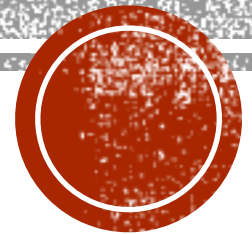


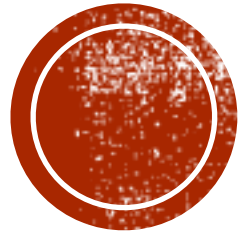
DESIGN PROCESS



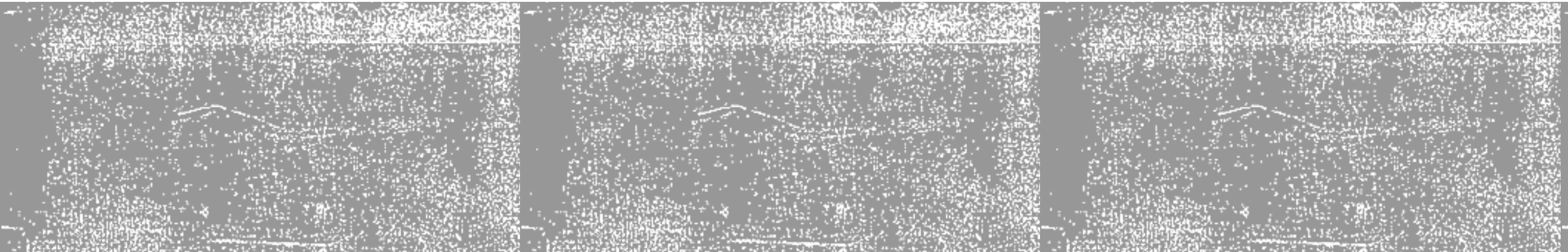
UNIT - 4

- UI Design Process
- Task Oriented Design
- Object Oriented Design
- CSCW UI Design
- Case Studies.





UI DESIGN PROCESS



5 STEPS OF UI/UX DESIGN PROCESS

- The entire UI/UX design process can be divided into 5 phases.
- The responsible department will be analyzing every single step, and make it almost perfect!



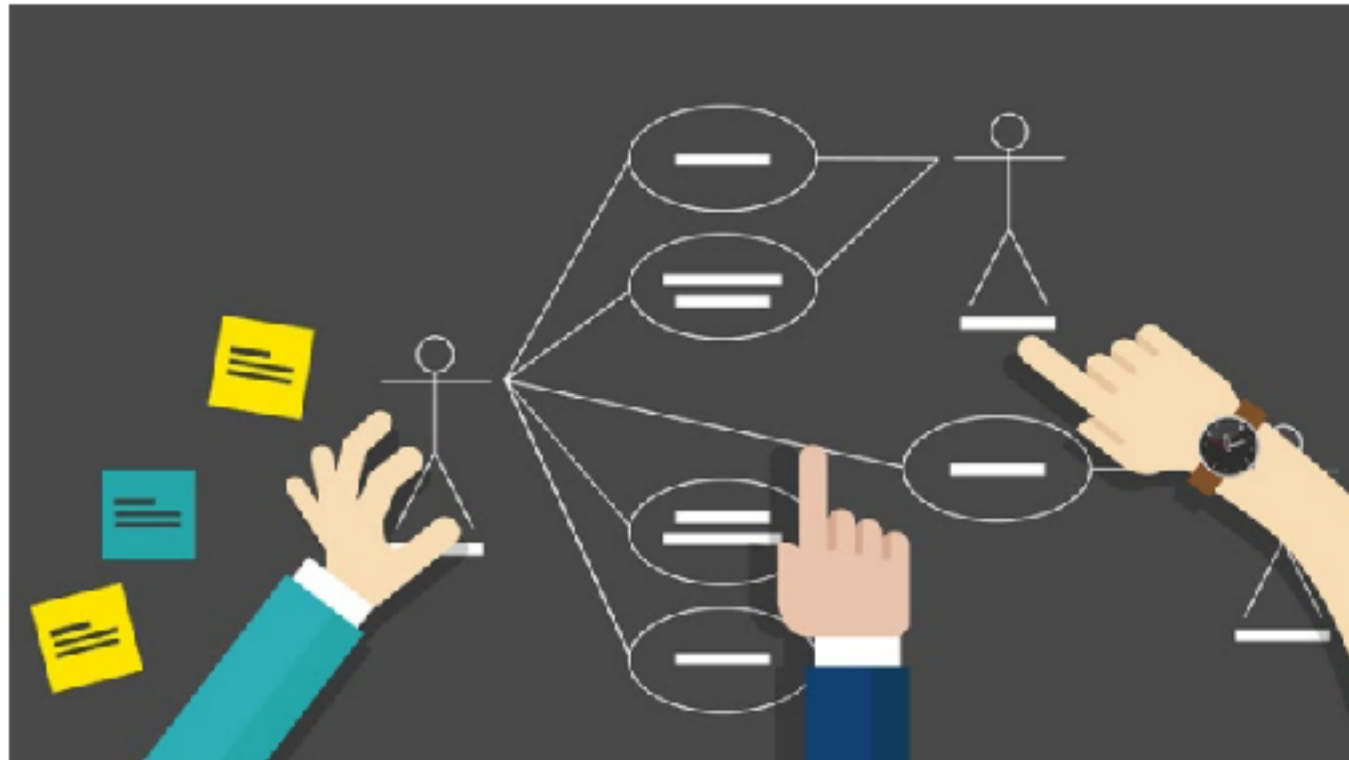
PRODUCT DEFINITION

- The team responsible for this **will collect the user requirements** based on their business environment. It's very much essential because understanding about the **real scope** of the product and their existence happens in this phase.
- It's simple; before beginning the work, enlighten your UI/UX designers about the requirements!
- People involved in this phase are Design Team, Business Manager, and Product Manager. The entire team should consult with clients in their environment. Analyze their needs within the framework of your operation.



PRODUCT DEFINITION

- The significant outcomes of this phase are User Personas, User Stories, and Use Case Diagrams.



RESEARCH

- The research is the most crucial element for a designer.
- The designing team studies how the present system works for the current client proposal.
- The three main functions at this stage are:
 - Have an understanding of the competition.
 - Making a thorough study of your existing domain.
 - Going through competitor strategy to test outcomes.



ANALYSIS

- In this phase, make use of **the things collected in the Research phase**. With the help of the information received, create hypothetical personas, and experience maps.
 - **Hypothetical Personas:**
 - Creating hypothetical scenarios help the designers to know about the various persons **who will be the users of your product**.
 - It allows depicting the realistic **representation of the ultimate product**.
 - The design team can figure out how it is going to **look like after delivery**.
 - **Experience Maps:**
 - Experience maps shows the **user flow within your final product**.
 - All these are done using visual representations through proper interactions with the client in the product definition phase.



DESIGN

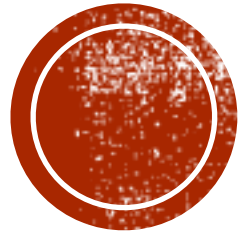
- In the design process, we finally end up giving life to ideas that we have collected in the above three steps.
- The design team will execute the **final design** in this phase.
- The significant outcomes of the designing phase are:
 - Sketching
 - Creating wireframes
 - Creating Prototypes
 - Creating Design Specifications



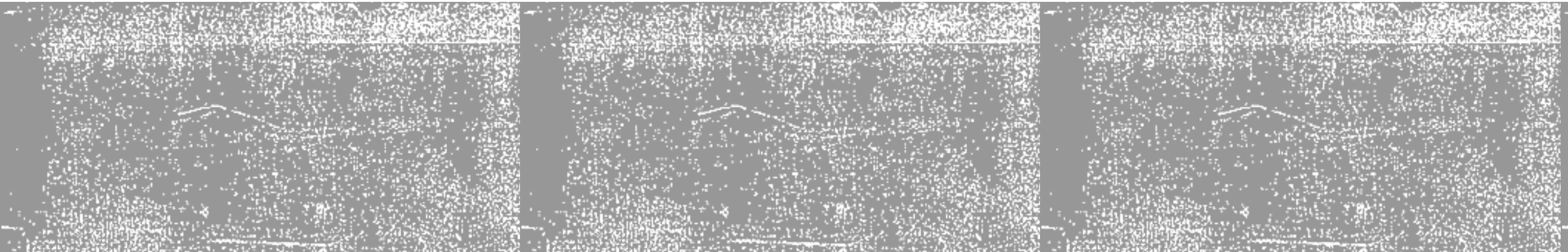
VALIDATION OR TESTING

- Testing is the phase that determines the overall **quality of the end-product**.
- The testers make notes of the **things that have to be improved** and send them back to the respected team for correcting the errors.
- While evaluating your final product, there are certain factors that one needs to keep in mind.
 - Is the system user-friendly?
 - Is it flexible and easy to operate?
 - Does it solve the customer's issue?
 - Is it credible and attracts the users to come back every time they need your service?





