

UDSA

- ✓ 1. User experience and usability goals
(Flight booking, E-commerce, mobile banking)
- ✓ 2. Usability principles
- ✓ 3. Conceptual framework for understanding users
(Activity model, distributed cognition)
- ✓ 4. Life cycle models computer → star model, usability engi.
- ✓ 5. Hierarchical task analysis (HTA).
- ✓ 6. Data gathering principles
7. Prototyping → significance of construction and prototyping.
 ↓
 physical support, tools support, conceptual design.
8. Low fidelity & high prototype. (Examples also are)
- ✓ 9. Functional and non-functional requirements.
- ✓ 10. Dist - b/w Synchronous and Asynchronous product
- ✓ 11. What is DF and list out all activities paradigm.
 Provide application and how 6 points are validated.

ANSWERS.

④ * They show how the activities are related each other.

* There are two types of LCM;

SW Engineering → waterfall, spiral, RAP, Microsoft

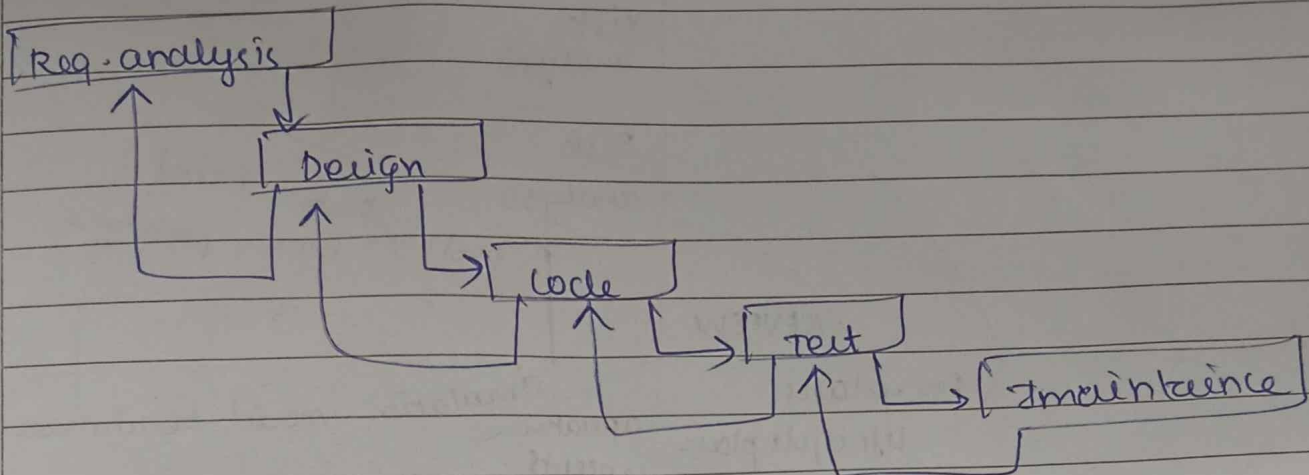
HCI (Human computer interaction) → Star, usability engineering

