Comments
Hardware and software	12,010	As outlined in Technical section estimate
Website design incorporating existing database	10,000	
Training	2,000	This is for initial training only.
1 dedicated IT website person costing £20,000 per annum, over 5 years	100,000	Could be sourced by appointing an existing member of staff
Writing a new database	15,000	In the event of the existing database becoming problematic to update, or technically slow, a new database may be required
Maintenance at £5,000 per annum over 5 years	25,000	
Advertising to promote new website	25,000	
TOTAL COST OF OWNERSHIP :	189,010	

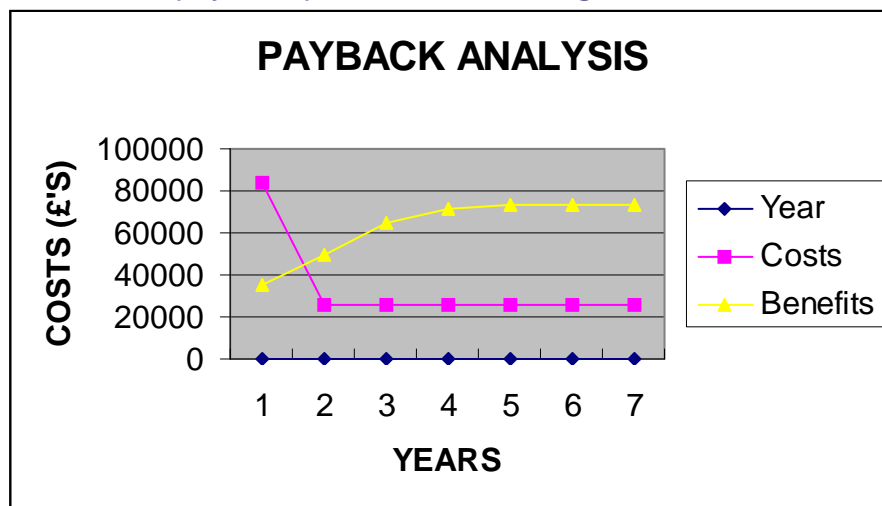
TANGIBLE BENEFITS	Per annum	Over 5 years
Staff hours saving 268% of full time employees. Salaries calculated @20,000 per annum	53,600	268,000
Postage savings, 7,500 catalogues at 49p per year (60% of total)	3,675	18,375
Savings on guestimate of weight for postage (52,000 items @ 10p)	5,200	26,000
Saving on telephone calls @ 10% of bill	380	1,900
Saving on printing costs £7,500 catalogues at 1.18 per catalogue	8,850	44,250
Saving postage and phone costs on sending electronic invoices, remittance advice and orders - 10,000 @ 20p	2,000	10,000
TOTAL TANGIBLE BENEFITS :	73,705	368,525

PAYBACK ANALYSIS

Year	Costs	Cumulative Costs	Benefits	Cumulative Benefits
0	85,010	85,010	35,110	35,110
1	26,000	111,010	50,000	85,110
2	26,000	137,010	65,000	150,110
3	26,000	163,010	71,000	221,110
4	26,000	189,010	73,705	294,815
5	26,000	215,010	73,705	368,520
6	26,000	241,010	73,705	442,225

The costs of £189,010 (as highlighted in yellow) at the end of Year 4 totals £189,010 which is the Total Cost of Ownership over 5 years.

The payback period occurs during Year 2 and 3.



Schedule

Item description	Number of weeks
Time to consult staff	2
Time to analyse database	2
Updating of hardware & software	1
Uploading stock photographs	1
Training staff	1
Database design	3
Website design	3
Going live	2
ESTIMATED TOTAL WEEKS :	15



Task 2. Fact Finding Techniques

DOCUMENTATION

An analyst has an intricate task facing him/her when conducting analysis of a company system particularly if the analyst is outside the company, i.e. a consultant brought in to carry out the analysis, or a new employee of the company. One of the most useful forms of fact finding is examination and analysis of existing company documents. Even the most straight-forward documents, such as invoices, orders, delivery notes and remittance advice hold valuable information such as:-