TASK ORIENTED APPROACH

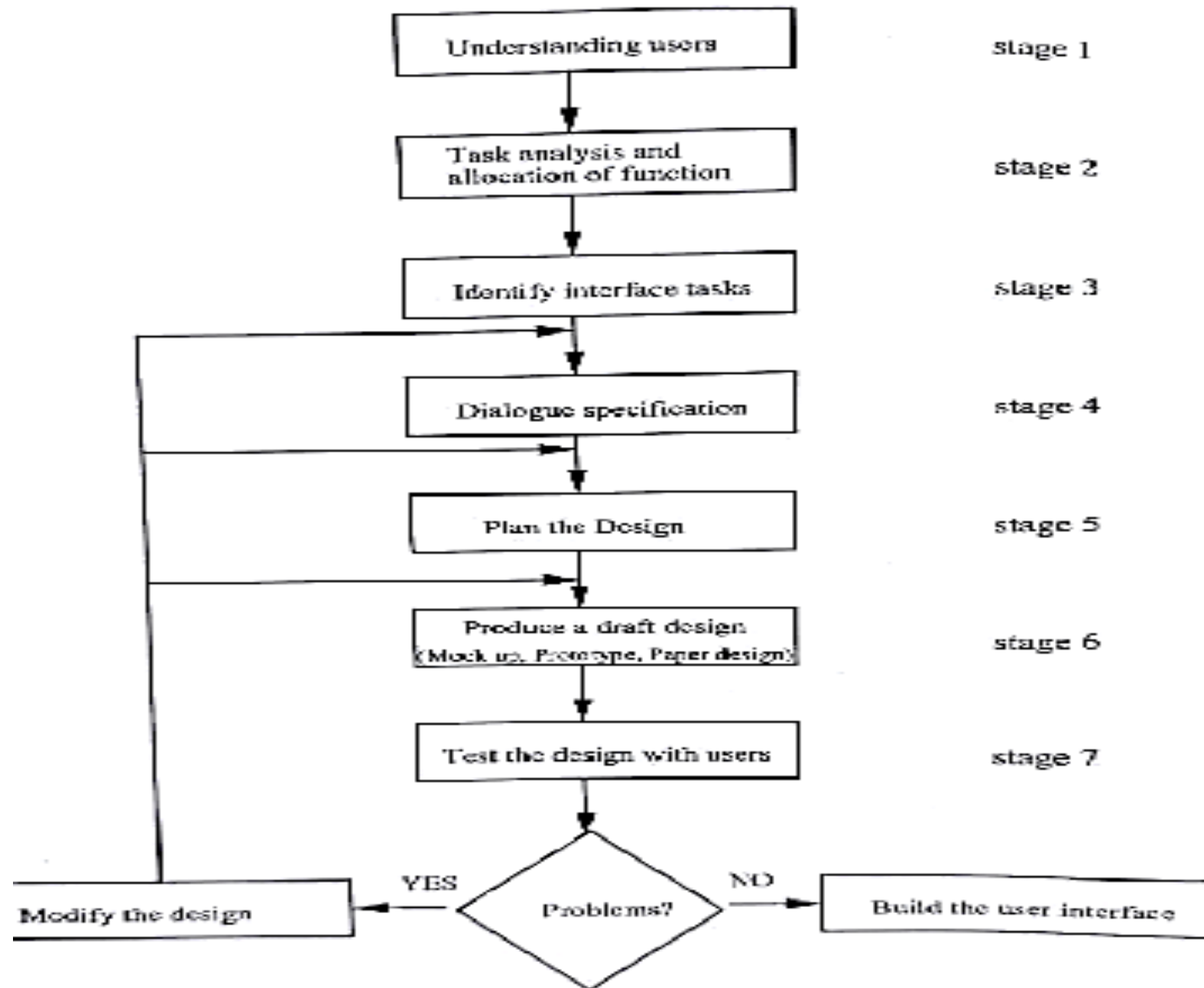


TASK ORIENTED APPROACH

- It involves the understanding of user tasks, and their sequencing of user actions.
- There are 7 stages of task oriented approach.



TASK ORIENTED APPROACH



STAGE - 1 - UNDERSTANDING G USERS

Generic users	Relationship	Description sheets		
		Job	Person	Organization
ENGINEER	1	YES	YES	YES
TRACER	1	YES	YES	NO
TECHNICIAN	1	YES	YES	NO
TEAM LEADER	2	YES	NO	NO
DEPARTMENTAL HEAD	3	NO	NO	NO

1: Primary user
2: Secondary user
3: Tertiary user

YES: Means that a description sheet has been completed for that user
NO: Means it hasn't

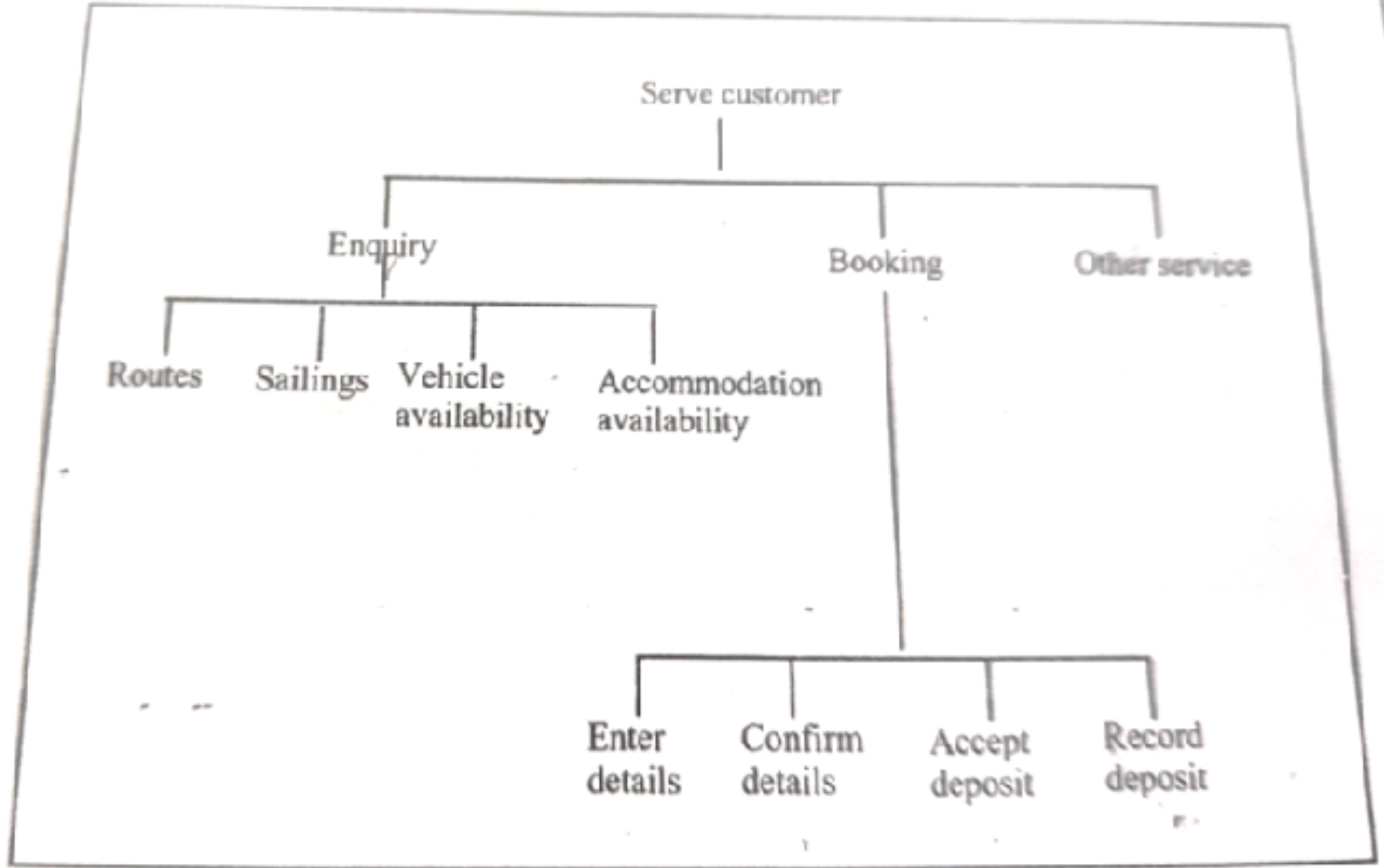


STAGE - 1 - UNDERSTANDING G USERS

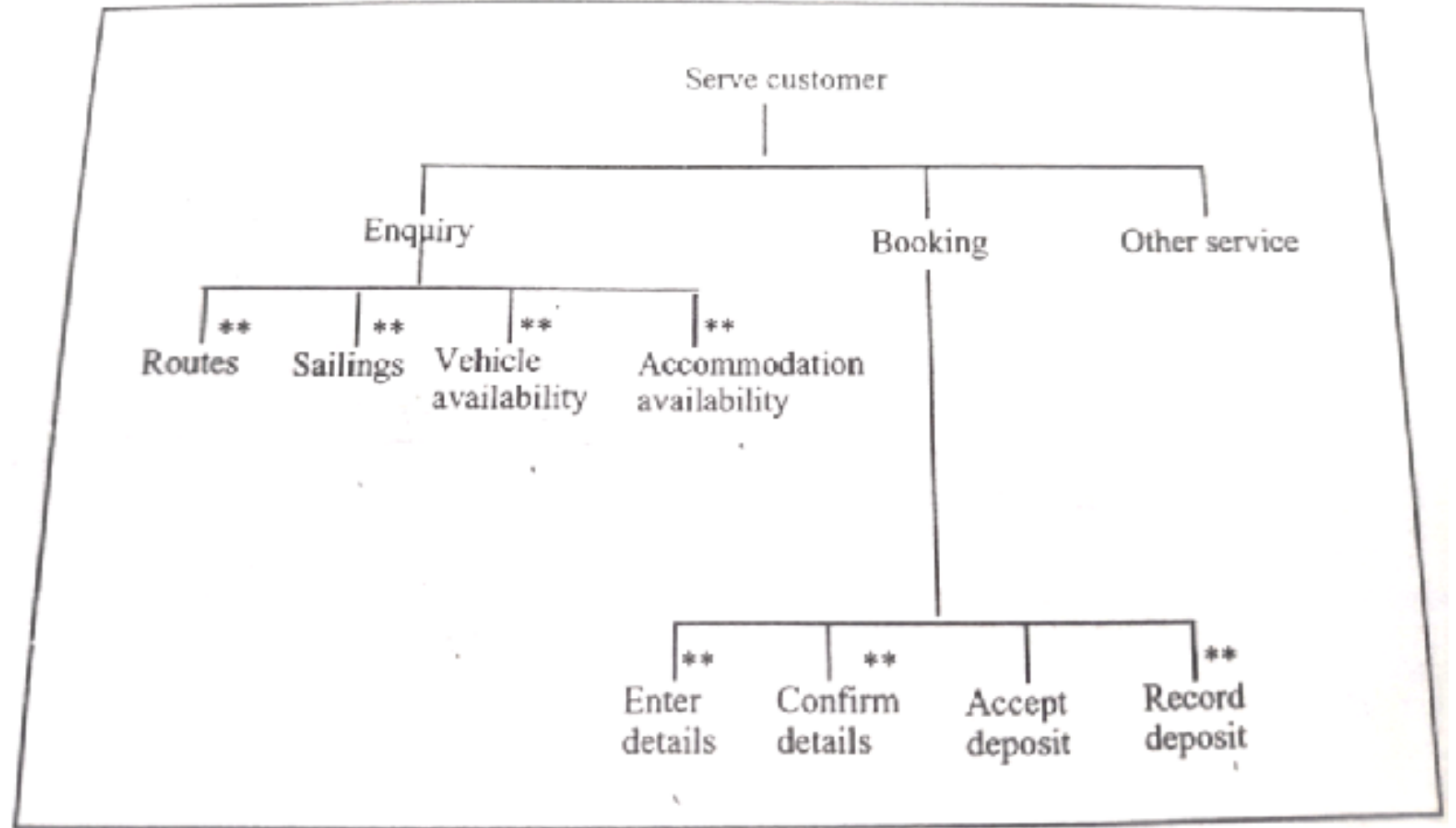
New	Proposed (e.g. 2 years on)
Attitude Professional (traditional and cautious, positive as long as benefits can be seen)	unchanged
Motivation <ul style="list-style-type: none"> • easier life • to be more effective • to increase quality 	<ul style="list-style-type: none"> • make use of maps easier • speed up information flow • increase quality
Aspiration/ambition <ul style="list-style-type: none"> • to be a team leader • to be seen as the 'top' engineer 	to realize aspirations
Expertise High expertise (very specialized knowledge base)	<ul style="list-style-type: none"> • exploit expertise more fully by reducing time-consuming and/or boring tasks
Skill Most technical skills undertaken by technician or tracer, likely to be rather 'rusty'	<ul style="list-style-type: none"> • new set of IT skills needs to be learnt
Job Very sociable, varied with high status	unchanged