a) SW Engineering models:-

waterfall model:-

* The requirements are gathered before applying a task

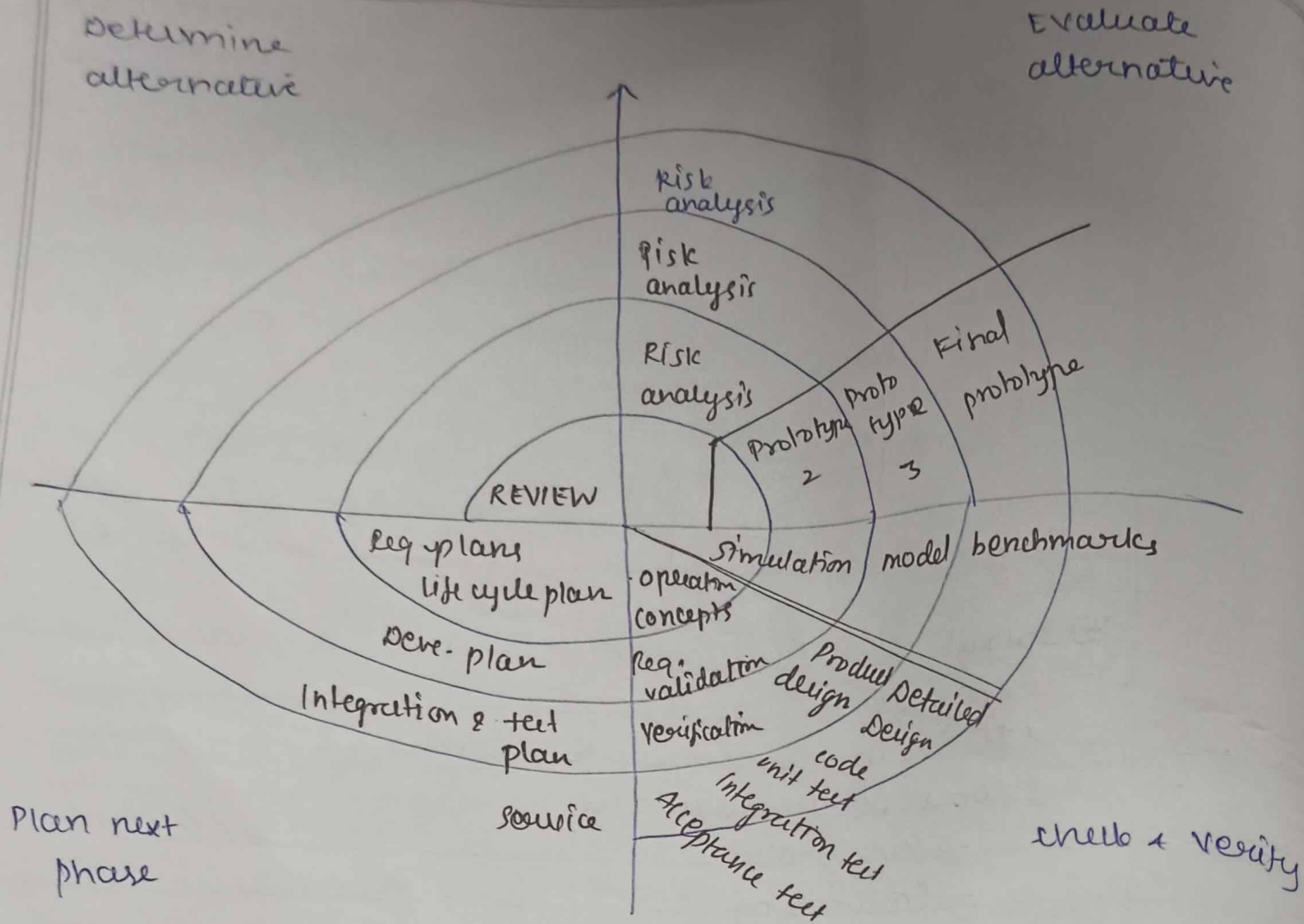
- * It is a linear process
- * Non-iterative.



