



Interaction Design

for Home Computing

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Guide:
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Introduction

Technology does not work for people just by being 'latest'

In a world of Information Technology, it is imperative that technology reaches out to homes.

Can sending an e-mail be as simple as making a phone call?

!!?

Introduction

Computing

Strong distinction between people who 'know' computers and those who don't.

Apprehension for those who don't.

Device meant for office desktops thrown into home scene.

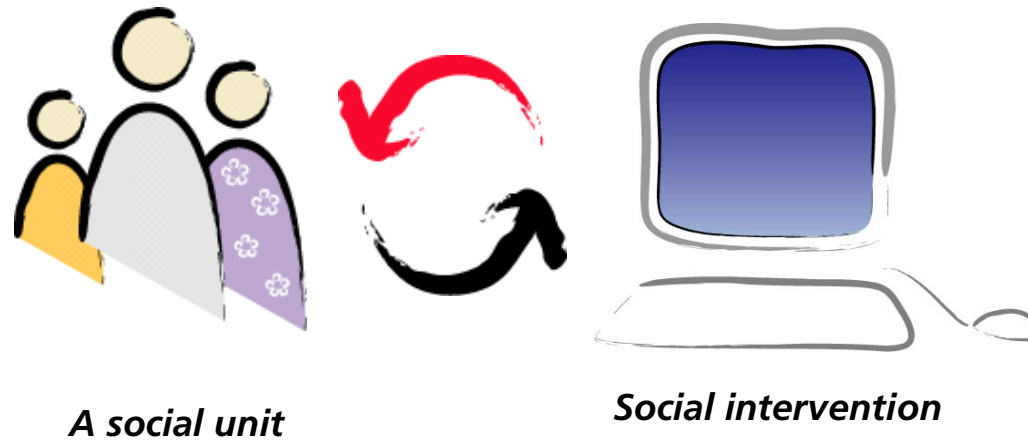
Serious rethinking before yet another gizmo comes in.

Understanding Home Computer

PC – a computer designed for use by only one person at a time

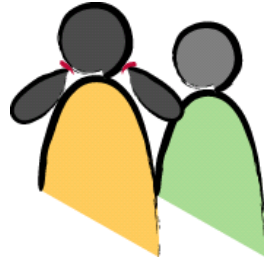
Home computer – PC in a home setting

*New significance for families since
late 1990s because of connection to
the internet.*



Home Computer Usage

Who?



Kids – Entertainment,
Education, Entertainment,
Information

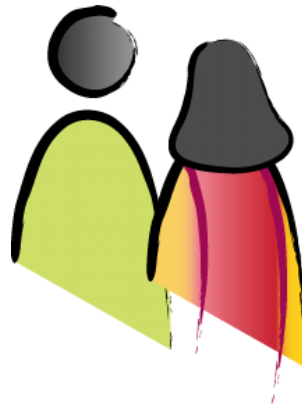
How?

Where?

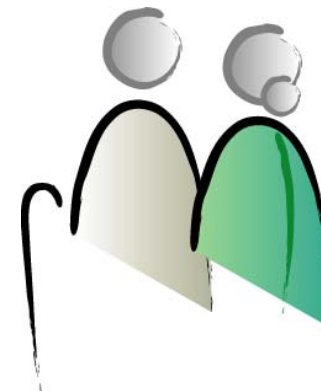
When?

Why?

Parents – Communication,
Entertainment, Information



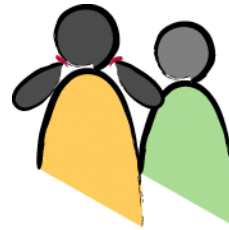
Elderly - Communication



Home Computer Usage

Who?

Kids – Schools



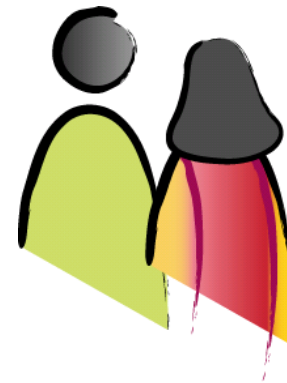
How?

Where?

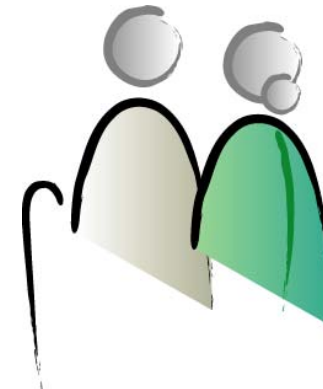
When?

Why?

Parents – From work, special training, self learn



Elderly – Instructions for specific task, strictly follow notes.



Home Computer Usage

Who?

How?

Where?

No specific place
Requires a work table,
Placed in bedrooms, living room

When?

Why?

Home Computer Usage

Who?

How?

Where?

When?

After work/ school

Evenings (... *stretching into late nights*)

Weekends & holidays

Why?

Usage pattern is similar to TV viewing

Home Computer Usage

Who?

How?

Where?

When?

Why?

Kids need for school/ college work
Staying in touch
To keep up with times
To learn

Home Tasks

Home work (?)

Cooking, storage, cleaning, washing, housekeeping, shopping, budgeting..

Self care, child care, baby care, finance management, bills...

Home entertainment

TV/ Radio, Music, Video

Reading- newspaper, magazines, books

Games- cards, chess, etc. board games, solo games

Writing- diary, poems, letters, cards

Hobbies- craft, art, knitting, stitching, collecting, cooking

Fitness & Exercise- gym, swimming, yoga, aerobics

Home Technology

Home communication

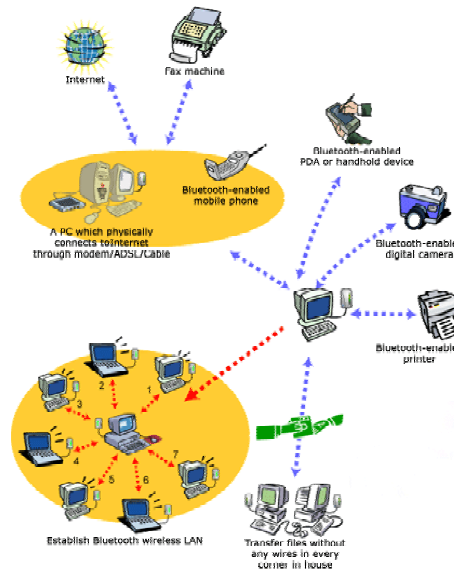
Telephones/ mobile phones, Answering machines, Voice mails, Fax, Post, Telegrams, Phonograms, Ham radio, Intercom, Security cameras/ baby watch

Home appliances

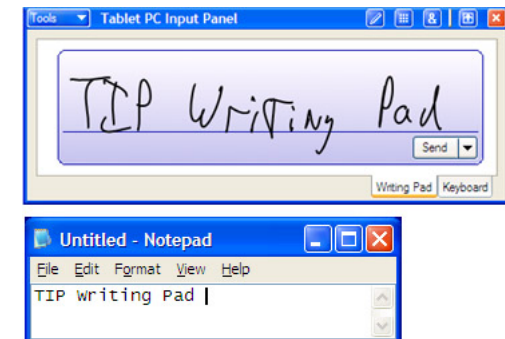
Microwave, Water purifiers, Washing machine, Television, DVD player, music players, Refrigerator, Cordless telephones, fax machine, answering machines

Technology that works!

New Technology



Technology that works!



Family and Home Computer

Activity displacement

Technology displaces some activities.

Telephone → Written communication

Television → Family interaction/ recreation

PC → Family togetherness



Technology improves some activities.

Household appliances – Washing machine, music player, video players, cameras.....etc.