STAGE - 2 - TASKS ANALYSIS AND ALLOCATION OF FUNCTION



STAGE - 3 - IDENTIFY SHARED TASKS



THOSE SYSTEMS WHICH ARE SHARED BETWEEN USER AND SYSTEM WILL HAVE A USER SYSTEM INTERFACE

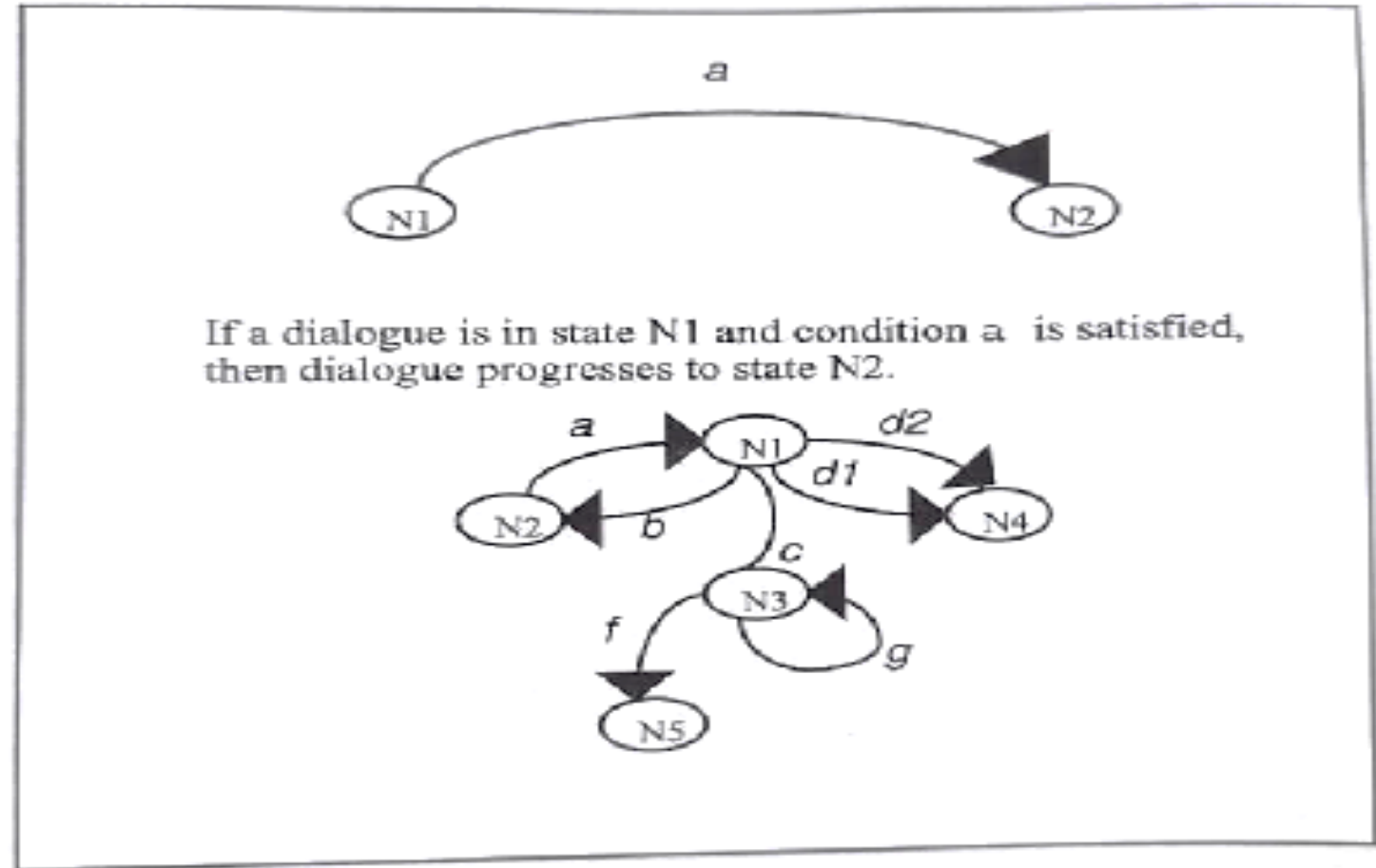


STAGE – 4 – SPECIFY USER SYSTEM DIALOGUE

- **Two techniques for specifying the dialogue between user and system is introduced.**
 - **Dialogue Network diagram**
 - **Logical Dialogue Controls (LDC)**



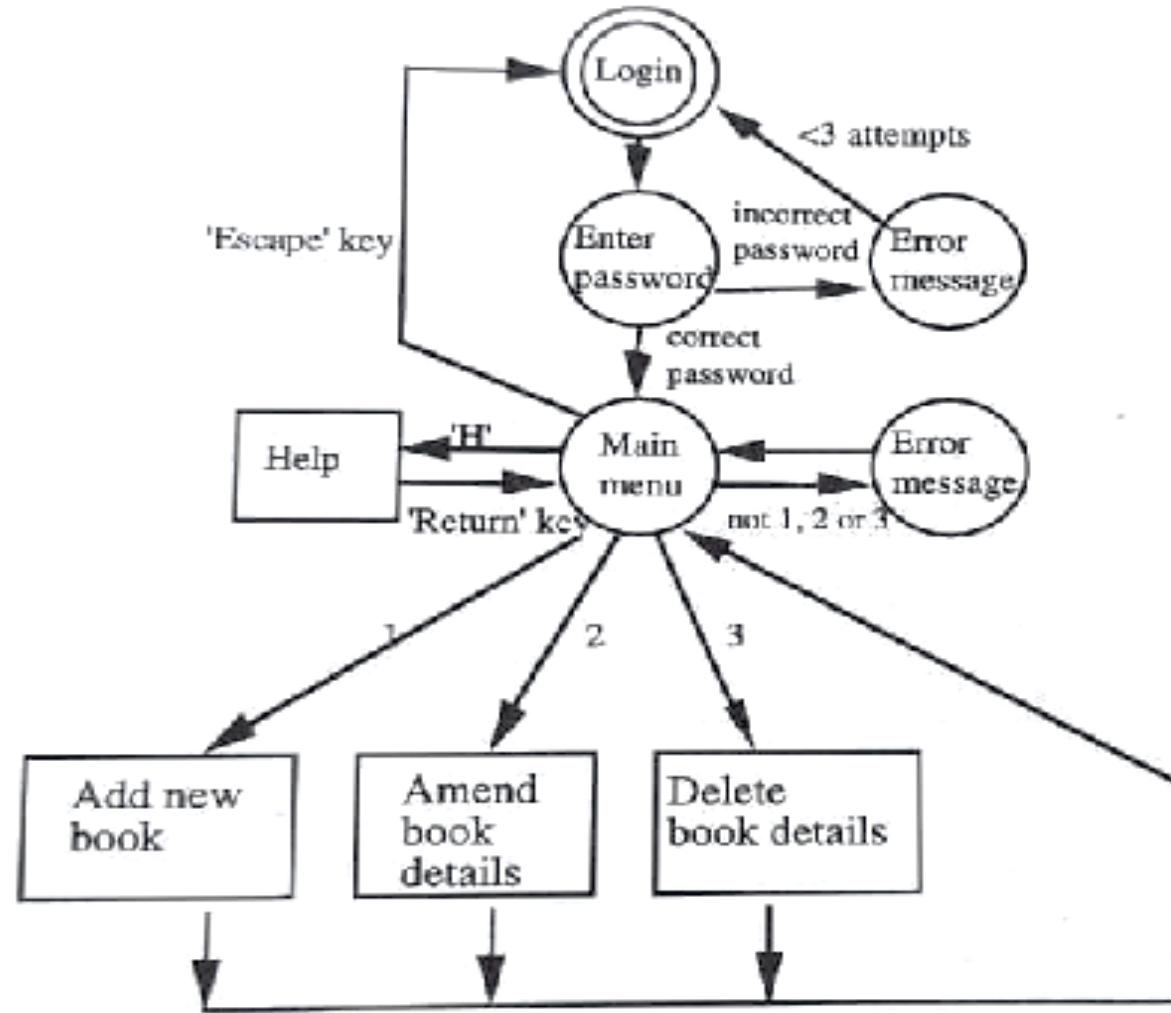
STAGE - 4 - SPECIFY USER SYSTEM DIALOGUE