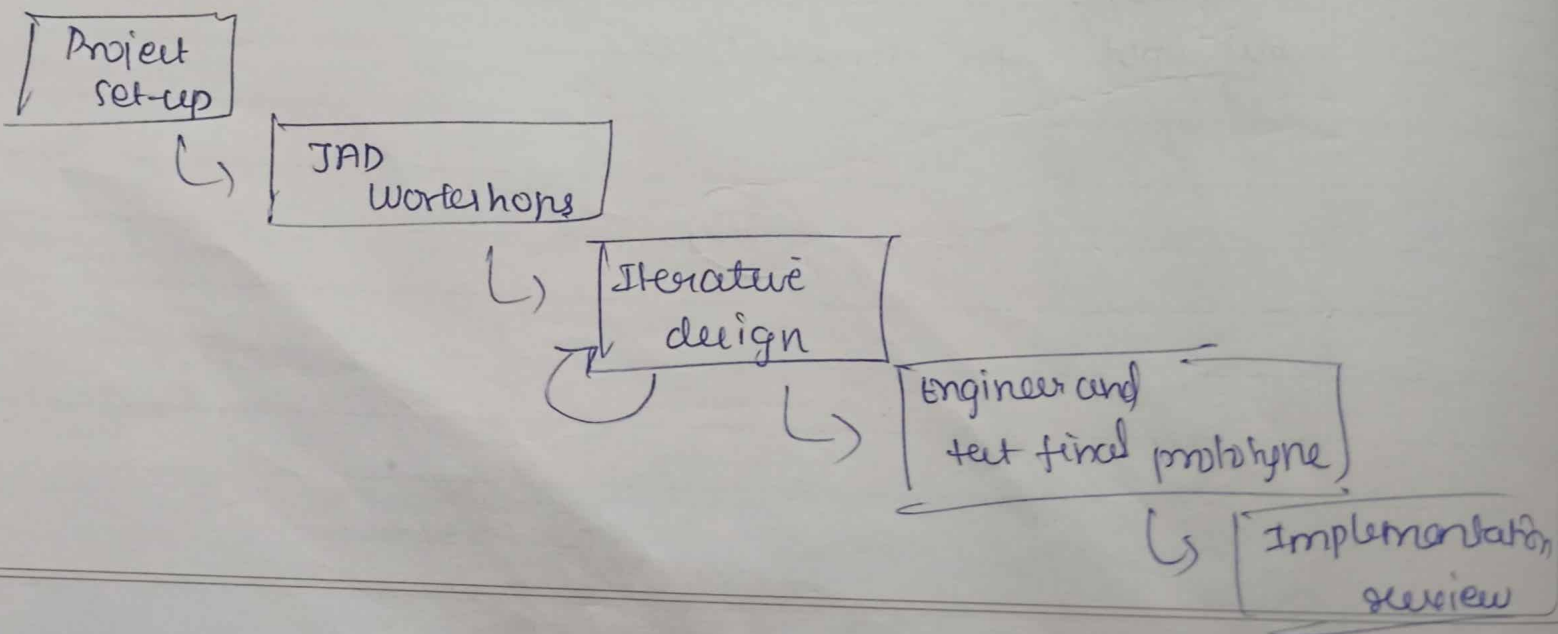
b) Spiral model - (Barry Boehm)

- * It is in a circular path.
- * Some key features are
 - Risk analysis
 - Prototyping
 - Iterative framework
 - Interactive design
- * Good for large and complex projects but not for small ones.

(PTD)



RAD model : (Rapid Application Development)