PC

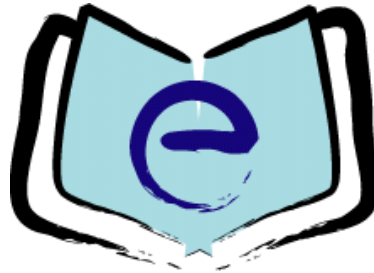
Higher level of concentration

Time trade offs

Home computer now

For knowledge

educational purposes
information through internet



For connectivity

Emails, chat, video conferencing
Net banking, bill payments,
reservations



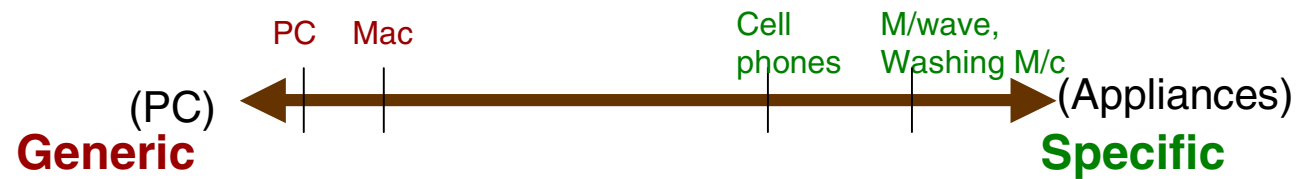
Entertainment

Multimedia, games music, movies
'Edutainment' for children



Home Computer Problems

Tasks Performed Limited use as standalone units
Use not fit for a well defined scenario as a home



Language barrier English as the common computing language
narrows down means of expression
Indian language- typing problem

Home Computer Problems

Location

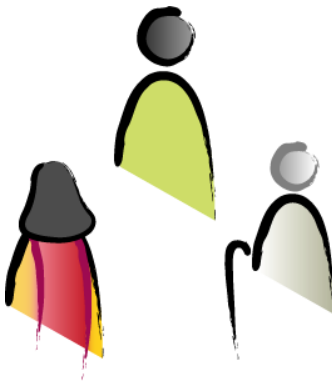
No well defined physical space in the house

Male vs Female

Strong gender and age bias.

Old vs Young

Other household technologies are female dominated – achieve homely status



Home Computer Problems

Home status

No privileged status in domestic environment

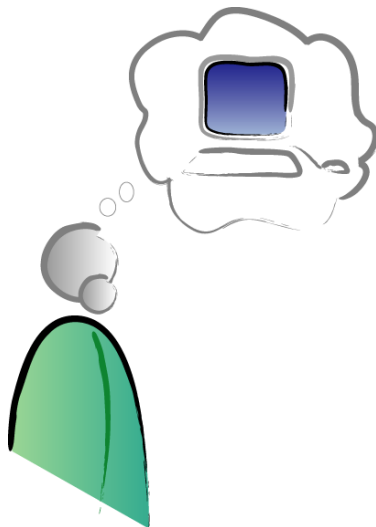
More strategic technologies exist in the household

Conceptual model

Hazy or incorrect model of the system

Indirect manipulation makes matters worse

Results in rote learning of methods



Home Computer Problems

Learning

High learning curve

Learning includes – jargon, metaphors, capabilities and conventions

Skills - typing and mouse pointing

Expected vs actual use

Home finance → Non use

Educational → Better performance in today's scene

Connectivity → average performance

*Pentium 4 processor with 1.8 G Hz speed, 256 MB of RAM, 80 GB of memory, DVD drive, monitor, keyboard, mouse, modem, speakers, webcam, microphone, TV tuner card, USB port for external devices – **Is this all worth it?***

Home Computer Problems

Installation

Unpacking and plugging in not possible

Cleaning, relocating problems

Hardware troubleshooting

Family interaction

Single use- taking turns at using compute

Does not support family interaction



Interaction issues

Objectives

- Reduce learning curve
- Provide language freedom
- Provide clear conceptual model
- Provide networking with other devices
- Contextual interfaces
- Provide specific applications

Taboo:

'Computerese'

Seeing the guts, rear side, sockets

Plethora of configurations

External wires

'I don't know the first thing about computers!!!'

Conceptual design

Possibilities

Existing hardware – New software

Modify existing hardware – Enhance interaction

Design new hardware for current usage

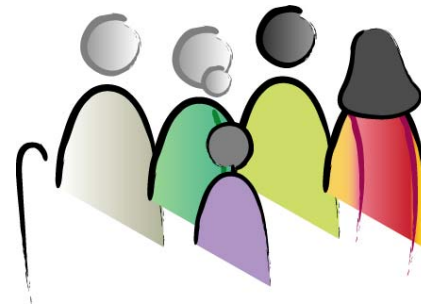
New hardware and software – Specific home tasks

Target users

User group – age, gender or knowledge wise

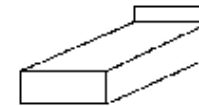
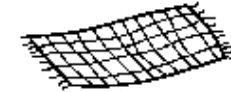
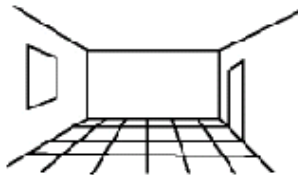
Design separately for various user groups in a family

Family as a user group



Conceptual design

Starting point



(Concept of a home computer)

Users

Family (comprising of children, youngsters, parents, elderly parents)

Character:

Togetherness, hierarchy, head of family, decisions, sharing, festivals, chores, self development, learning, experience, devotion, attachment, safety, caring

Environment:

Comfort, 'at home', cozy, relaxation, environment, fun, sincere, serene, quiet, playful, Living room, dining room, kitchen, bedroom, garden, verandah, balcony, picnics, holidays...

Metaphors:

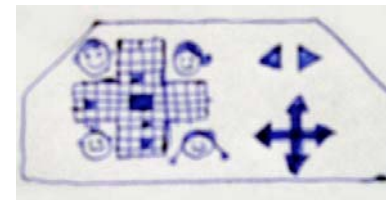
Home, shelter, umbrella, banyan tree, blanket, rooms, bed, easy chair, food, door, doormat, window, drapes, curtains, wall paintings, flower vase, alarm clock, reminder notes, lunch box, calendar, picture frame, spectacle case, dining table, place mat.....

Brainstorming

Devices

Family game @ work:

Small game of four or five moves (word game/ board game) one move per person, and one last move after coming home. Sense of **being connected** throughout the day.

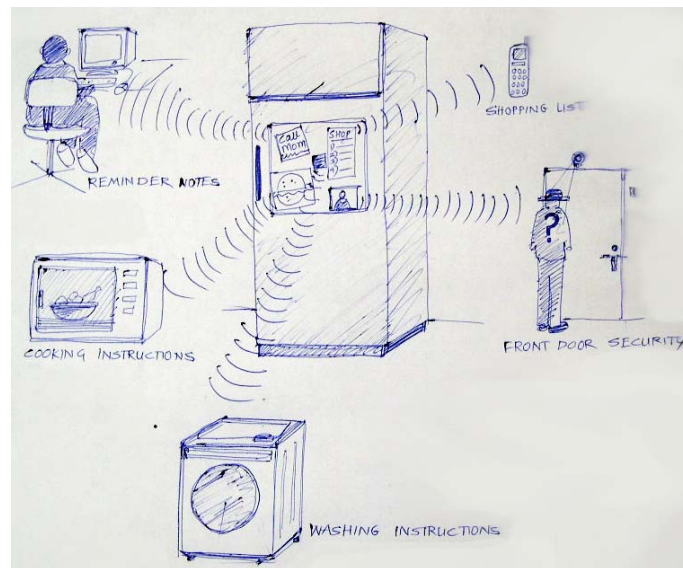


Brainstorming

Devices

Fridge computer:

An **activity hub** that connects to individual devices at home and outside.

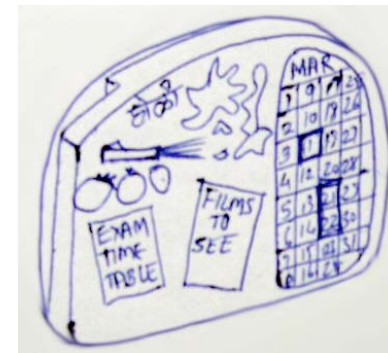


Brainstorming

Devices

Calendar

A **family planner**, photo album, family expenses, grocery lists, notes etc...

