Graphical User Interfaces
Design and usability

P.VISWANATHAN
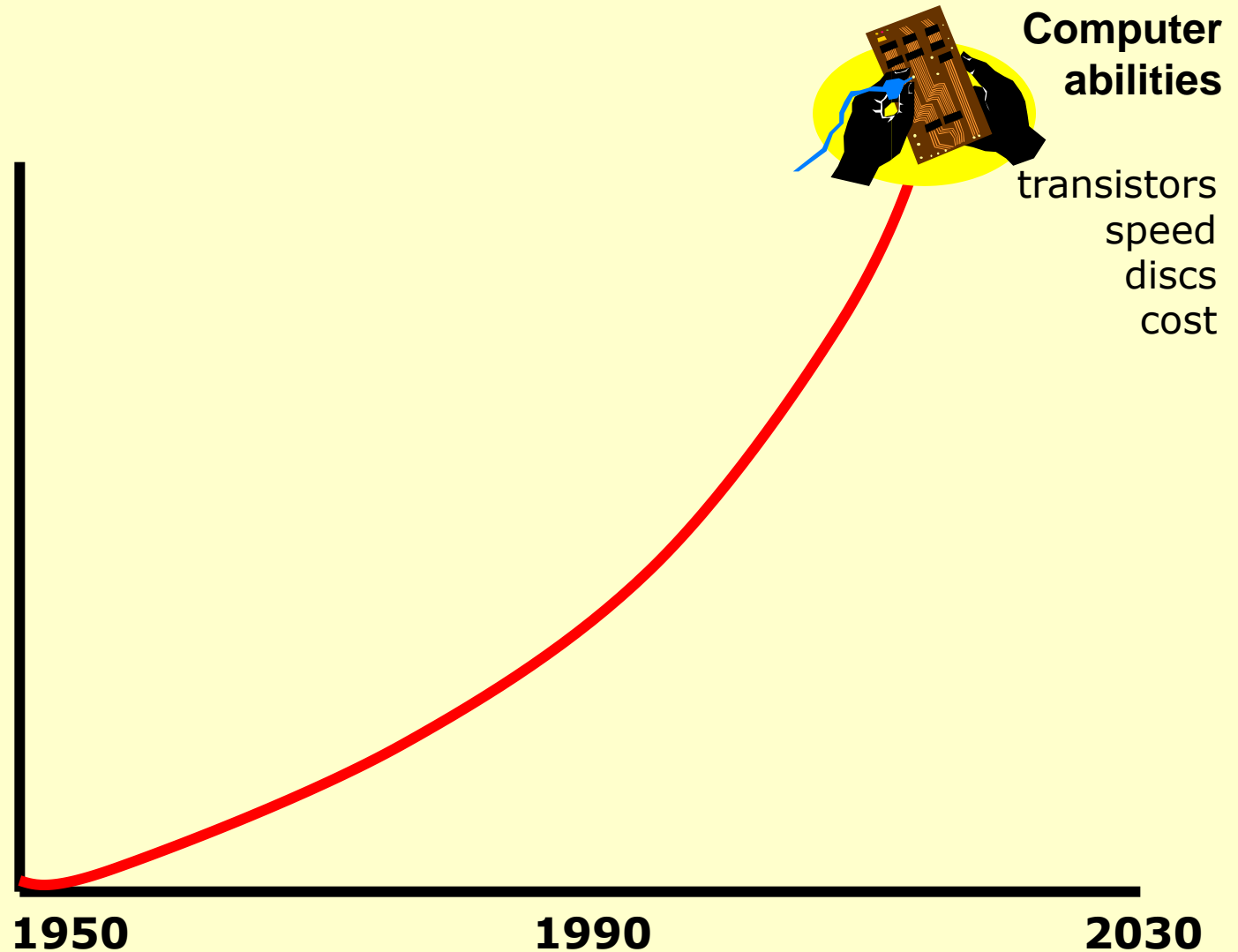
pviswanathan@vit.ac.in
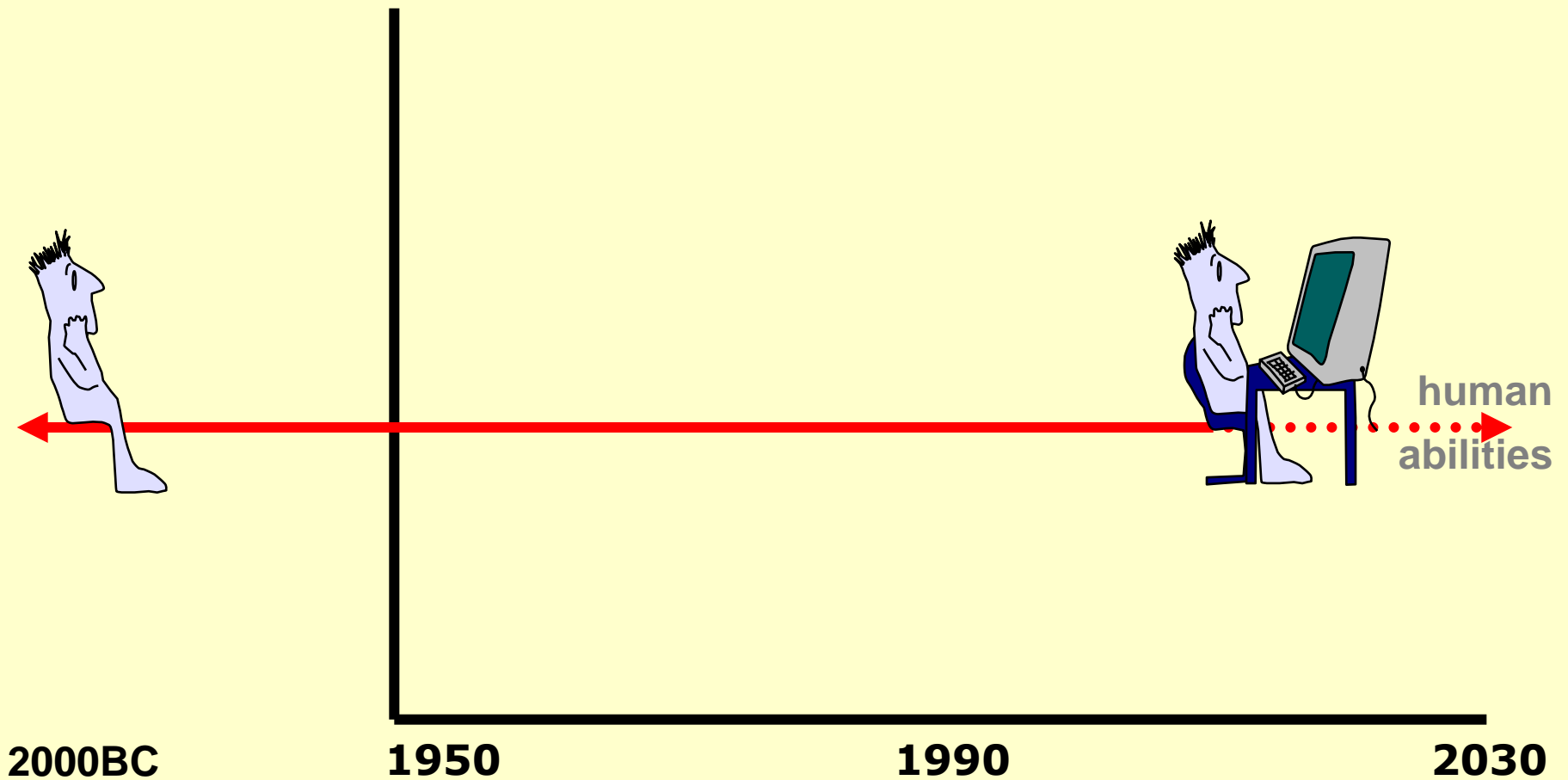
Moore's Law