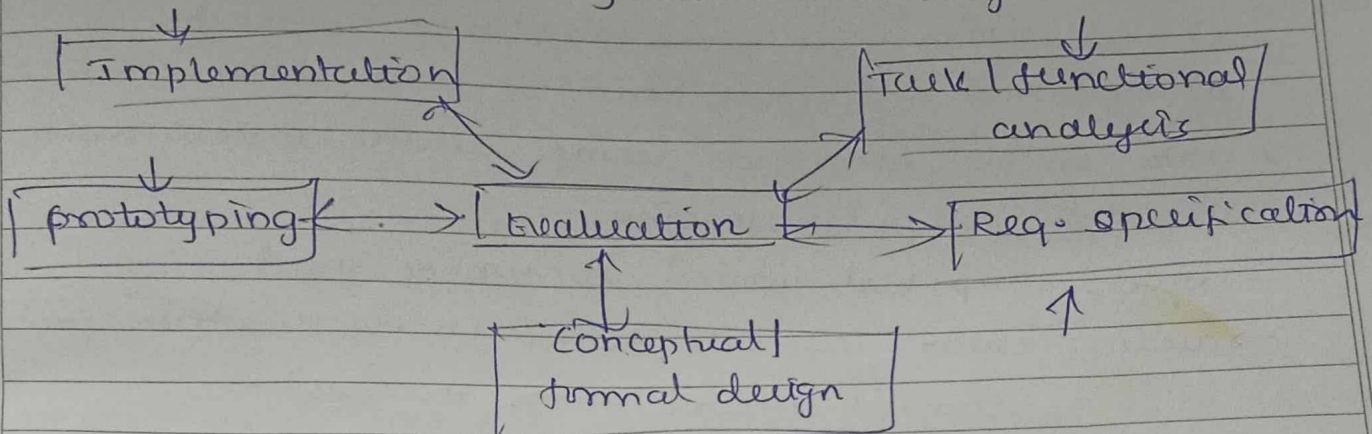


5) HCI (computer models).

Star life cycle model: Harrison & Fitz (1989).

* (X) features are

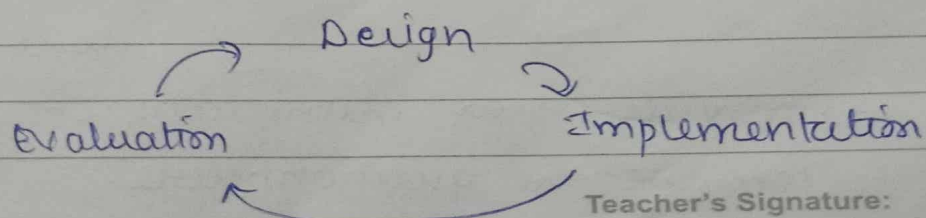
- Evaluation of core of activities
- No particular ordering of activities
- development may start in anyone



usability engineering models. (Deborah Mayhew)

* (X) features are

- Holistic view of usability engineering
- provides link to SWE approaches
- stages of identifying req, designing, evaluating, & prototyping
- can be scaled down for small projects



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⑥ Data gathering principles :

→ collect sufficient, relevant and appropriate data for establishing the users requirements.

Four keys :-

- a) setting goal → decide how to analyze the data once collected
- b) Relationship with participants → clear and professional
- c) triangulation → use more than one approach.
- d) Pilot studies → small train of main study

* Data can be recorded using audio, video, notes, photograph, computer logging.

→ Notes : cheap but limited to writing speed.

→ audio : cheap, difficult to match with other protocols.
(cannot record some actions)

→ video : accurate, users may feel uncomfortable

→ computer logging : automatic & difficult to analyze the large amount of data

commonly used techniques :

1. questionnaires → Yes/No, quantitative/qualitative data, good for answering specific questions, usually no one is needed to help the ans the questions, closed/open end questions
 - ↳ Easy to analyze, may be done by computer.
- provide clear instructions on how to complete the questionnaire.
- Decide all phrases (+)ve, (-)ve (or) mixed

open end questions are not pre determined
close end questions are YES/NO types.

→ Likert rating scales (3, 5, 7, 9 point scales are common)

1 2 3 4 5

→ semantic scales

Attractive 1 2 3 4 5 Ugly

2. Interviews: → Forum for talking to people
→ Face-to-Face / telephone interviews
→ Good for exploring issues
→ Time consuming.

There are 3 types;

structured :- directed by scripts and replicable
but lack of richness

unstructured :- directed not by scripts rich but
not replicable.

semi-structured :- good balance btw richness and
replicable. Both combination of.

two types

↳ closed questions : have predetermined
answer format (YES/NO)

↳ open questions : do not have predetermined
format.

→ avoid long questions.

Steps in interview:

Introduction → Introduce myself

warm-up → easy questions

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cool-off period: include
Main body: present questions in logical order
cool-off period: include few easy questions at the end
closure: thank interviewee.

3. Group interview → type 3-10 participants
→ get a group of stakeholders together for discussion.

Advantages

- * Time consuming
- * Good team work

Disadvantages

- * If one speaking continuously the other can't speak
- * Misunderstandings

4. Direct / Indirect observation → Motivation.

→ spend time with stakeholders

→ can be passive.

→ can include audio / video recording

5. Studying documentation → Include manuals, regulations

→ Good source of data

→ Rules and regulations.