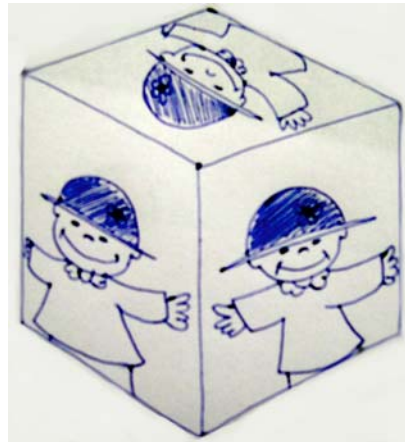


Brainstorming

Devices

Photo objects:

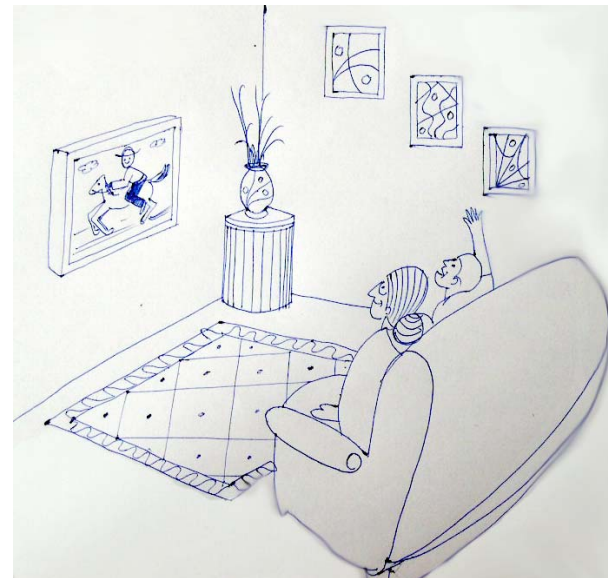
Vase, cube, picture frame, showing imprints of random family pictures, pendant, organizer.



Brainstorming

Devices

Family space:
Turning into TV space



Brainstorming

Network

Network of computers:

Computers of suitable sizes/ shapes located in appropriate locations in the house and networked together.

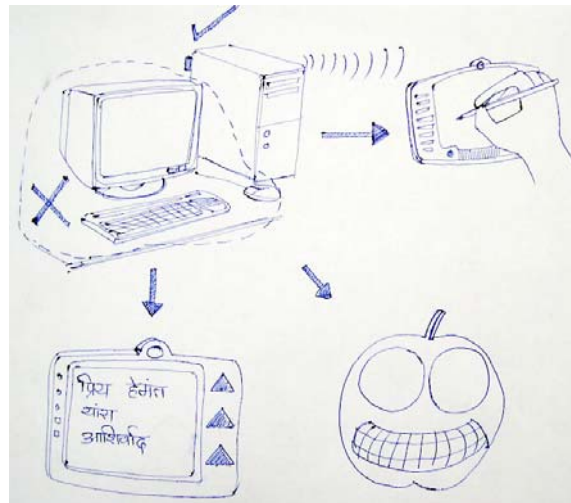


Brainstorming

Network

Single computer with different input/ output devices:

Computer at a single location in the family (possibly with small input points located elsewhere in the house).
Interfaces for family and individual family members vary.

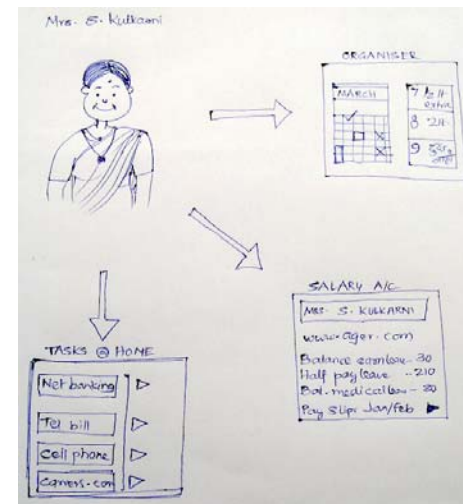
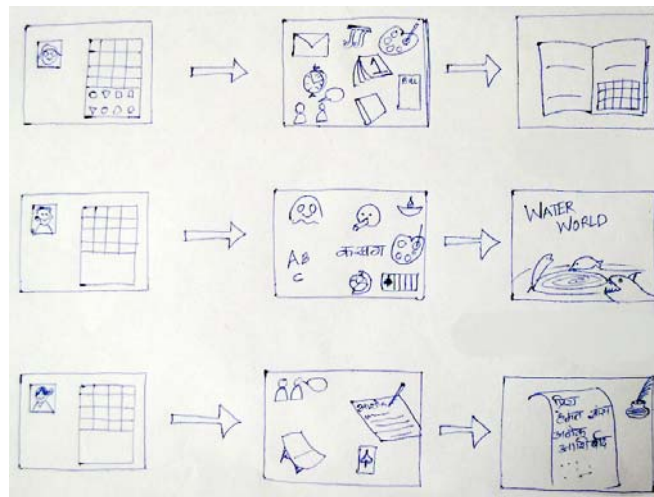


Brainstorming

Computing concepts

Individualistic interfaces:

Priorities of activities of an **individual** family member listed out and interfaces designed for that individual.



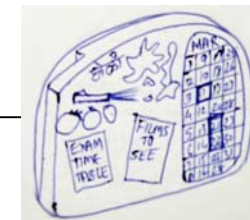
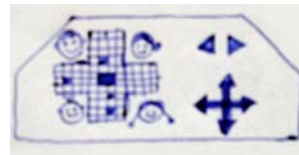
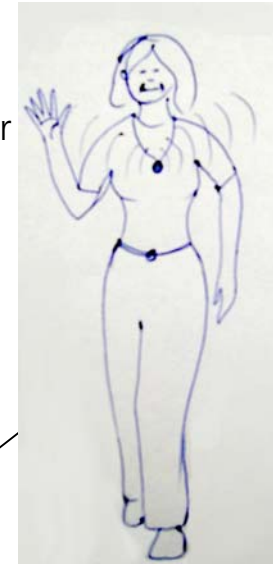
Brainstorming

Mixed ideas

Mixed ideas:

Interaction and interactivity elements suitable to the family scenario taken from the concepts discussed earlier and a system designed from the mixed ideas.

The idea is dis-aggregating or breaking up of the home PC into specific computing functions, which can be relocated around the home and family.



Feedback

Concepts is forced on users

What is so relevant and revolutionary?

Do not solve specific problems, no specific task

Satisfies emotional need? Decorative elements?

Device for family interaction???

'Solutions approach' vs 'Problems approach'

Redefining brief

"To design computing interaction for the home environment that blends with the home settings, is intuitive and performs specific tasks for home."

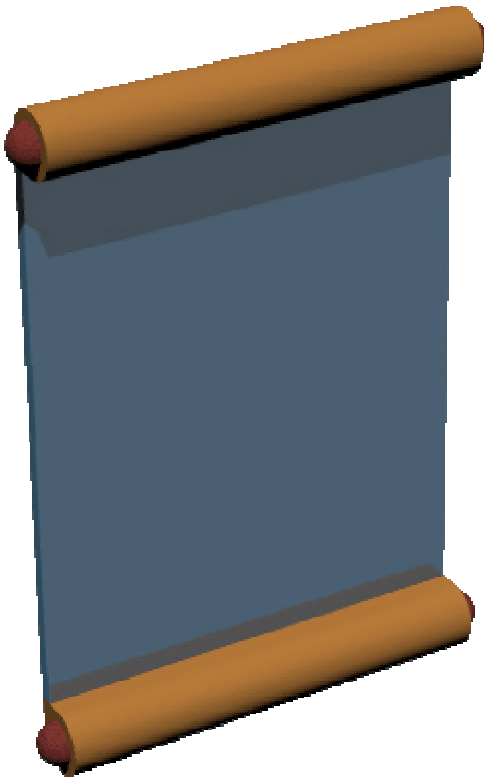
Final concept

'Yojak'- a digital calendar

Consists of two units- one in kitchen, another in living room.

Wall hung as in calendar.

Other personal devices such as cell phones, digital diaries networked with these devices.



Final concept

Calendar as a metaphor

Most **family schedules** revolve around the calendar.

Most **family accounts** are maintained on a calendar

Most home **information** comes from the calendar.



Digital version is an **extension** of the current calendar in terms of its **place** in the house.

Families **identify well** with calendars,

A **clear conceptual model** of what the **device represents** and what it can do in the household.

Final concept

Calendar – current purpose



Notes (Birthdays, exam time table, shopping list, personal info in code/ symbol.)