DIALOGUE NETWORK DIAGRAM



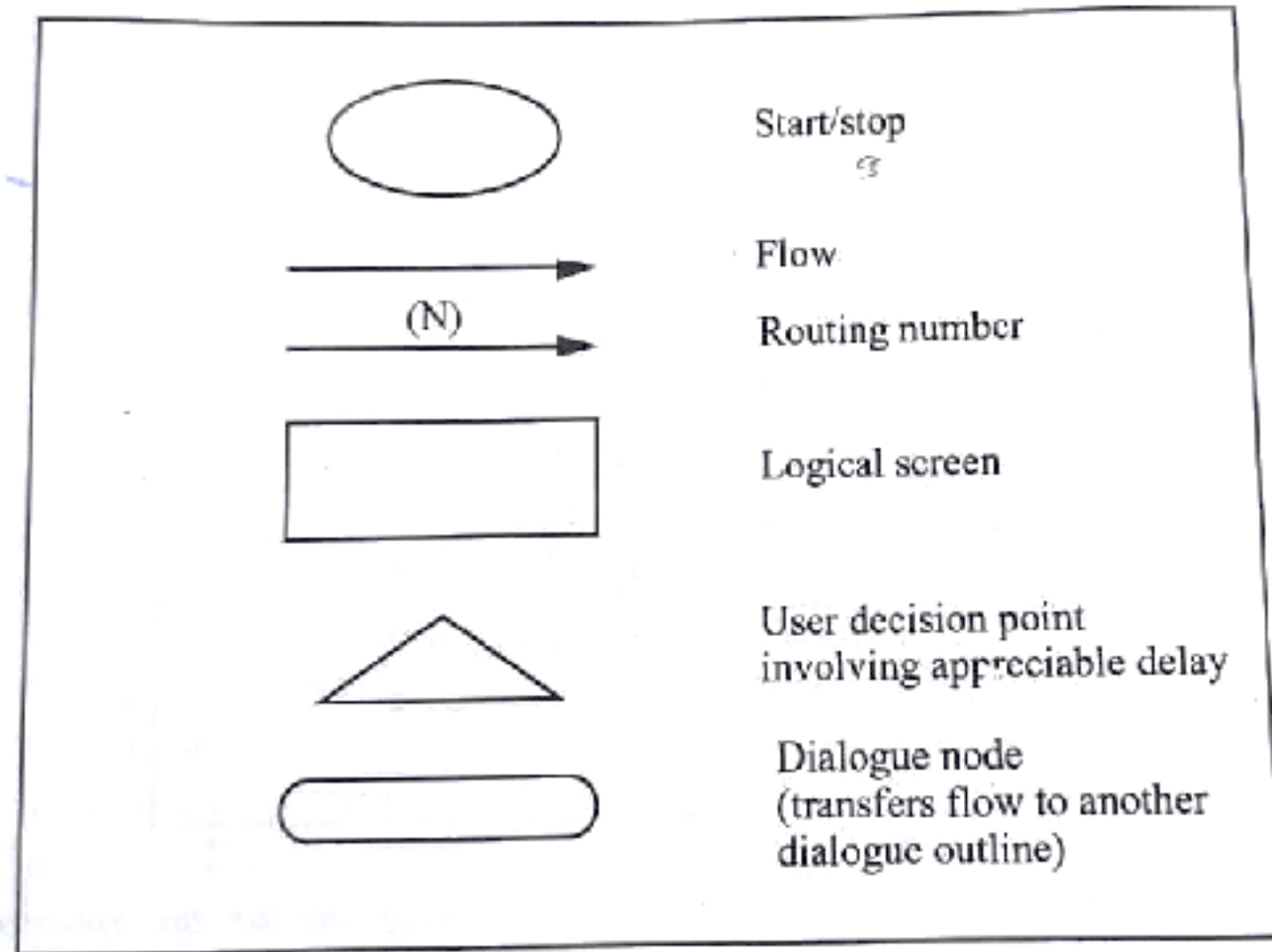
STAGE - 4 - SPECIFY USER SYSTEM DIALOGUE



Example of a dialogue network diagram for update stock records.



STAGE - 4 - SPECIFY USER SYSTEM DIALOGUE

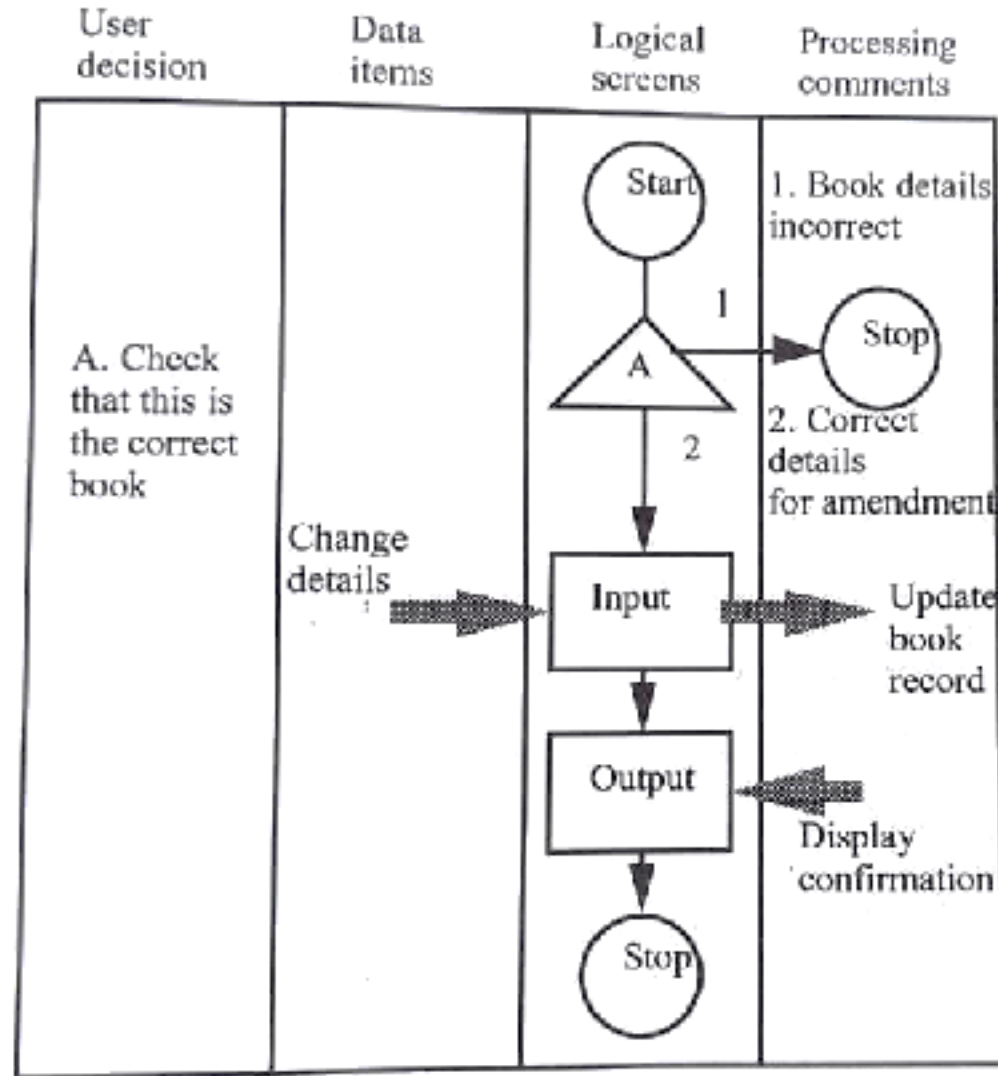


SSADM dialogue design symbols

**Logical Dialogue Controls
(LDC)**



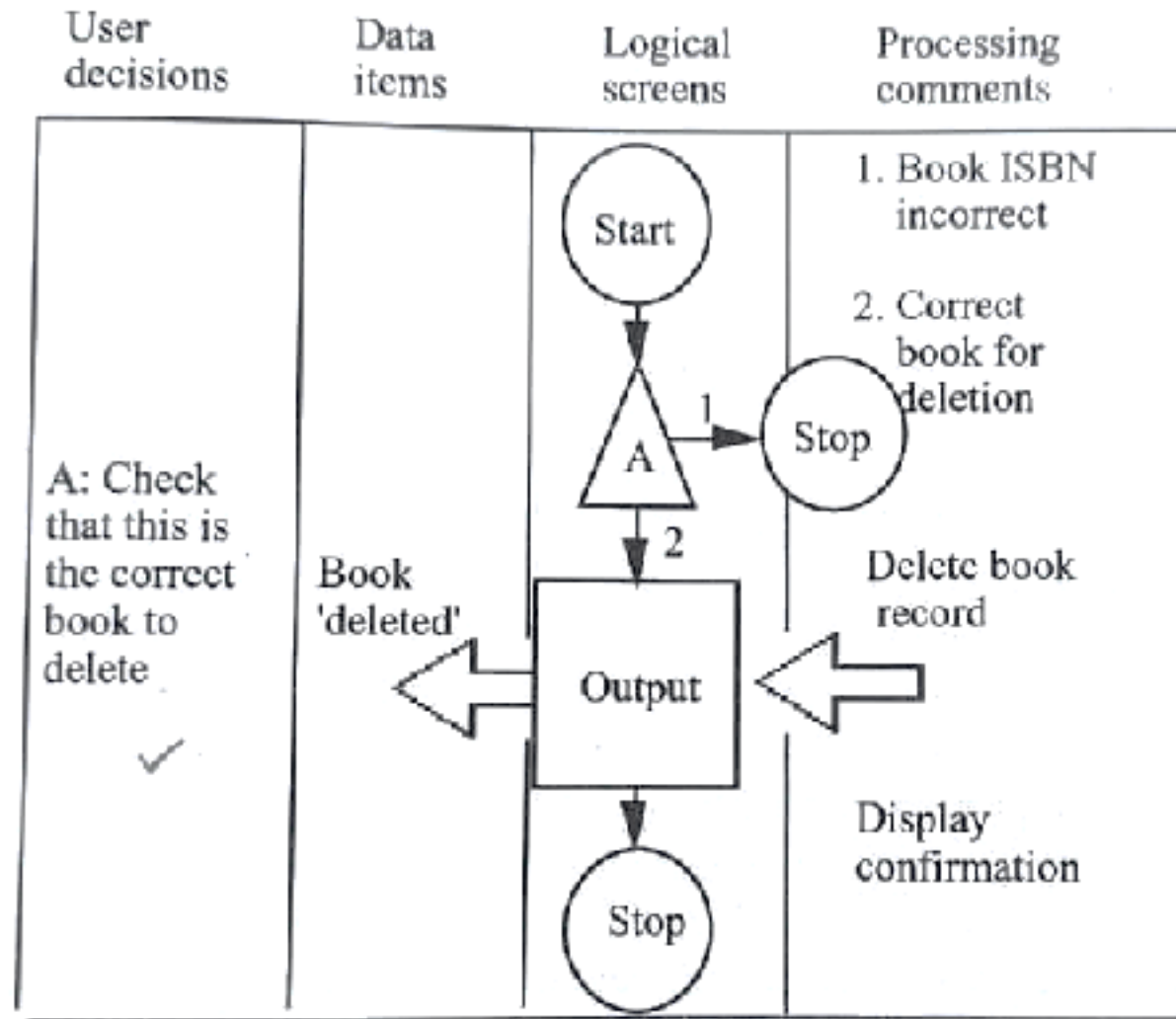
STAGE - 4 - SPECIFY USER SYSTEM DIALOGUE



Example of a logical dialogue outline (LDO) for a library cataloguing system.