→ quantitative type.

Questionnaires → quantitative / qualitative

Interview → " "

Group interview → Both balancing

Direct / Indirect observation → qualitative

Studying documentation → quantitative.

⑤ HTA → common technique for task analysis

→ Breaking tasks in sub tasks

→ Start with user goal.

1. User experience and usability goals.

Ans:- Usability goals :

a) Effectiveness:- The degree to which a system successfully achieves its intended purpose.

Goal:- Help user

b) Efficiency:- The extent which a system allows users to achieve their goals with minimal time and effort

c) Safety:- The system's ability to protect users from harmful conditions and unintended consequences.

d) Utility:- The system's ability to provide the necessary functionality and features to users.

e) Learnability:- How easy is for users to learn how to use the system.

f) Memorability:- How easily users can remember how to use the system after not using for some time.

User experience goals:

a) Satisfying:- The system should be pleasant and fulfilling to use.

b) Engaging:- The system should keep users interested and motivated to use it

c) Fun:- The system should be enjoyable to use.

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9. Functional and Non-functional requirements:

Any: what, how, why

what → find the needs of users

→ From the users needs, determine the req. of the proposed system.

2 aims in this activity are:

- Understand as much as possible about users, task, context etc --,

- Produce a stable set of requirements.

How → Data gathering, analysis, requirements determination

Type of Requirements:

Functional

* what the system should do?

Non-functional

* what constraints there are on the system and its development

Eg.: word processor.

Func → must include 20 typefaces

Non func → Able to run on diff. platforms. PC's, Macs

→ Product should be delivered in 6 months.

Non-functional requirements:

Data req.

↓

type, size, amt, accuracy.
of the req. data

Environmental req.

↓

circumstances in which the product will be expected to operate

- physical
- social
- technical
- org.
- user
- usability

2. Usability principles:

Ans:- Design for online shopping websites.

a) understanding the requirements.

- User research
- Market analysis
- Define goals and objectives.

b) conceptual design

- Persona development
- User scenarios and use cases
- Info. architecture

c) prototyping

- Wireframing
- Mockups
- Interactive prototypes

d) detailed Design

- Visual design
- Interactive design
- Responsive design

e) Implementation

- Development
- content creation.

g) Testing and Evaluation

- Usability Testing
- A/B Testing
- Performance testing.

h) Launch and maintenance

- Launch
- continuous improvement.

Usability principlesVUCA H H E R F I M

- visibility of system status
- user control and freedom
- consistency and standard.
- Aesthetic and minimalist Design

- Help users Recognise, diagnose, Recover from errors

- Help and documentation
- Error prevention
- Recognition rather than recall

- flexibility and efficiency of use

- Match b/w system and real world.

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Classification of CMC

10. Synchronous communication & Asynchronous

Synchronous:

- * It is a real-time conversation
- * It is by voice (or) typing.
- * Supports non-verbal comm. ~~to~~

Eg: voice → video phones, media spaces
Typing → Text messaging, chatrooms, CVEs

New functionalities:

- CVEs → combines avatars with chatboxes
→ Allows new personal and expression
- Instant Messaging → supports multitasking with multiple conversations.

Advantages

- * Easy to understand
- * " " communicate

Disadvantages

- * quality of audio, video
- * Real-time delay.

Asynchronous

- * comm. happens remotely and at diff. times
- * Participants initiate and respond to comm. when they want.

Eg: Email, Bulletin boards, Newsgroups, computer conferencing

New functionalities:

- Attachments can be sent via email
- Msgs can be archived and accessed with search facilities.

Advantages

- * ubiquity
- * Powerful
- * Easier comm
- * Flexibility

Disadvantages

- * overload
- * Flaming
- * False expectations.

CMC - Mediated communication (eg: google docs)

* Both are joined
New functionalities:

- tool integration → combines diff. tools
- collaborative learning → new forms of learning together
- Allows multiple users to work on the same document at the same time.