Accounts (Milk, presswala, gas, body weight, maids, petrol)

Messages

Almanac (Chaturthi, Ekadashi, Chandroday time, Auspicious days, Festivals)

Holidays

Recipes

Railway time table

Bank interest rates

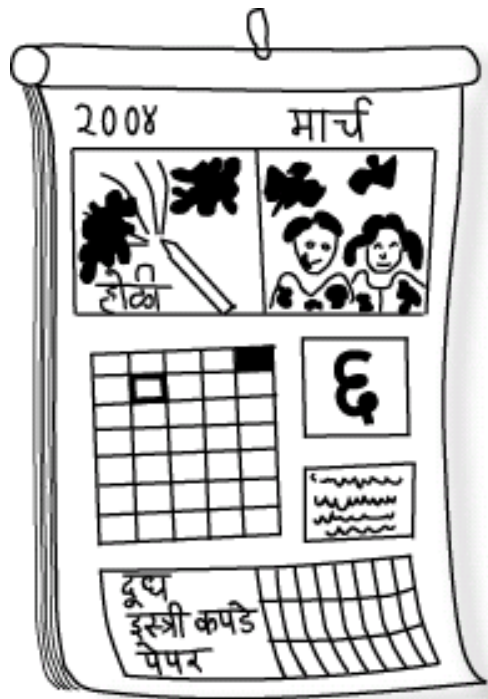
Horoscope

Other Info- (Articles- yoga, beauty tips, investment guide)

Good place for pinning up sewing needle :-)

Final concept

Calendar – new possibilities



Notes - can give reminders, grocery list/ shopping list, can be retrieved from cell phone

Accounts- can calculate

Messages- can be conveyed to individual cell phones

Almanac- can give reminders

Holidays- reminders

Recipes- can be downloaded, audio instructions while cooking

Railway time table- latest info- reservations, additional air/ road travel info

Bank interest rates- Banking, bill payments

Horoscope- personalized

Other Info- through internet

Emails- concept of family mailbox, family chat, family communication

Final concept

How families use calendar

[illegible]

Milk - Daily quantity from doodhwala.

Presswalla : Number of clothes, rates, date given, date returned

Gas cylinder- When started, when booked, when arrived.

Maid - Days maid is on leave.

Newspaper- Days of vacations, other periodicals from the vendor

Grocery list- Things needed for kitchen, Grocer's accounts.

Kids- Exam time table, holidays time table.

Ladies- 'Dates' in personal code, body temperature.

Car- When serviced, petrol record, due dates, driver's record.

Exercise buffs- Daily body weight.

Telephone- Calls to make, telephone numbers

Messages- To family members, reminders, message to maid.

Final concept

Other planners and calendars

Personal diaries - to keep records of Personal Expenses

Personal schedule

Telephone diary for personal contacts

Reminders, Birthday reminders

Personal notes

Health checkups (especially for elderly)

Home diary

Telephone numbers of all relatives, family friends and important personal contacts of all family members.

Household expenses, savings etc.

Birthdays of relatives.

Important family events.

Mobile Phones- for connectivity

Phone calls

Short messages

Organizing

Telephone diary- categories(business, personal etc.)

Additional services by providers- News, city guide, TV guides, horoscopes, games, dictionary