- the numbering system for the company database
- Accounts Department referencing system
- the system used when raising an order
- the ability for the delivery note and actual goods delivered to be 'married' with the ordered items
- the accounting periods
- the credit control style
- familiarisation with the way sales items are referred to

Other documents are likely to be:-

- standard letters and memos
- enquiry forms
- customer details forms
- return of goods
- complaints forms

Each Department, or each Section may be asked to provide copy forms and copy standard letters and the following may occur:-

- the forms may not be up-to-date
- some information may no longer be required on the forms
- information may be required that is not requested on a form
- there may be duplication of the same form, or there may be different forms used by different Departments that carry out the same function
- there may be a procedure followed by company staff but no form

Once an analyst has read and interpreted the information on the forms, the accuracy of the form data can be verified during the interview technique.

THE INTERVIEW TECHNIQUE

Often, the member of staff being interviewed does not fully appreciate the concept of the interview, why they are being interviewed, or what information is required from them. They may be diligent and articulate workers or they may not be so well informed and may not be as capable. These differences need to be taken into consideration during the 'Interview Technique'

One way to assess the ability of the member of staff is for the analyst to send to each person before interview an email, with a list of tasks to deal with, i.e to ask for the member of staff to list:-

- the three adjustments to existing procedure that would make their job easier
- to ask for the member of staff to bring with them all forms they/their department use

An analyst will be able to interpret the information, i.e. if a member of staff asks for longer tea breaks on their wish list it is likely that the interview will have to be supported by information from another member of their team. However if a member of staff asks for a new way of allocating a customer number, because the existing way means they have to look up codes in a book, then an analyst can be fairly certain that this person is going to provide good information. If a person turns up with a few scraps of paper, they may not be as committed or have enough free time as another who turns up with a folder containing all the forms, with notes and areas highlighted for attention. It is important for the analyst to realise that whilst interviewing a person, the person is not at their desk and may be under pressure to return to their job quickly, i.e. to meet a deadline/to earn more commission, etc.

An analyst needs to make sure that before each interview, each person is aware of exactly what the interview is about, who is conducting it, why it is being conducted, how it is to proceed, where it is being held, how long it will take and provision made for some feedback. Often an analyst will be better to also provide a presentation companywide prior to the interviews so that everyone is aware and that they do not feel singled out for special attention which may be unsettling for them.

It is useful when carrying out several interviews to use the same format for each interview with a section specialising for that particular department or procedure. As much standardisation of the interview questions as possible will make it easier for the analyst to evaluate the information provided by each interviewee.

It is important for the analyst to be efficient and to allow time after the interview to document the information received. The analyst needs to have an efficient system for documenting and retrieving the information.

OBSERVATION

By now, the analyst will be familiar with the style of paperwork, the information on the forms and the departments and some of the personnel.

The analyst then needs to look at the existing computer systems and observe the personnel using both the computer systems and the paper-based systems.

Often a manager of a department will not be quite as aware of shortcomings in a system as the person that actual implements a procedure and it is important that the analyst selects the most appropriate person in each team to observe, which may be the lowest paid person in that department. The analyst can then monitor a particular task, i.e. the first enquiry by a new customer through to purchase and the completed

transaction for this customer, or the first point of realisation that stock is low, through to replenishment of that stock item.

The analyst will be able to use the observation to validate the information received during both the Documentation Technique and the Interview Technique.

An analyst needs to be aware that often when observing a person working they will not be working in the same manner as they would usually, i.e. they may not take cigarette breaks, or they may work extra fast whilst being observed or they may be embarrassed and work slower or make mistakes that they would not normally make.

QUESTIONNAIRE

Once the observation technique is carried out, a questionnaire could be used say, for sending to all customers for the purpose of improving the quality of customer service. Or a questionnaire could be sent to all members of staff for the purpose of improving communication between departments and establishing how this is viewed and how it could be improved.

Questionnaires can be confidential so they may flush out more accurately information say, if a person thinks their manager is going to find out something that they don't want them to find out, then they may not give a true answer.

Often questionnaires will be received by the person, put to one side and not responded to. These people need to be given a gentle nudge.