Advantages

- * Multi-tasking
- * Greater awareness
- * speed

Disadvantages

- * Floor control
- * WYSIWIS.

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11. Evaluation paradigms.

4 core evaluation paradigms

- quick and dirt evaluation
- usability testing
- Field studies
- Predictive evaluation.

• → Quick and dirt evaluation

- > Getting feedback from users
- > Done at any stage

• → Usability testing

- > controlled settings
- > users are watched, recorded on video.
- > The data is used to calculate performance times, identify errors.

• → Field studies

- > Done in natural settings
- > what users do naturally
- > How tech. impacts them
- > used to identify opportunities of new tech

Two approaches of field study

OUTSIDER INSIDER

• → Predictive evaluation

- > predict usability problems
- > users need not be present
- > process is quick
- > Attractive to companies

DECIDE Framework

i) Determine the goals.

- check that the evaluator have understood user's needs.

- check to ensure that the final interface is consistent

- Improve the usability of the product

ii) Explore the questions

- How quickly can users complete essential tasks

- All evaluations need goals and questions to guide them.

iii) choose the evaluation paradigm

- quick & dirt

- Usability testing

- Field studies

- Predictive evaluation

iv) Identifying practical issues

- select users

- stay on budget

- staying on schedule

- Find right evaluators.

v) Decide on ethical issues

- Develop concern form

- participants have right to privacy, goals of study

vi) Evaluate, Interpret and present data

- Reliability, validity, bias, scope, outcome.

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3. Conceptual framework for understanding users cognition.
Ans: * Understand how people think and interact with systems

* Three-main conceptual frameworks for cognition.

a) Mental models

b) Info. processing

c) External cognition

a) Mental models:

* Internal representations that users form about how systems work and how to interact with them.

* These models guide user's actions and decisions helping them predict outcomes.

• → How they develop → Mental models are developed through experience with a system. As users interact with system they form assumptions about how it operates which helps them to troubleshoot problems.

• → Importance in design → A good interface should match the user's mental model.

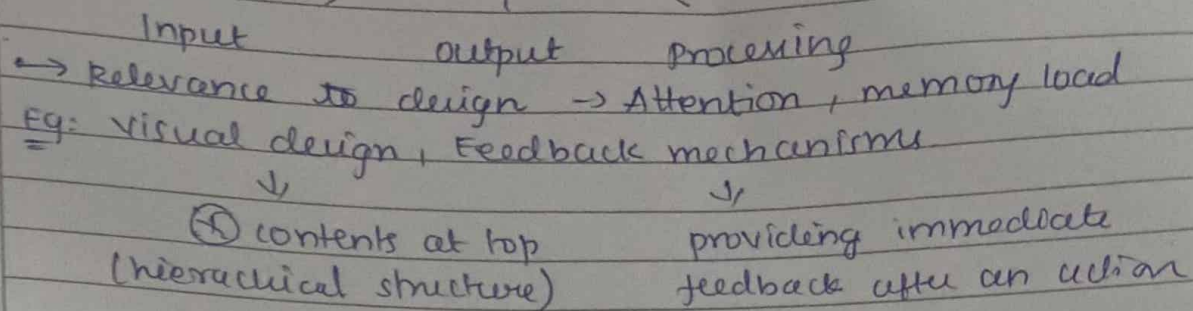
Eg: TV operation, Extraneous mental models.

b) Info. processing:

* This framework views the mind as an info. processor. Similar to computer.

* It involves how users receive, process, subserve, store info. when interacting with systems

→ stages of info processing:



(c) External cognition:

→ how people use external tools (or) representations like diagrams, lists etc. - / to support their cognitive processes. external tools

→ offloading cognitive work → By using cognition users can reduce the mental effort req. to perform a task

→ Visual Aids: Diagrams, charts helps users to understand complex info. more easily

→ checklists, guides: help users complete tasks more efficiently by reducing the need to remember every step.

Eg: spreadsheet sw, design tools.

↓

sw like CAD users with visual

Application

⇒ Align with MM, support IP, leverage EC.

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