Features of mobile phones- voice messages, auto reply, multimedia messaging,

Desk planner- for students

Time tables

Planning of studies

Birthdays of friends

Holidays, vacations

'Yojak' – a home computer

Scenario

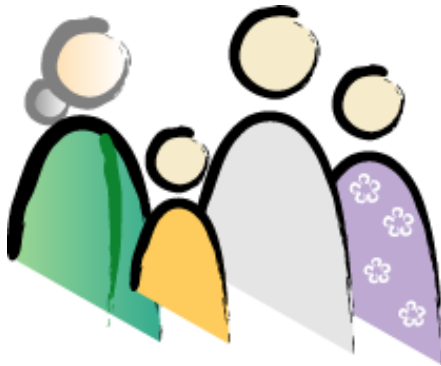
Family –

Elderly mother Shalini 65, retired school teacher

Son Madhav, 37, manager in PSU Bank

His wife Anjali, 33, manager in an MNC

Son Mitul, 8 likes to draw

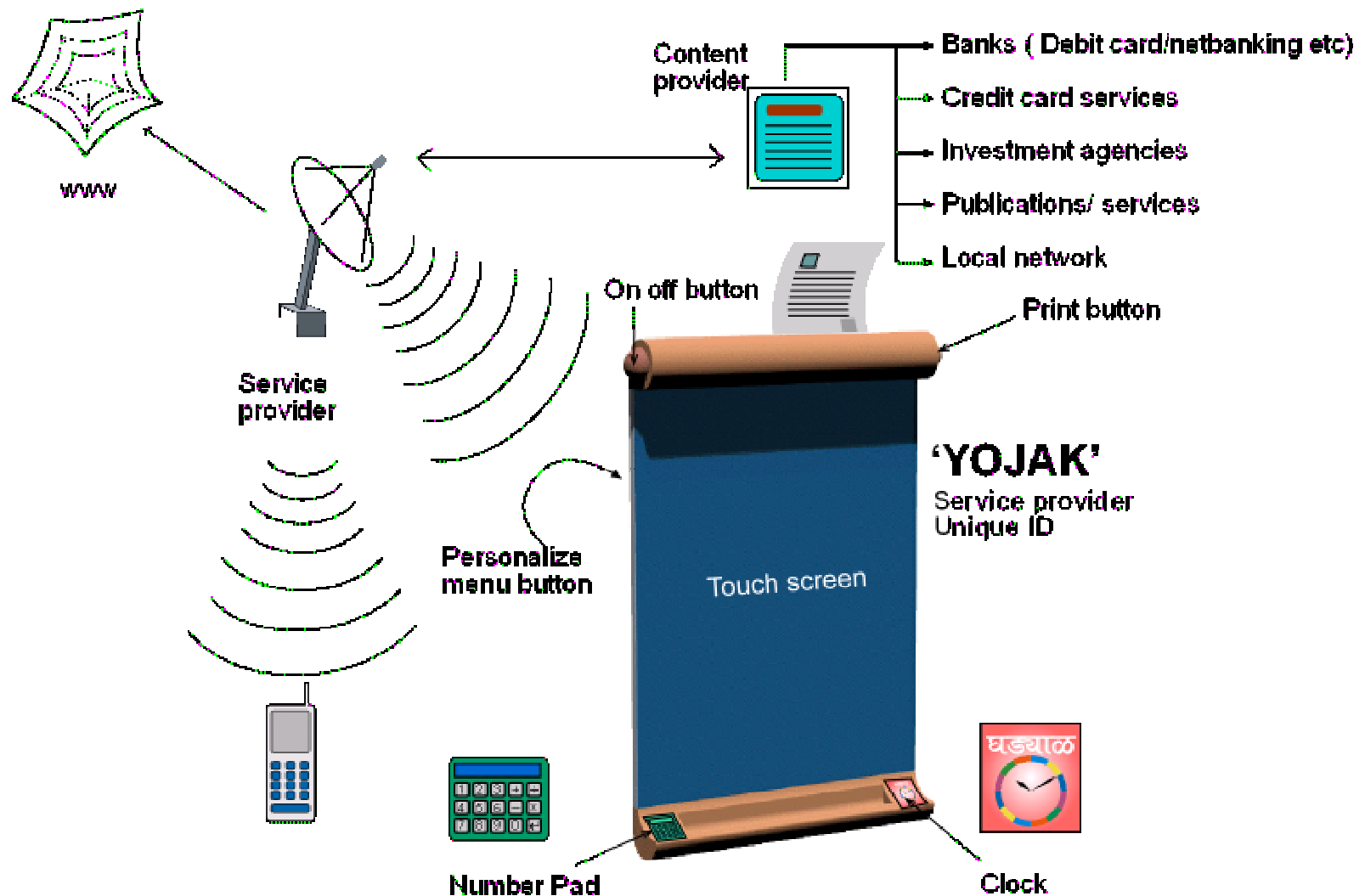