Other issues with questionnaires are:-

- people may just take the easy option and tick the 'average' box and the responses may not be correct
- people may simply not complete the questionnaire and if it is a confidential questionnaire then it is difficult to establish who has completed and who has not
- people may purposely complete the questionnaire incorrectly, i.e. they may feel aggrieved about salary level, or not getting that promotion, etc.

Questionnaires can be sent out by email, or on paper. Where possible it is better not to make the questionnaire confidential so that the responses can be monitored and chased. It is essential to give a required return date, together with the name and address of the person to return it to. If the questionnaire is to be posted, a stamped addressed envelope will assist in receiving responses. The other way of getting a questionnaire answered promptly is to offer a prize to the 'lucky draw' winner of say, gift vouchers.

It needs to be emphasized to the personnel that the questionnaire is there for the purpose of promoting the company, improving the quality of the company, therefore securing their job and possibly providing better prospects for them in the future.

When preparing the questionnaire care needs to be taken in respect of:-

- the appearance of the questionnaire, it needs to be clear and simple to follow
- it needs to have a title, a date and an author
- the return details need to be clear
- the questions are to be clear and non-ambiguous
- the questions designed to flush out the information the analyst requires
- keep the answers in strict format, i.e. yes/no or on a scale of 1-5.
- allow the person an area to write comments

SAMPLING

Sampling is when information is requested from some of a number of people, for example

- 200 customers out of 3000 customers
- or maybe every 100th customer
- or maybe by age
- or by geographic location
- type of item purchased
- amount of money spent in year
- percentage selection male/female
- selected totally randomly

Sampling information may be requested by face-to-face interview, telephone interview or questionnaire. It is important that great thought is given to the sampling method, systematic, stratified or random. It is also important that the sampling reflects as much as possible the views as if the whole amount of people had been interviewed.. Therefore when using sampling as a fact finding technique, careful planning of the sampling method and technique is key to providing useable results.

RESEARCH

Research can be carried out by reading and interpreting information gleaned from radio, tv, internet (newsgroups, search engines and known sites), newspapers, magazines, books, other people with knowledge of the area of work and from telephone canvassing of companies, attendance at conferences and networking events.



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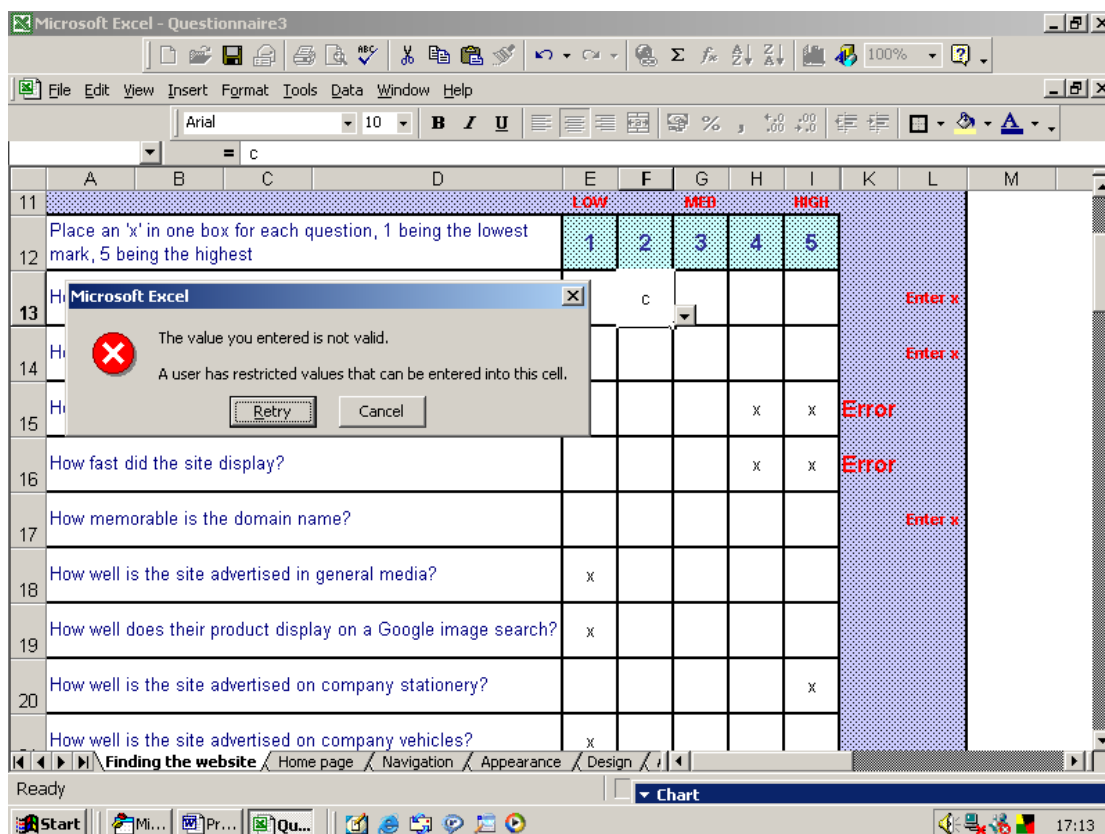
Task 3. Creating, Using & Analysing a Questionnaire