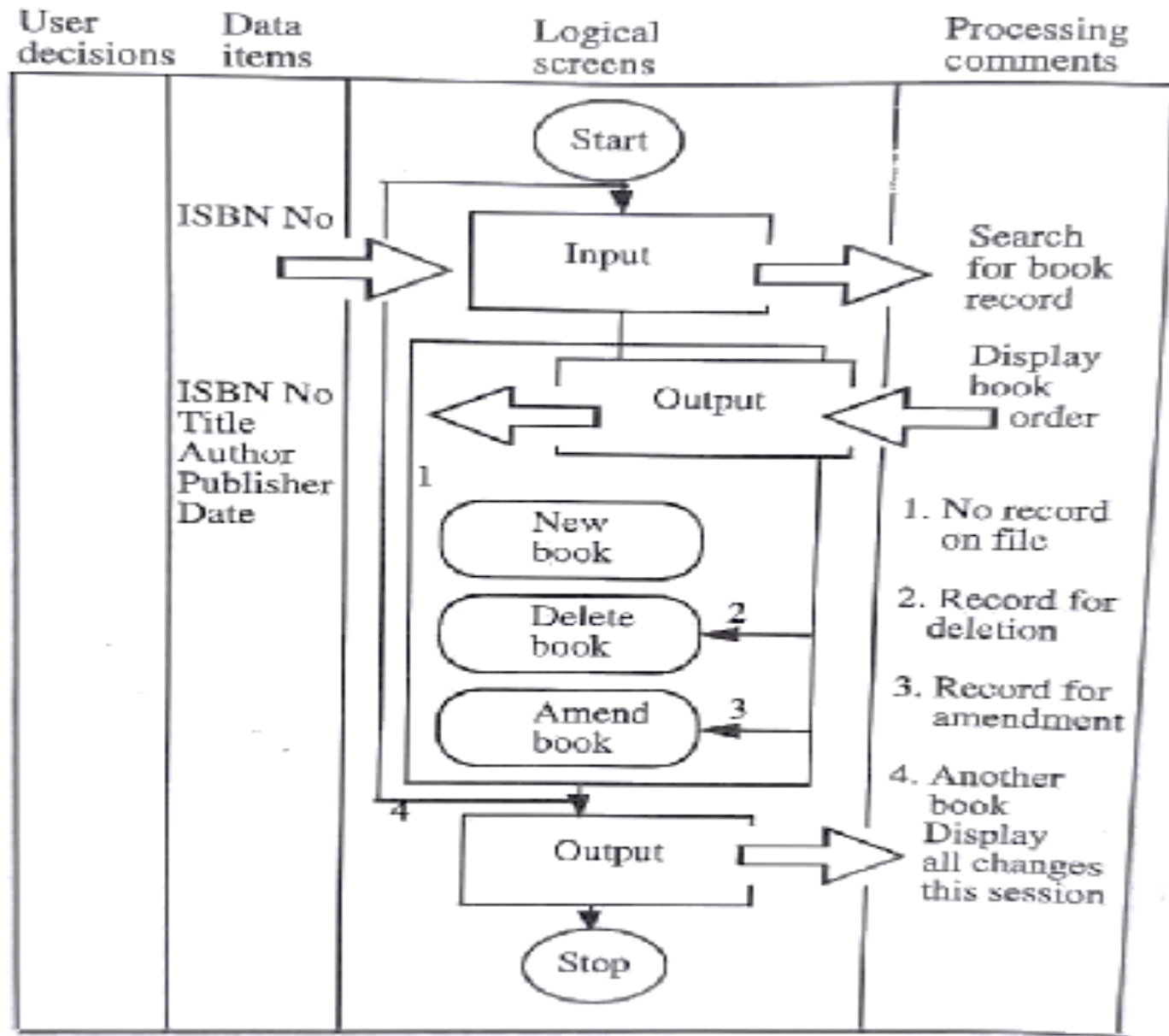
STAGE - 4 - SPECIFY USER SYSTEM DIALOGUE



LDO for delete book details.



STAGE – 4 – SPECIFY USER SYSTEM DIALOGUE



STAGE – 5 – PLAN THE DESIGN OF USER INTERFACE

- Planning is divided into four main stages.
 - Deciding what information should be displayed in each window
 - Deciding how the information should be displayed
 - Deciding where each field will appear
 - Deciding what highlighting is required.

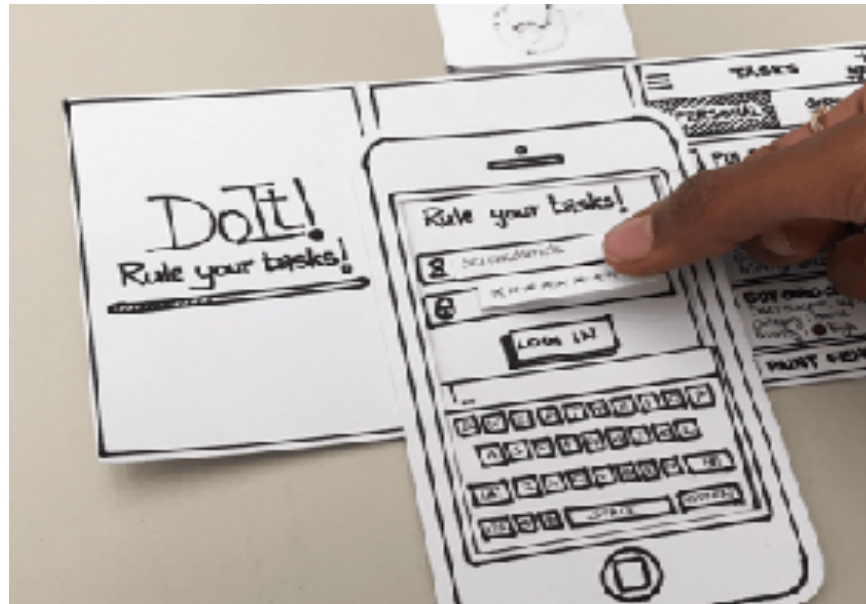


- What information should be displayed in each window
 - Follow the guidelines in menu design
- How the information should be displayed
 - Follow the guidelines of information presentation
 - Follow the guidelines on data entry
- Where should the information be displayed.
 - Follow the guidelines on positioning of text
 - Follow the guidelines in presentation of text
 - Follow the guidelines in design of windows
- When to use highlighting.



STAGE – 6 – PRODUCE A DRAFT DESIGN

- Use screen layout sheets, screen design aids, paper mock-ups or prototyping tools to produce a first draft.



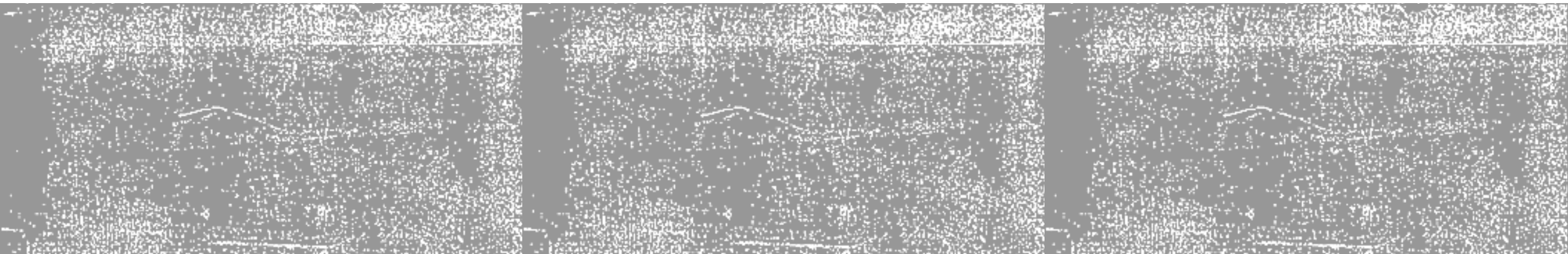
STAGE – 7 – TEST THE DESIGN WITH USERS

- Evaluate the layout in terms of design principles.
- Then evaluate the effectiveness of the design through the experimentation with target users.





CASE STUDY



FAST FERRARI RESERVATION SYSTEM

■ Stage – 1 – understanding users

- Business Case
- Work group table
- Workgroup: Sales staff: Job issues
- Generic User: Travel agent: Person issue
- Task: Enquiry: Organization Issue
- Task: Booking: Organization Issue
- Users, Object, task: Travel agent, Voyage details, Enquiry
- Users, Object, task: Travel agent, Booking details, Booking



FAST FERRARI RESERVATION SYSTEM

- **Stage – 2 –tasks analysis and allocation of function**
 - Task analysis
 - Allocation of function
- **Stage – 3 – identify shared tasks**
- **Stage – 4 – Specify User System Dialogue**
 - Dialogue Network Diagram



FAST FERRARI RESERVATION SYSTEM

- **Stage – 5 – Plan the Design of User Interface**

- Full Screen Window template
- Error popup window template

- **Stage – 6 – Produce a draft design**

- Main Menu
- Some Enquiry Window
- Some Booking Window

- **Stage – 7 – Test the design wit users**



WORK GROUP TABLE

Work Group Title	Sales staff group	Management group	Financial group
Relationship	1	2	2
Generic users <input type="checkbox"/>	TRAVEL AGENT <input type="checkbox"/>	SENIOR TRAVEL AGENT <input type="checkbox"/>	MANAGER <input type="checkbox"/>
	ASSISTANT <input type="checkbox"/>	MANAGER <input type="checkbox"/>	ACCOUNTANT <input type="checkbox"/>
	SENIOR TRAVEL AGENT <input type="checkbox"/>	SECRETARY <input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Indicates relationship of user to the proposed system



WORKGROUP: SALES STAFF: JOB ISSUES

<u>Proposed system</u>	<u>FAST FERRIES</u>
<u>Work-group</u>	<u>SALES STAFF</u>
<u>Job issues</u>	<u>(A typical week)</u>

Now	Proposed (e.g. 2 years on)
Dealing with customers, finding out their <u>requirements</u> (35%)	More effective, by using the system to support communication between customer and sales staff (25%)
Making enquiries regarding <u>availability of ferries</u> , times and prices of crossings, using the telephone and published timetable (25%)	Speed up service to <u>customers</u> (15%)
Making bookings and reservations for <u>passengers and vehicles</u> , by filling in the reservation form, together with the customer (15%)	Reduce time taken and reduce chances of double booking (10%)
Selling associated products such as insurance (2%)	Reduce time taken (3%)
Arranging accommodation (2%)	
Informing ferry company of reservation details (2%)	Reduce time by using network (1%)
Recording information about bookings for management (5%)	Reduce time and reduce paperwork (4%)
Keeping files on customers and bookings (5%)	
Dealing with payment (2%)	Same
Issuing tickets on behalf of the ferry company (2%)	Reduce time and reduce errors (1%)
Setting out and reading travel <u>brochures</u> (5%)	Same
	<u>New tasks:</u> Computer related (5%)