Married Daughter Meena, 30, has come to visit from Bangalore with son Rohan, 4



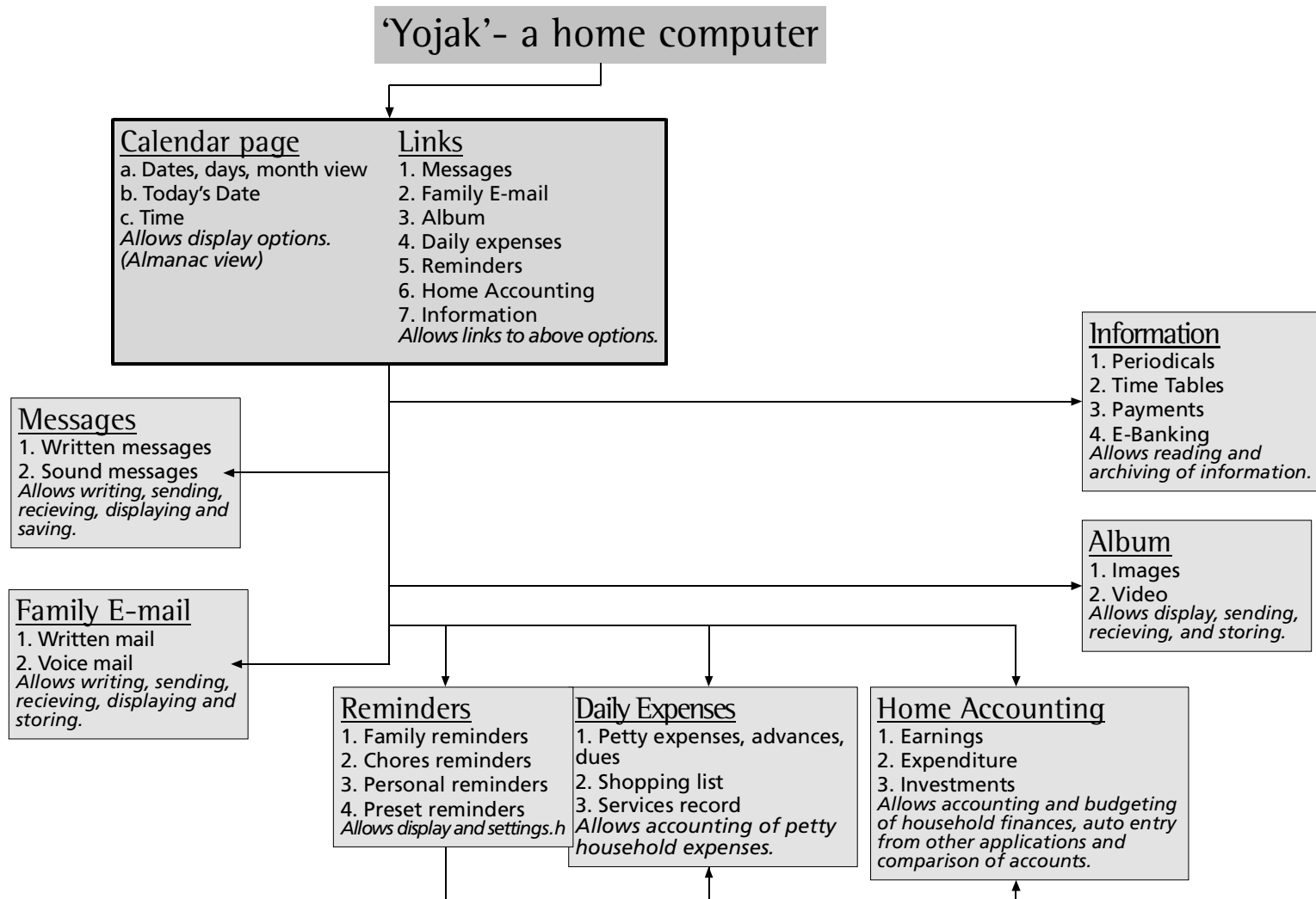
'Yojak' – a home computer

Schematic Diagram



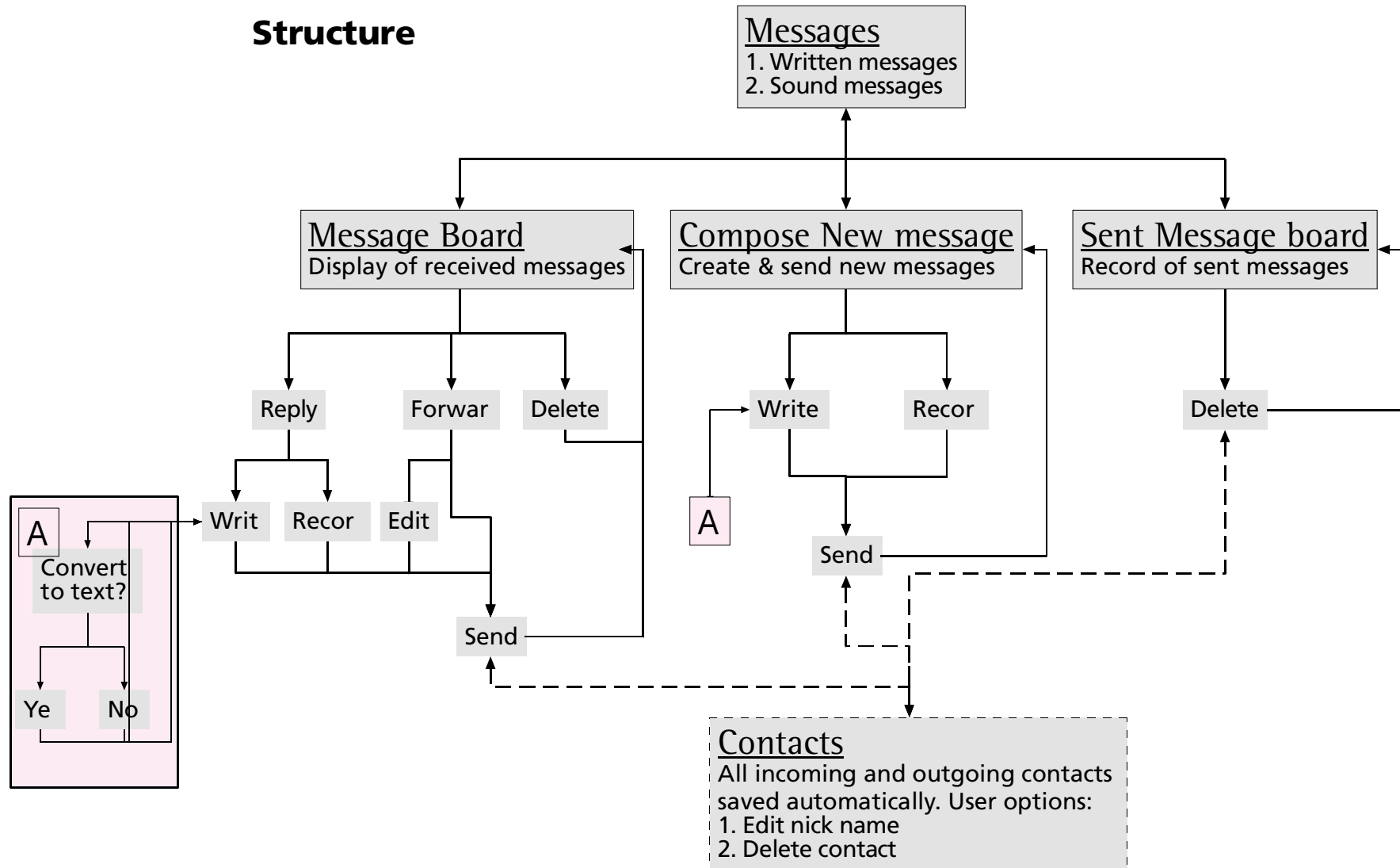
'Yojak' – a home computer

Conceptual model



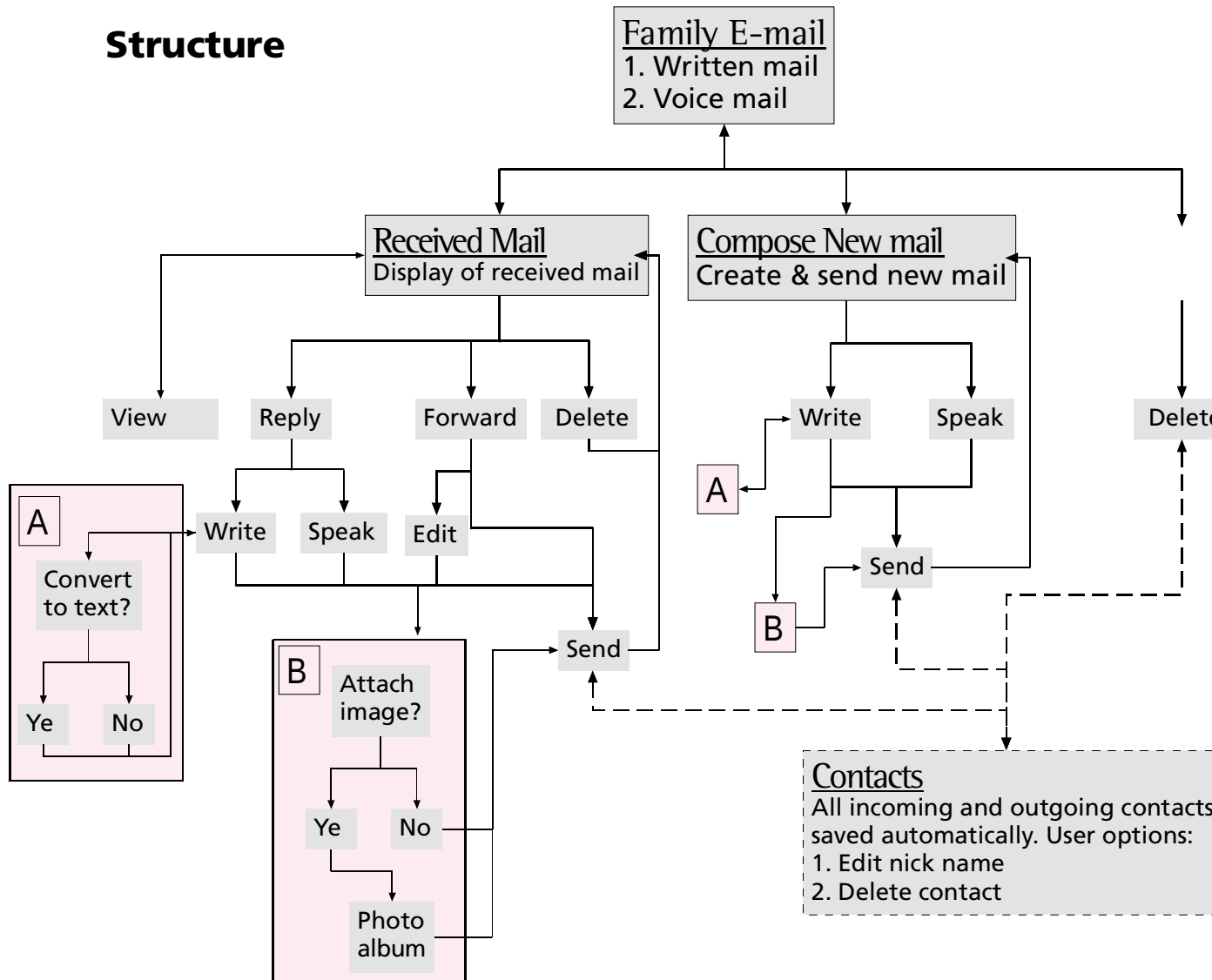
'Yojak' – a home computer

Structure



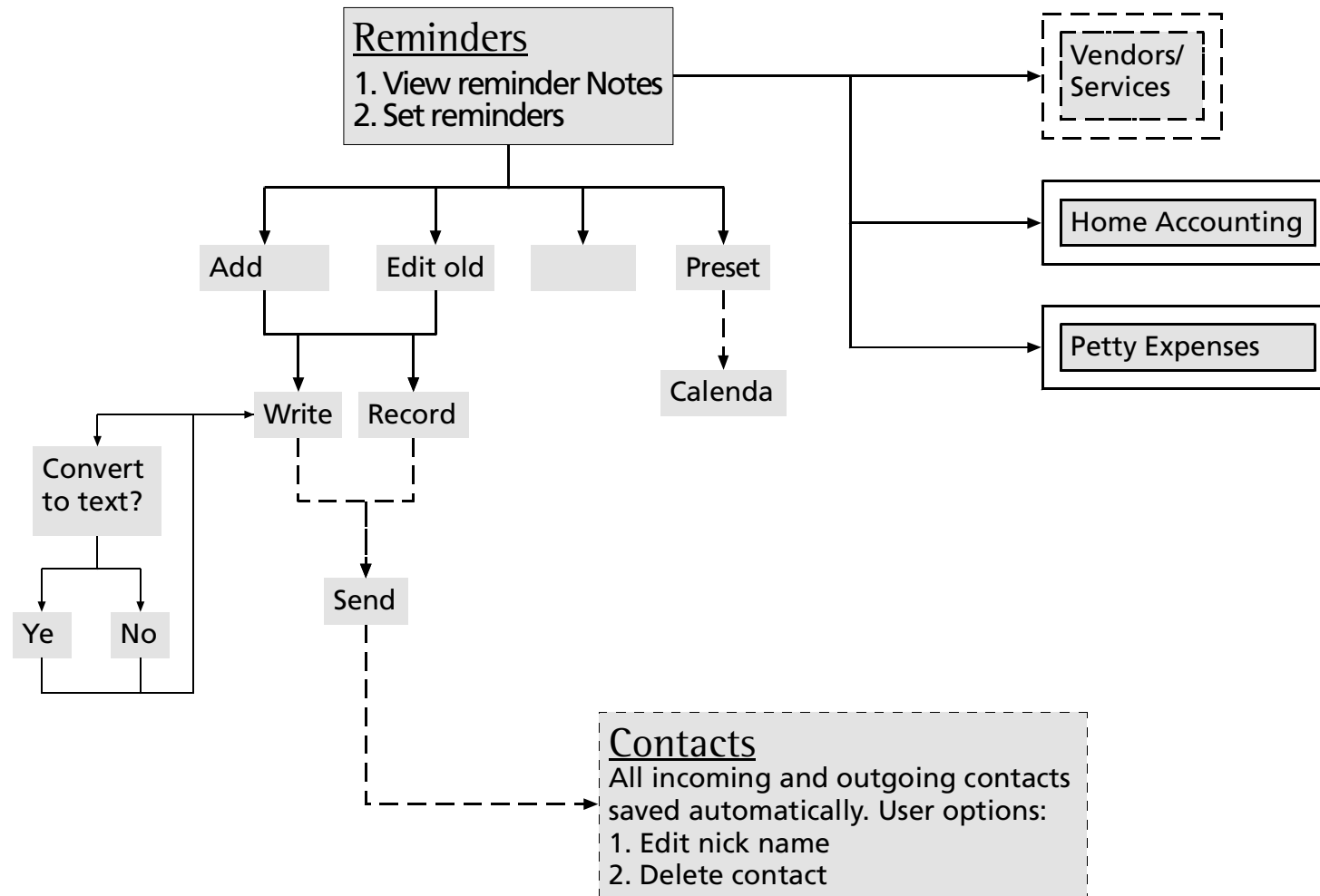
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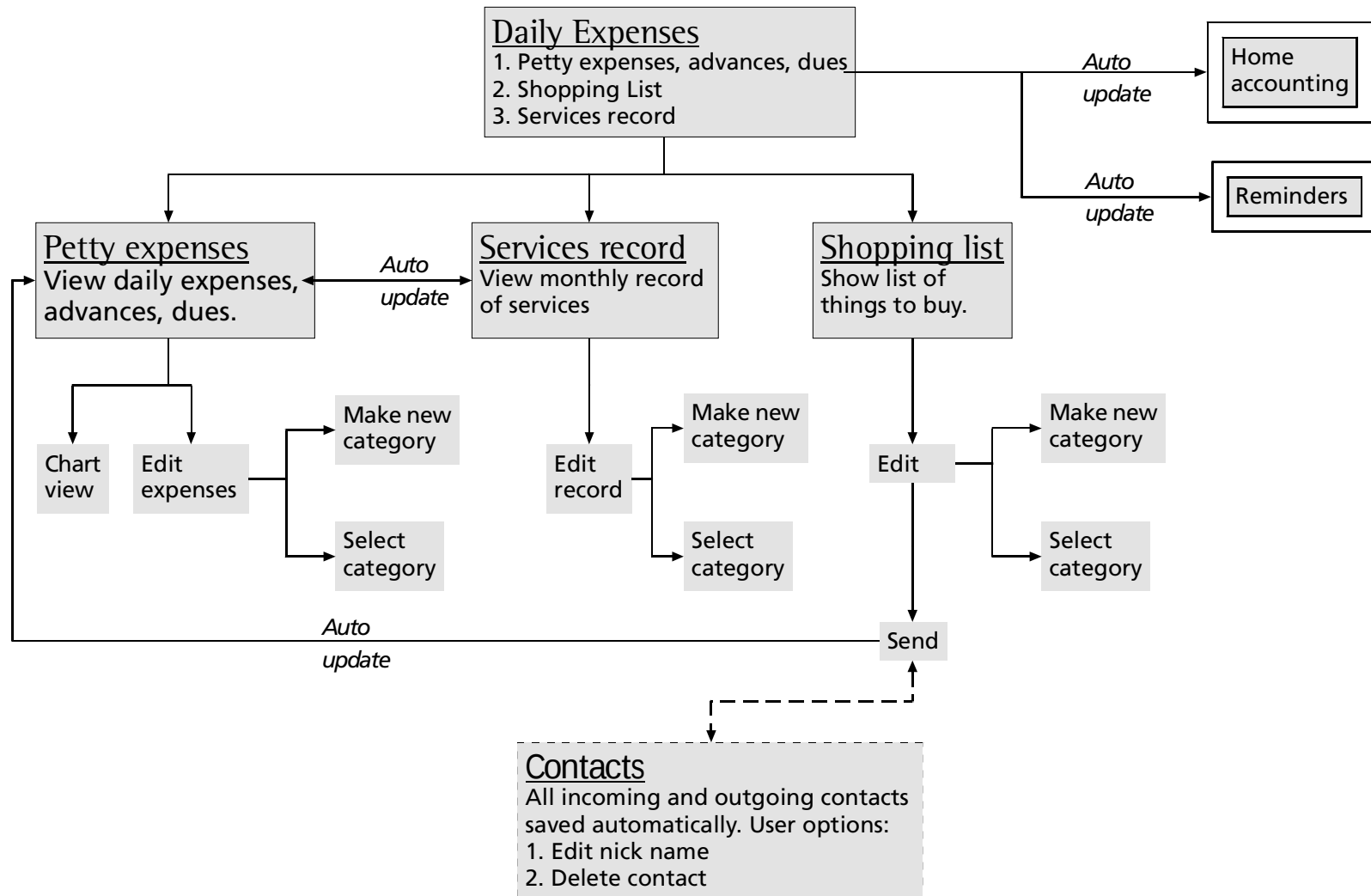
'Yojak' – a home computer