Task 3

3.1 Appendix (a) – copy of questionnaire

Design of Questionnaire

This questionnaire works page by page. Each page covers a section and has the question answers totalled (invisible) at the bottom of the column of 'x's. These totals are fed through by formula to a results sheet. When they reach the results sheet they are multiplied, i.e. if there is 1 'x' in the highest mark of 5, then the result is $1 * 5 = 5$. Assuming the first of 5 companies is being entered then the user clicks 'Results Company 1' and the results are placed in the correct column on the manipulation sheet. Then the user can clear the 'x's throughout the questionnaire with one click of a button. The user can then enter their second company questionnaire 'x's. When they reach the results page, they click 'Results Company 2' and the results are placed in the next column of the manipulation sheet. This continues through until the 5 companies have been questionaired. All of the manipulated results feed through to the charts.



The above screenshot shows validation working correctly, it also shows "Error" when more than one x is entered, and asks "Enter x" where there is no 'x' entered.

Name the company on the manipulation sheet, and the company name will filter through and be displayed in the correct place on each chart.

The tab of each sheet is named, alternatively, buttons can be used to navigate around the spreadsheets.

The user has the opportunity to enter comments on the Results page.

I have designed the questionnaire in this way because I think it is clear and logical. It also saves a lot of time in calculating results because they are all fed through via formula.

I have used the following Excel features:-

- validation using a list and typing 'x' into the appropriate cell
- IF function, including IFCOUNT
- Simple addition functions
- Simple transfer of information (i.e. cell x on Sheet 1 = cell y on Sheet 2)
- Simple multiplication
- Using F4 to 'fix' a cell (entering the dollar sign)
- Buttons with code or macros behind them
- protection, i.e. unlocking cells and then protecting the sheet

3.3 Research of 5 similar sites

Attached – Appendix (b)

3.4 Charts and diagrams

Attached – Appendix (b)

These charts are automatically available due to the design of the questionnaire using Excel features

3.5 Sample printouts

Attached – Appendix (c)



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Task 4.
Flow Charts,
Decision Tables
&
Structured English

Task 4:1

See attached flow chart – Appendix (d)

Task 4:2

DECISION TABLE									
DISCOUNT TO APPLY TO CUSTOMERS									
	1	2	3	4	5	6	7	8	9
Gold Trade Customer	Y	Y	Y	N	N	N	N	N	N
Trade Customer	Y	Y	Y	Y	Y	Y	N	N	N
Retail Customer	N	N	N	N	N	N	Y	Y	Y
Order is over £1,000	Y	N	N	Y	N	N	Y	N	N
Order is over £100	Y	Y	N	Y	Y	N	Y	Y	N
Discount rate: 25%	X	X	X	X					
Discount rate: 20%					X	X			
Discount rate: 10%							X	X	
Discount rate: 0%									X

DECISION TABLE									
DISCOUNT TO APPLY TO CUSTOMERS									
	1	2	3	4	5	6	7	8	9
Gold Trade Customer	Y	Y	Y	N	N	N	N	N	N
Trade Customer	~	~	~	Y	Y	Y	N	N	N
Retail Customer	~	~	~	N	N	N	Y	Y	Y
Order is over £1,000	~	~	~	Y	N	N	~	~	~
Order is over £100	~	~	~	~	~	~	Y	Y	N
Discount rate: 25%	X	X	X	X					
Discount rate: 20%					X	X			
Discount rate: 10%							X	X	
Discount rate: 0%									X