GENERIC USER: TRAVEL AGENT: PERSON ISSUE

Now	Proposed
Attitude Sociable Likes helping people	Unchanged
Motivation To be more helpful Commission on voyage and service sales	More up-to-date information Less hassle
Aspiration/ambition To act for a prestige ferry line More commission on sales	Unchanged
Expertise Knows ferry routes and timetable in outline Knows booking routine	Unchanged
Skill Many are touch typists, but are out of practice	Typing skills preferred, but high speed not essential
Job Very visible to customers	Unchanged
Seated, at a desk or counter Office-like environment, with public access Similar to building society branches	Unchanged
Much paper clutter	Less clutter



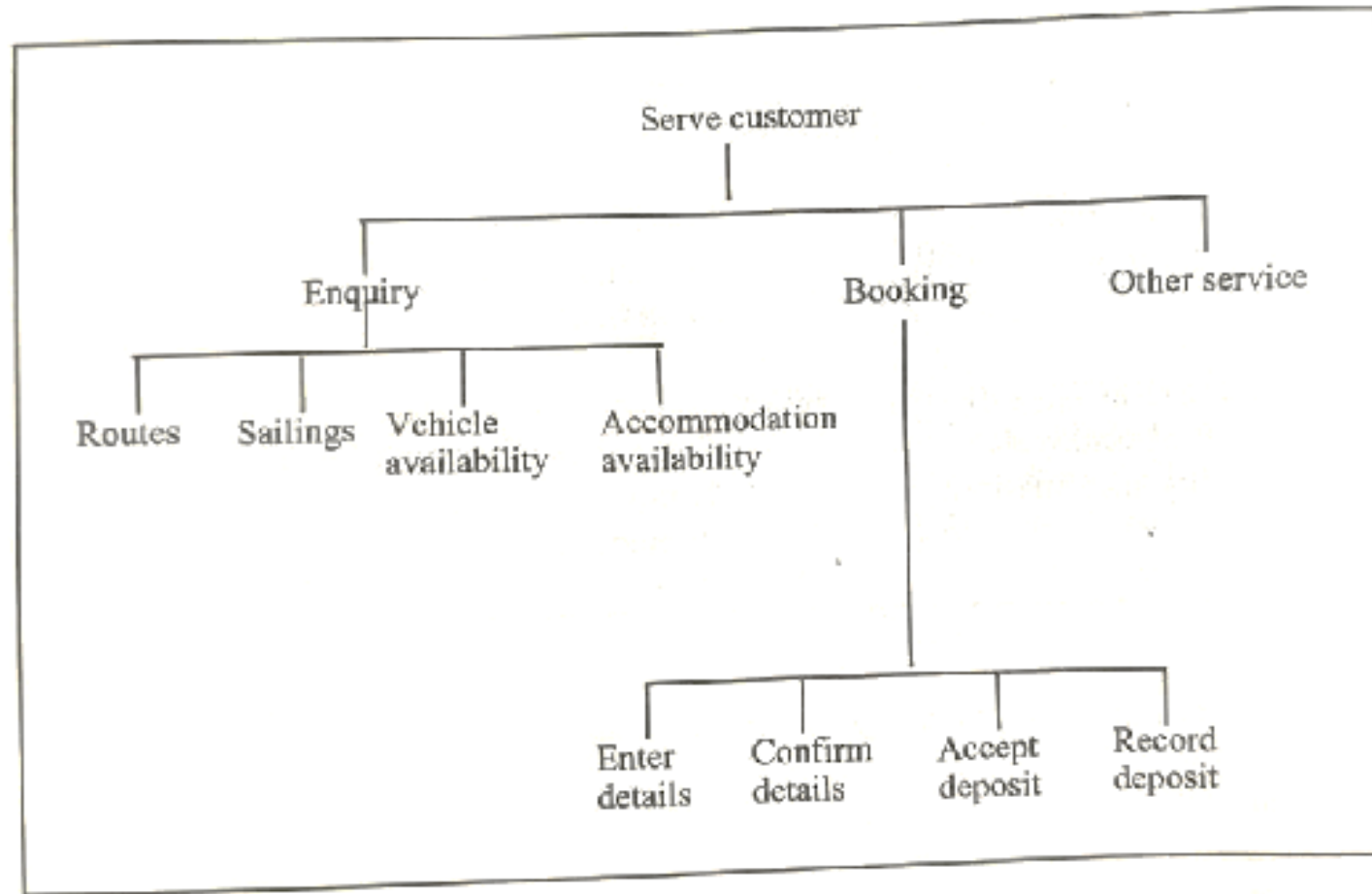
TASK: ENQUIRY: ORGANIZATION ISSUE

(1.5) Task: enquiry: organization issues

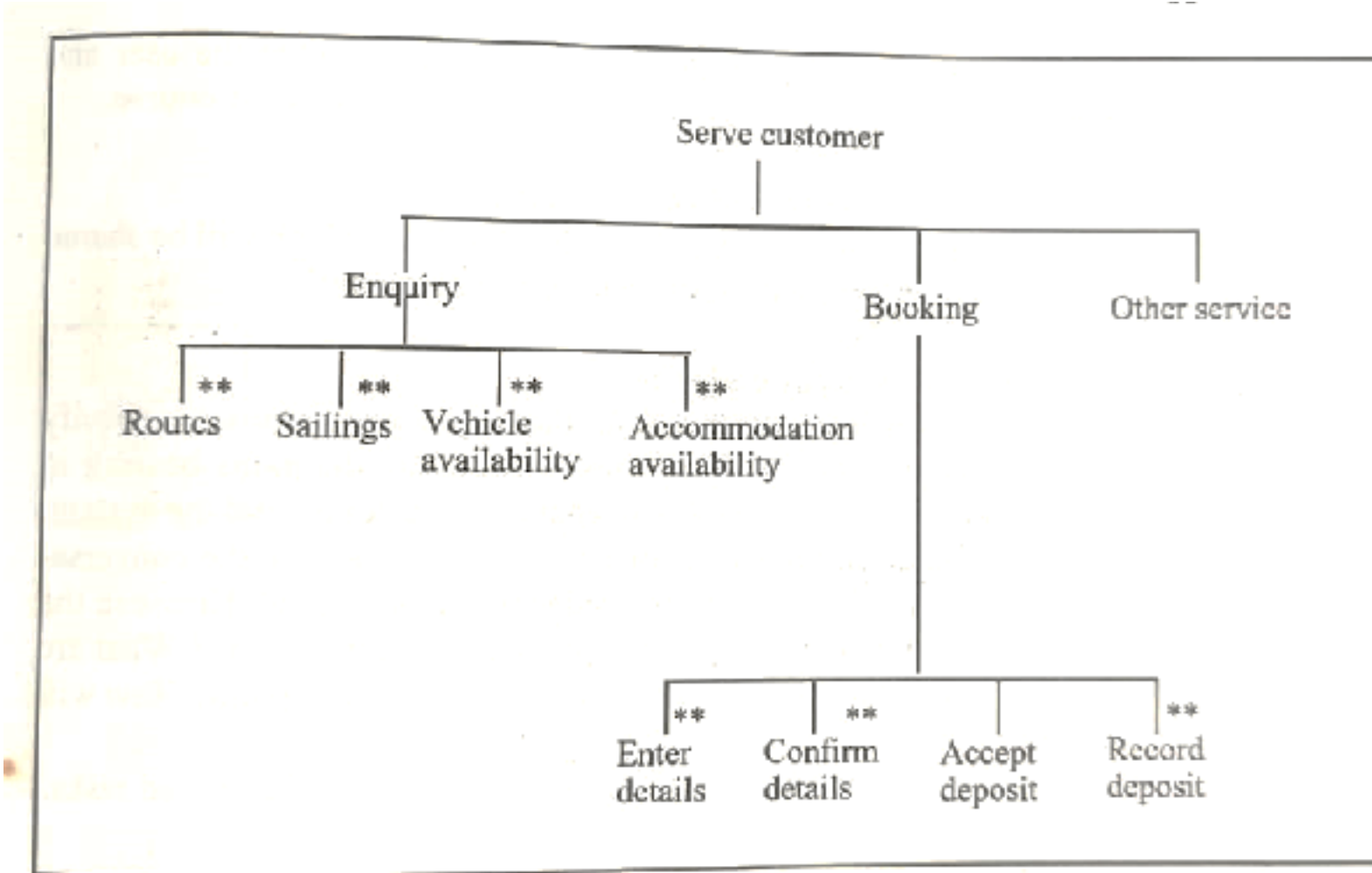
Now	Proposed
Importance	
High	Same
Many sales depend on it	
Helps avoid under — or over — booking	Same but more accurate
Security	
No security issues associated with the timetable	Same
Availability of sailings is inaccessible and security risk is low	High: commercially and financially sensitive if collated over all sailings and whole year
Motivation	
High	Same
Used to help customers	
Skill level	
Medium	Low: less reliance on memory
Dependencies	
Accuracy of timetable and availability	Same, but more up-to-date information