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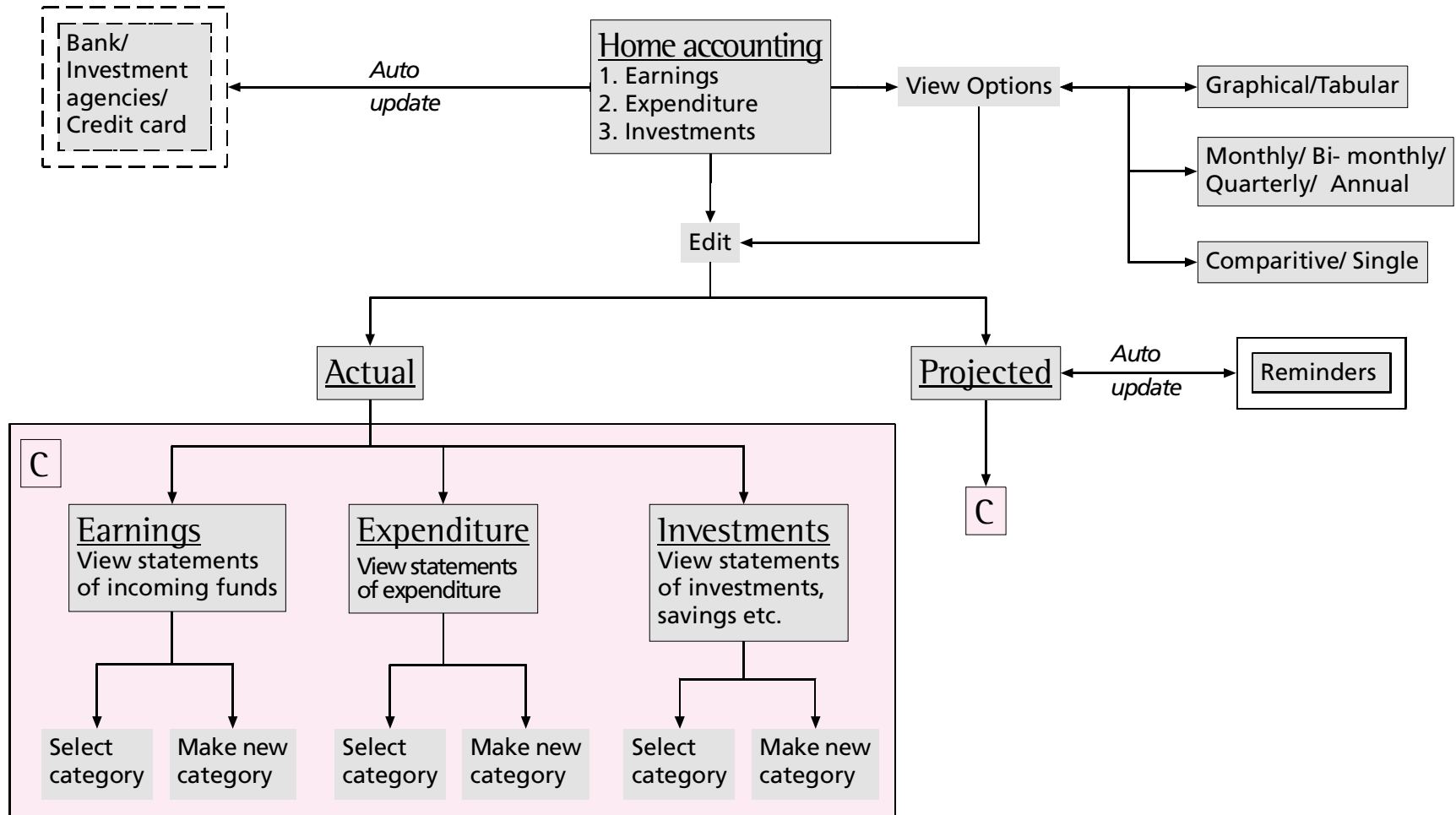
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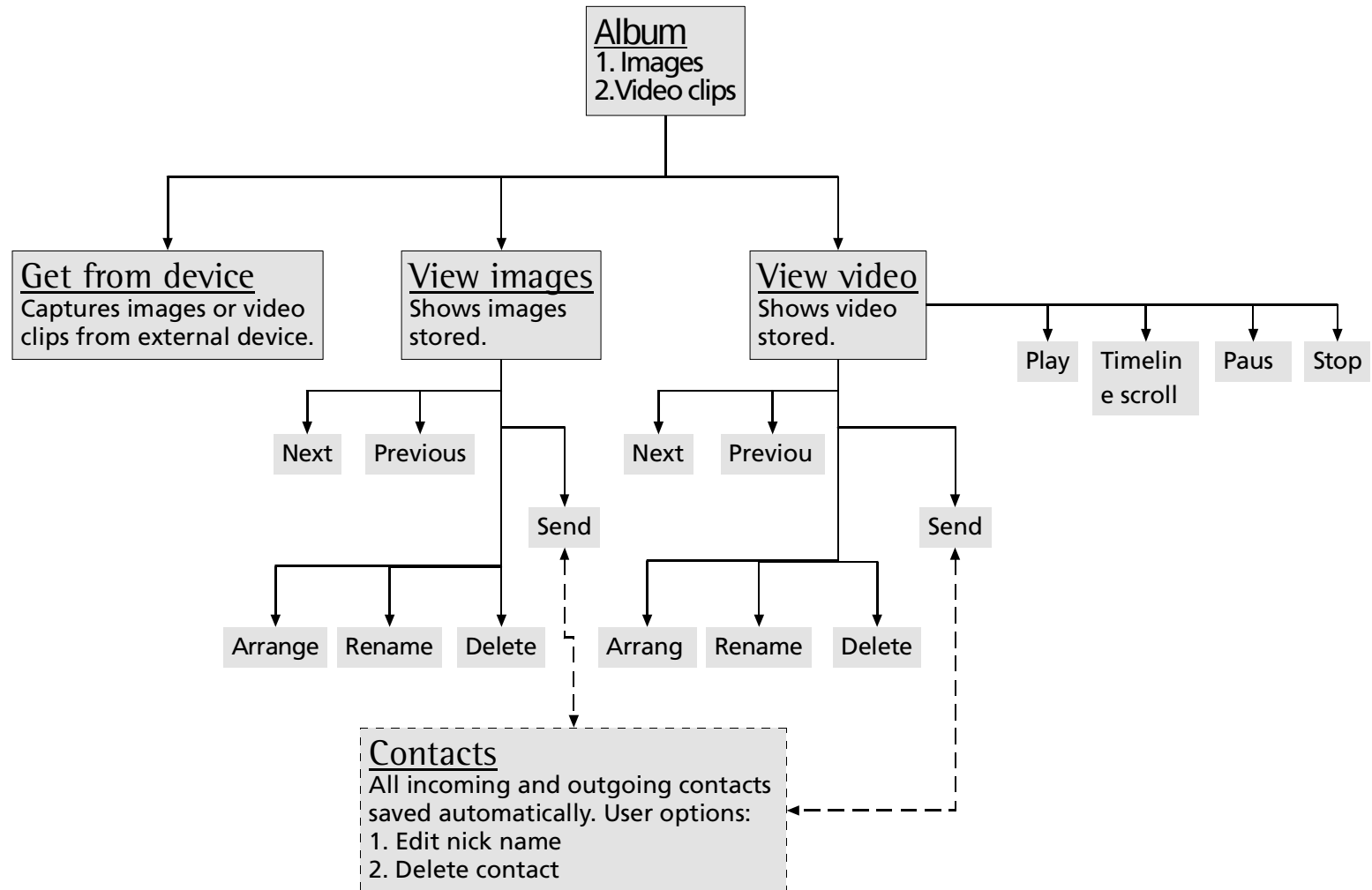
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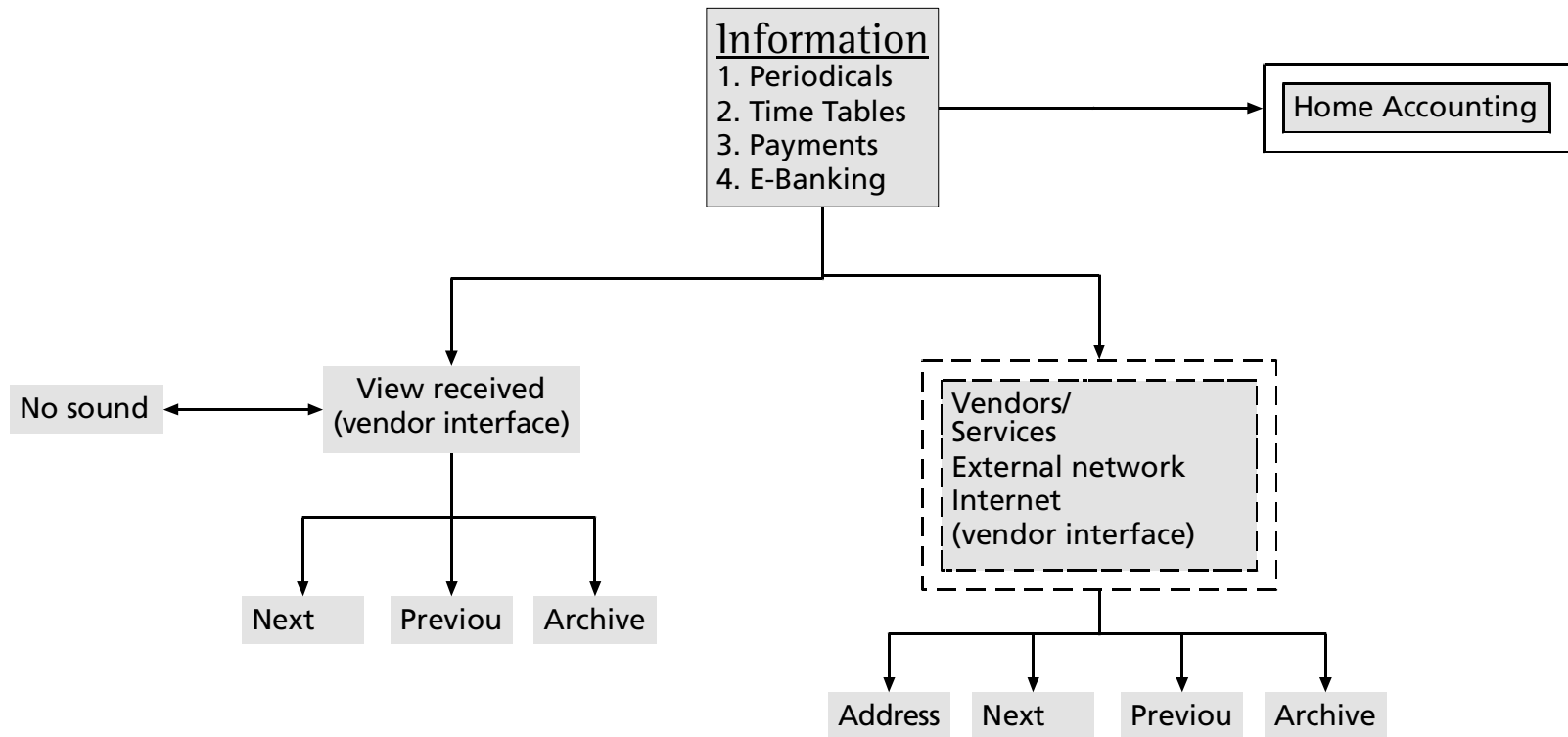
'Yojak' – a home computer