DECISION TABLE									
DISCOUNT TO APPLY TO CUSTOMERS									
	1	2	3	4	5	6	7	8	9
Gold Trade Customer	Y	Y	Y	~	~	~	~	~	~
Trade Customer	~	~	~	Y	Y	Y	~	~	~
Retail Customer	~	~	~	~	~	~	Y	Y	Y
Order is over £1,000	~	~	~	Y	N	N	~	~	~
Order is over £100	~	~	~	~	~	~	Y	Y	N
Discount rate: 25%	X	X	X	X					
Discount rate: 20%					X	X			
Discount rate: 10%							X	X	
Discount rate: 0%									X

DECISION TABLE					
DISCOUNT TO APPLY TO CUSTOMERS					
	1	4	6	8	9
Gold Trade Customer	Y	~	~	~	~
Trade Customer	~	Y	Y	~	~
Retail Customer	~	~	~	Y	Y
Order is over £1,000	~	Y	N	~	~
Order is over £100	~	~	~	Y	N
Discount rate: 25%	X	X			
Discount rate: 20%			X		
Discount rate: 10%				X	
Discount rate: 0%					X

Summary:

- Gold Trade Customers receive 25% discount irrespective of the amount they spend.
- Trade Customers receive a standard 20% unless they spend over £1,000 which will then trigger a 25% discount rate on the whole order.
- Retail Customers receive no discount unless they spend over £100 which will then trigger a 10% discount rate on the whole order.

Task 4:3 Structured English

IF customer is Gold Trade Customer OR,
IF customer is Trade Customer AND order is over £1,000, then
 apply a 25% discount
IF customer is Trade Customer AND order is NOT over £1,000, then
 apply a 20% discount
IF customer is Retail Customer AND order is over £100, then
 apply 10% discount
ELSE
 apply 0% discount



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Task 5. Website Overview

5.1 Home page layout

Attached – Appendix (e)

5.2 Outline site map

Attached – Appendix (f)

5.3 How the website will interface to Norbro Tools existing database systems

The current database holds most of the information required for the website. The webhosting will cater for the database language. The design of the website will draw information from the existing database to the screen, the database being 'live' all the time.

Purchases will be made via the shopping cart and stock level will automatically be adjusted.

Payments will be electronically transferred to the company via the usual channels.

Workflow will improve in the area of stock management, accounts, sales queries and sales.



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Appendix (a)
Copy of
questionnaire



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Appendix (b)
Research of similar
sites
and
showing charts



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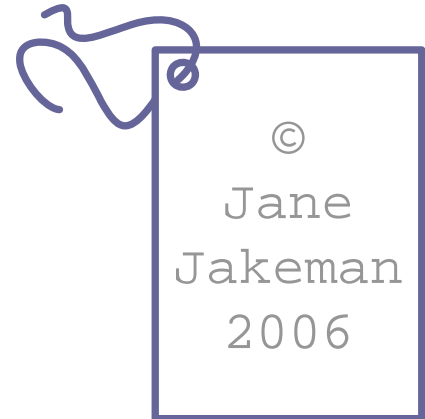
Appendix (c)

Sample printouts



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Appendix (d) Flow chart



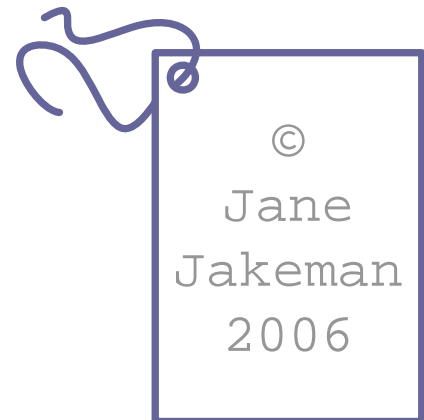
Appendix (e)

Home page layout



Appendix (f)

Web site map



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