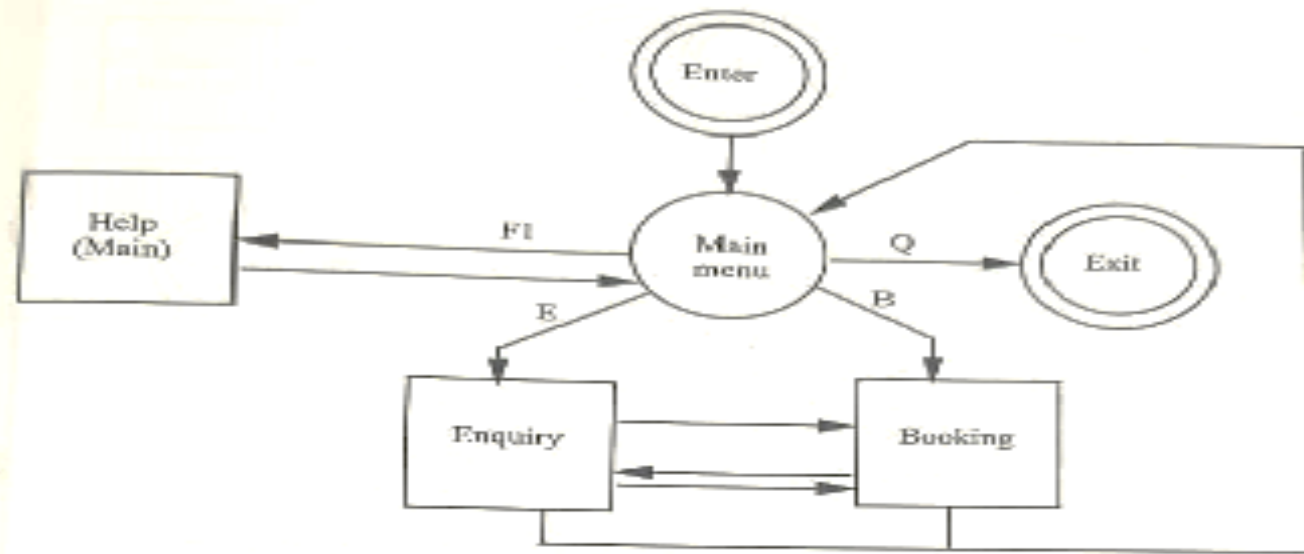
STAGE – 2 – TASKS ANALYSIS AND ALLOCATION OF FUNCTION



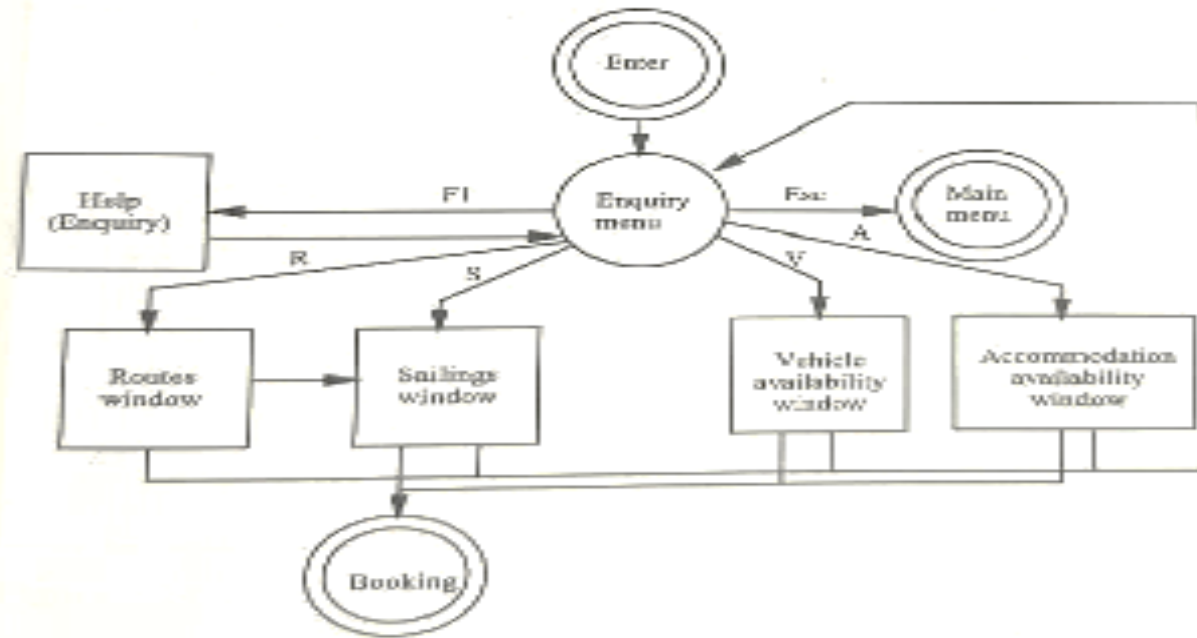
STAGE – 3 – IDENTIFY SHARED TASKS



STAGE - 4 - SPECIFY USER SYSTEM DIALOGUE



Level 1 diagram, main menu for 'serve customer'.



STAGE - 5 - PLAN THE DESIGN OF USER INTERFACE

Fast Ferries	Service name : Subject	09.27
Optional upper banner area - customer's name if appropriate		
Optional lower banner area - data entry for enquiries if appropriate		
Help F1	Exception sequencing keys	Normal sequencing keys

General screen template for Fast Ferries screens.

Template for a pop-up window

Error
Why this window has appeared What the user should do about it
Esc Continue

General template for pop-up error messages.



STAGE – 6 – PRODUCE A DRAFT DESIGN

Fast Ferries			Enquiry : routes			09.27
Country	From..... Port	Code	Country	To..... Port	Code	Hours
England	Folkestone	FOL	Belgium	Ostend	OST	10
	Dover	DVR	France	Calais	CAL	2
	Dover	DVR		Dunkirk	DUK	2.5
France	Calais	CAL	England	Dover	DVR	2
	Dunkirk	DUK		Dover	DVR	2.5
Belgium	Ostend	OST	England	Folkestone	FOL	10
Help F1	Enquiry menu Esc				Sailings F2	

Note:

Highlighted line selects the From and To ports if F2 is pressed.



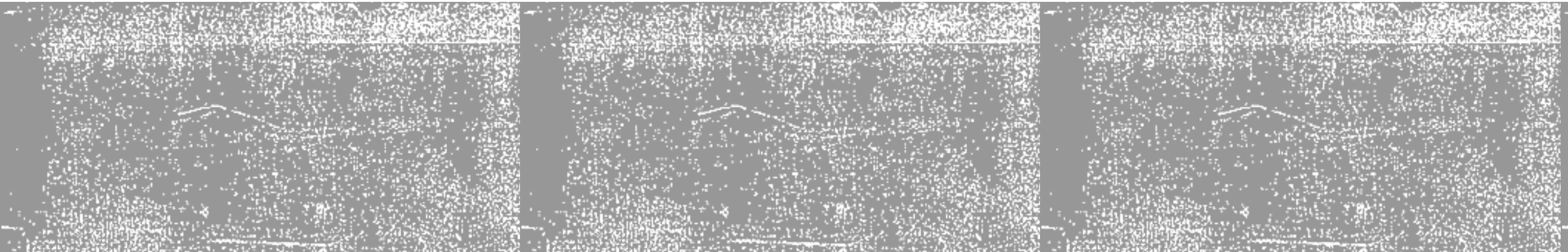
STAGE – 6 – PRODUCE A DRAFT DESIGN

Fast Ferries			Enquiry : sailings				09.27
21.02.94		Dover to Dunkirk					27.02.94
Mon	Tues	Wed	Thur	Fri	Sat	Sun	
01.00	01.00	01.00	01.00	01.00	01.00	01.00	
05.00	05.00	05.00	05.00	05.00	05.00 *	05.00	
09.00	09.00	09.00	09.00	09.00	09.00 *	09.00	
					11.30 *		
13.00	13.00	13.00	13.00	13.00	13.00	13.00	
					14.30		
17.00	17.00	17.00	17.00	16.30 *	17.00	17.00	
				19.30 *			
21.00	21.00	21.00	21.00	21.00 *	21.00	21.00	
				21.30			
				* : Fully Booked			
				* : Check Availability			
From DVR	To DUK	Date 25.2.94	Time 16.30				
				Booking F2			
Help F1	Enquiry menu Esc						





OBJECT ORIENTED APPROACH



OBJECT ORIENTED APPROACH

GUIs use an object action paradigm where the user indicates an object first and then decide the action.



Stage 1:

Understanding Users

Stage 2:

List objects associated
with all users and workgroups

Stage 3:

Decide on the role of the system
and identify which objects will
be visible at the user interface

Stage 4:

Describe each visible object
according to the interface metaphor

Stage 5:

Identify relationships between
objects according to the interface
metaphor

Stage 6:

Decide how to view each object

Stage 7:

Draw sketches of the
interface design

Stage 8:

Test the design with users



STAGES IN OBJECT ORIENTED APPROACH

Stage:1 – Understanding the users

- This stage will provide the description of what the do now and a basis for identifying objects.
- Always begin by understanding the users and what they do.



STAGES IN OBJECT ORIENTED APPROACH

Stage:2 – List Objects associated with all users and workgroup

- Different users will carryout different actions on the same object.
- Make a list of all objects associated with users and workgroup.
- These tasks should be set out in a list for each workgroup and all the nouns underlined.



STAGES IN OBJECT ORIENTED APPROACH

Stage:3 – Decide on the role of the system and identify visible objects

- Decide the role of the system.
- Classify the objects [Eg: Objects are automated (i.e., Invisible), Visible UI, External system object]
- Identify aggregations, different names and reports.
- Revised List of Objects



STAGES IN OBJECT ORIENTED APPROACH

Stage:4 – Describe each visible objects

- **Now and Proposed** descriptions
- Descriptions according to metaphor adopted



STAGES IN OBJECT ORIENTED APPROACH

Stage:5 – Identify relationship between objects

- The nature of relationship will also depend on the interface metaphor adopted.
- Relationship such as association and containment shall be identified.
- This stage involves understanding how the user will interact with the system.



STAGES IN OBJECT ORIENTED APPROACH

Stage:6 – Decide how to view each objects

- Views of objects are decided
 - Icons
 - Menubars
 - Menu Items,
 - Forms



STAGES IN OBJECT ORIENTED APPROACH

Stage:7 – Draw the Sketches of the Interface Design

- Draw the Sketches of the Interface Design and discuss possible scenarios of use with the users.
- Should not spend too much time on drawing a draft of the design.



STAGES IN OBJECT ORIENTED APPROACH

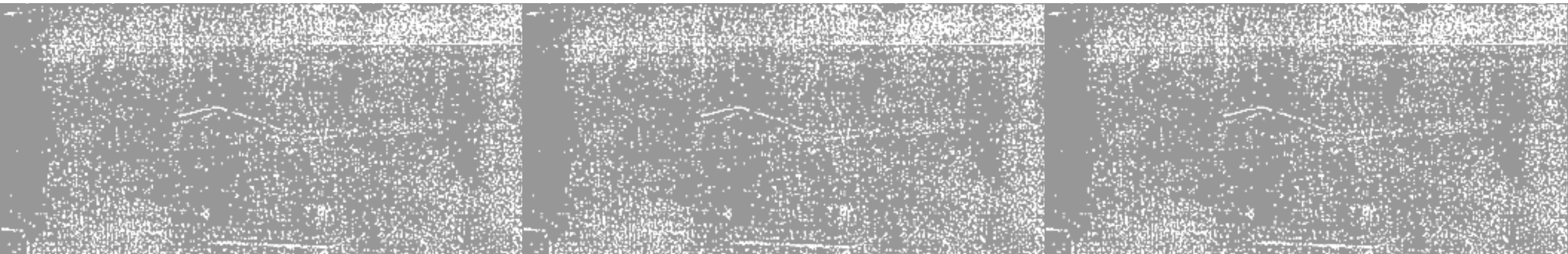
Stage:8 – Test the Design with users

- User reactions are sought concerning the choices of objects, the views of each object.
- The design should be modified to reflect user reactions.