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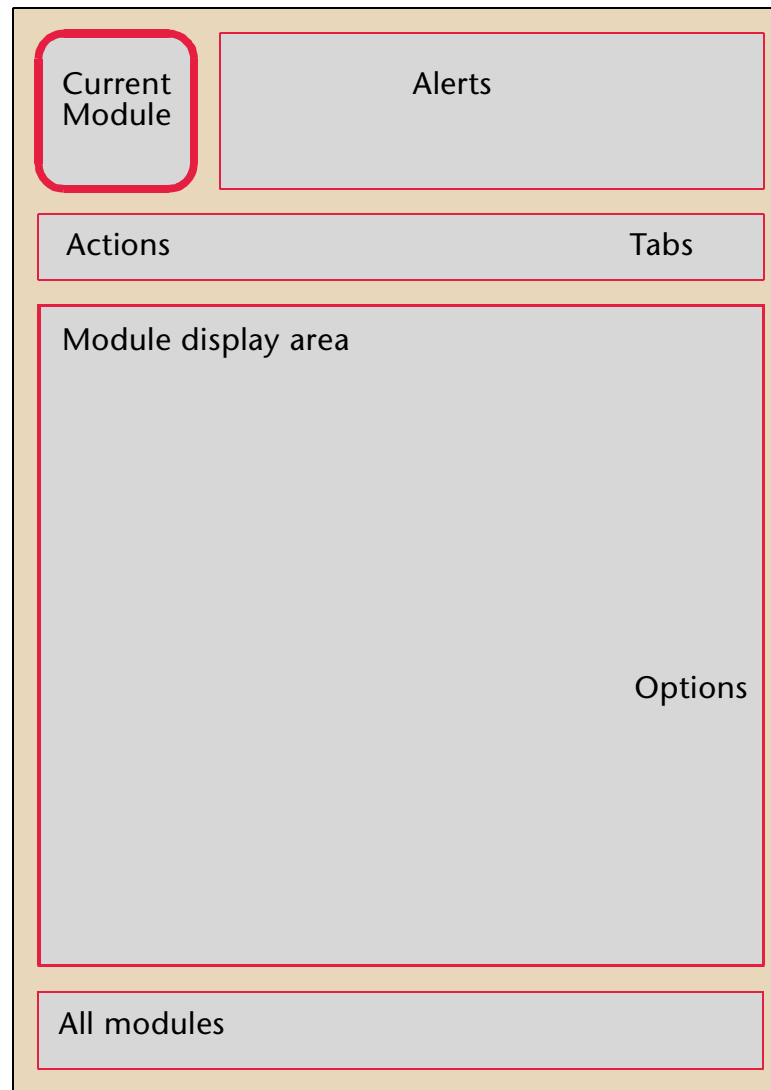
'Yojak' – a home computer

Structure



'Yojak' – a home computer

Skeleton



'Yojak' – a home computer

Visual Design

Look and feel is just one of the many possible choices



Icons

Context relevant, familiar and sometimes nostalgic icons



'Yojak' – a home computer

Visual Design

Look and feel is just one of the many possible choices

Words

Removal of jargon

Re-familiarizing with own language



Endnote

'Yojak'

*Is just a beginning in
terms of....*

Variations on the devices to choose from to suit each family's needs

Extension of the device beyond the household – into the car, workplace etc.

Catering to a more wider range of families than the urban or semi- urban families.

Further research and iterations....