CASE STUDY



FAST FERRARI RESERVATION SYSTEM

STAGE:1 - UNDERSTANDING THE USERS

Work Group Title	Sales staff group	Management group	Financial group
Relationship	1	2	2
Generic users <input type="checkbox"/>	TRAVEL AGENT <input type="checkbox"/> 1	SENIOR TRAVEL AGENT <input type="checkbox"/> 1	MANAGER <input type="checkbox"/> 2
	ASSISTANT <input type="checkbox"/> 1	MANAGER <input type="checkbox"/> 2	ACCOUNTANT <input type="checkbox"/> 2
	SENIOR TRAVEL AGENT <input type="checkbox"/> 1	SECRETARY <input type="checkbox"/> 3	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Indicates relationship of user to the proposed system



FAST FERRARI RESERVATION SYSTEM

SALES STAFF WORKGROUP: (from the job issues table in Fig. 3.17)

Deals with customers, finding out their requirements.

Makes enquiries regarding availability of ferries, times and prices of crossings, using the telephone and published timetable.

Makes bookings and reservations for passengers and vehicles, by filling in the reservation form, together with the customer.

Sells associated products such as insurance.

Arranges accommodation.

Stage:2 – List Objects
associated with all users
and workgroup

MANAGEMENT WORKGROUP: (from the job issues table — not shown).

Produces monthly and annual reports for head office.

Monitors performance of sales staff.

Markets the services of the travel agent by accessing customer files.

Makes forecasts and plans for future business.

Deals with complaints from customers.

Deals with exceptions.

Deals with other agencies and travel companies.

FINANCIAL WORKGROUP: (from the job issues table — not shown)

Produces monthly and annual financial reports for head office.

Produces financial statements for tax returns.

Produces daily and weekly summaries of takings.



FAST FERRARI RESERVATION SYSTEM

Stage:3 – Decide on the
role of the system and
identify visible objects

List of objects (from Stage 2)	Classification
customers	2
requirements	part of customer
enquiries	2
ferries, times and prices of crossings	same as timetable
telephone	2
timetable	2
bookings	2
reservations	2
passengers	2
vehicles	2
reservation form, <i>form</i>	2
customer	duplicate object
products	2
insurance	2
accommodation	2
ferry company	3



FAST FERRARI RESERVATION SYSTEM

Stage:3 – Decide on the
role of the system and
identify visible objects

3. *Aggregations, different names and reports*

Next the objects with an allocation of 1 or 2 need to be reconsidered:

✓ customers	2
enquiries	2
telephone	2
timetable	2
• bookings	2
• reservations	2
• passengers	2
vehicles	2
• reservation form	2
products	2
insurance	2
accommodation	2
information about bookings for management	2
✓ files on customers	2
• files on bookings	2
• information about payment	2



FAST FERRARI RESERVATION SYSTEM

Stage:3 – Decide on the
role of the system and
identify visible objects

4. *Revised list of objects*

customers
enquiries
telephone
timetable
bookings
reservations
products
tickets
payment
insurance details
accommodation details
vehicle.



FAST FERRARI RESERVATION SYSTEM

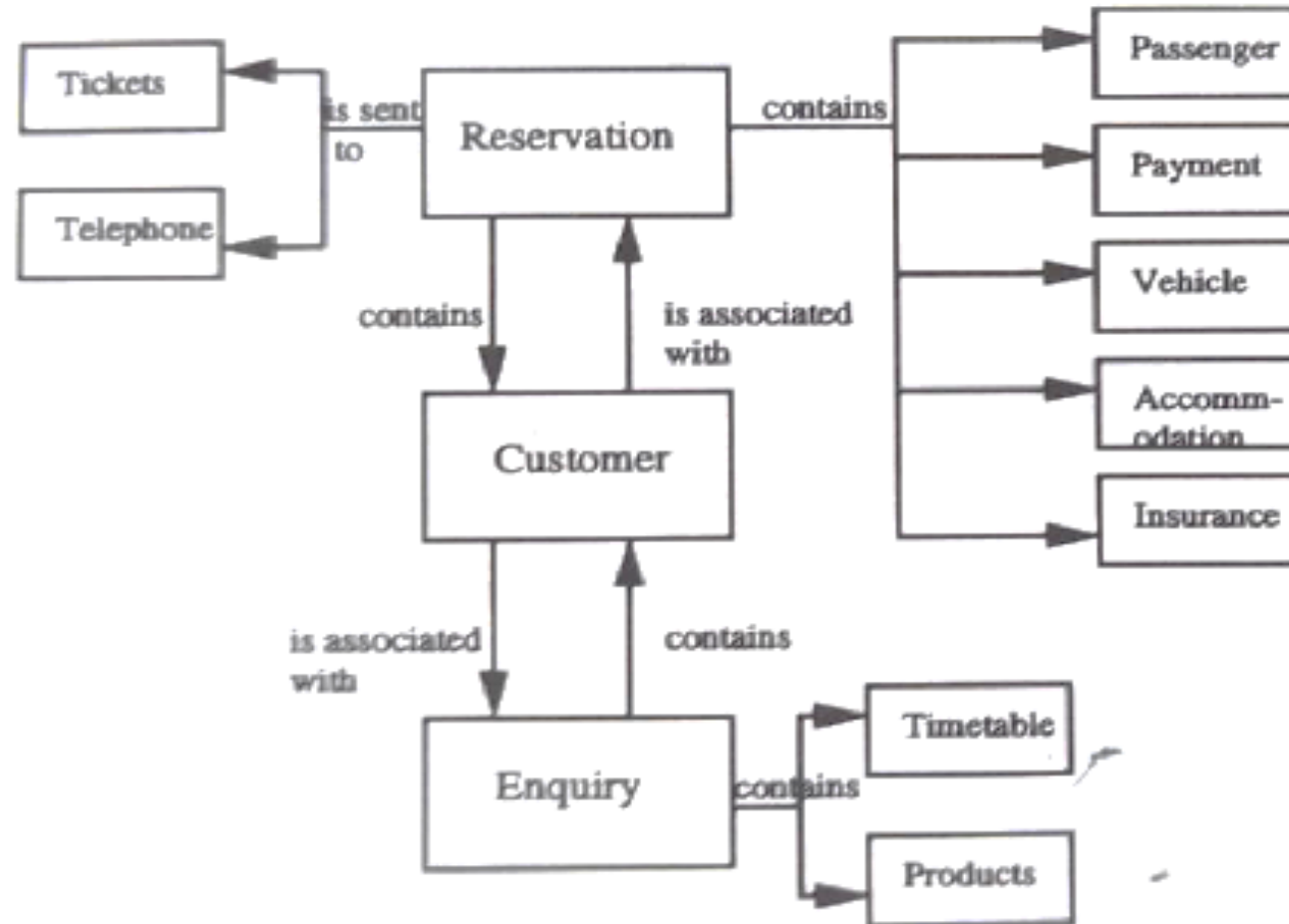
**Stage:4 – Describe each visible
objects**

- **What is it?**
- **Who has access to the object?**
- **Who is responsible for the management of the object?**
- **What is it?**
- **What is its representation and quality?**



FAST FERRARI RESERVATION SYSTEM

Stage:5 – Identify
relationship between
objects



FAST FERRARI RESERVATION SYSTEM

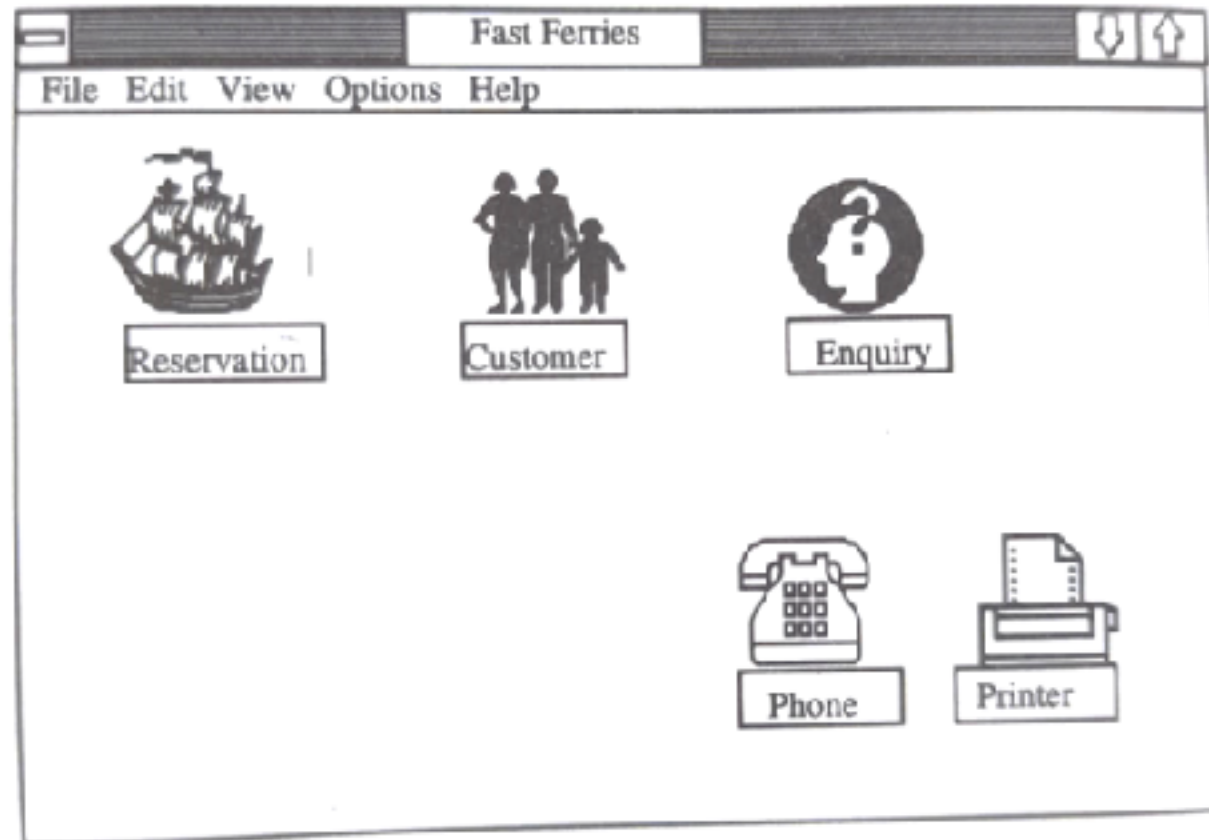
Stage:6 – Decide how to view
each objects

- **The reservation, Customer Enquiry may be viewed as an Icons.**
- **On selection of reservation, the menu bar will appear containing the passenger details.**



FAST FERRARI RESERVATION SYSTEM

Stage:7 – Draw the
Sketches of the Interface
Design



FAST FERRARI RESERVATION SYSTEM

Stage:8 – Test the Design with
users

- **Designers simply show the screen design to potential users and discuss a typical scenario of use with them**