Computer abilities

transistors
speed
discs
cost

1950   1990   2030

Psychology

human abilities

2000BC   1950   1990   2030
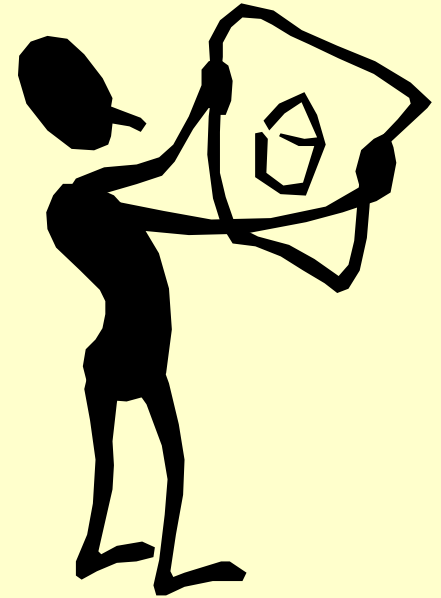
Where is the bottleneck?

system
performance
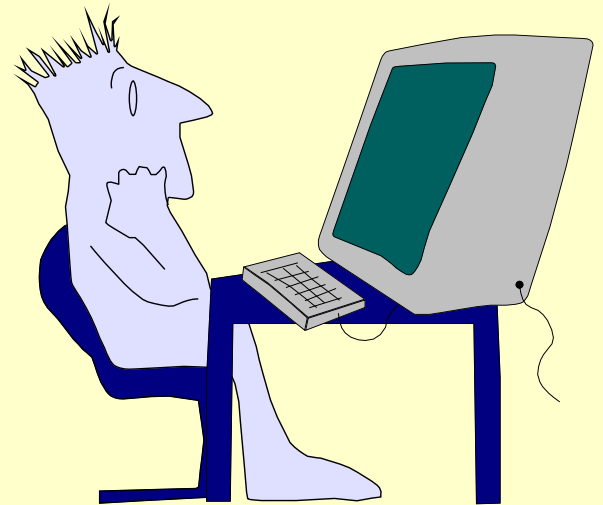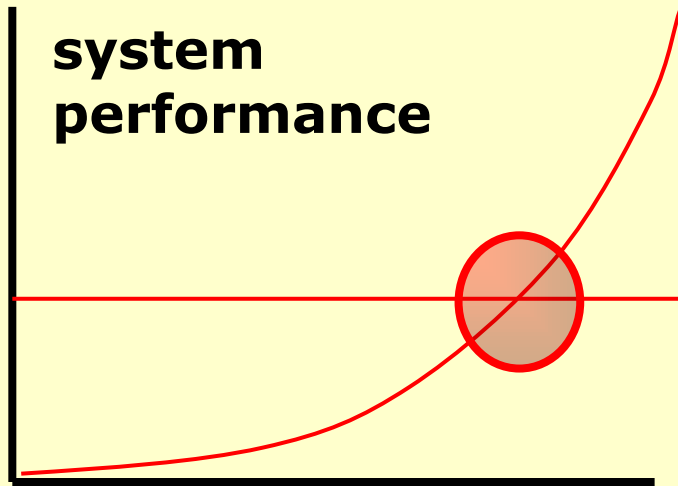
Human Computer Interaction

A discipline concerned with the

design

implementation

evaluation
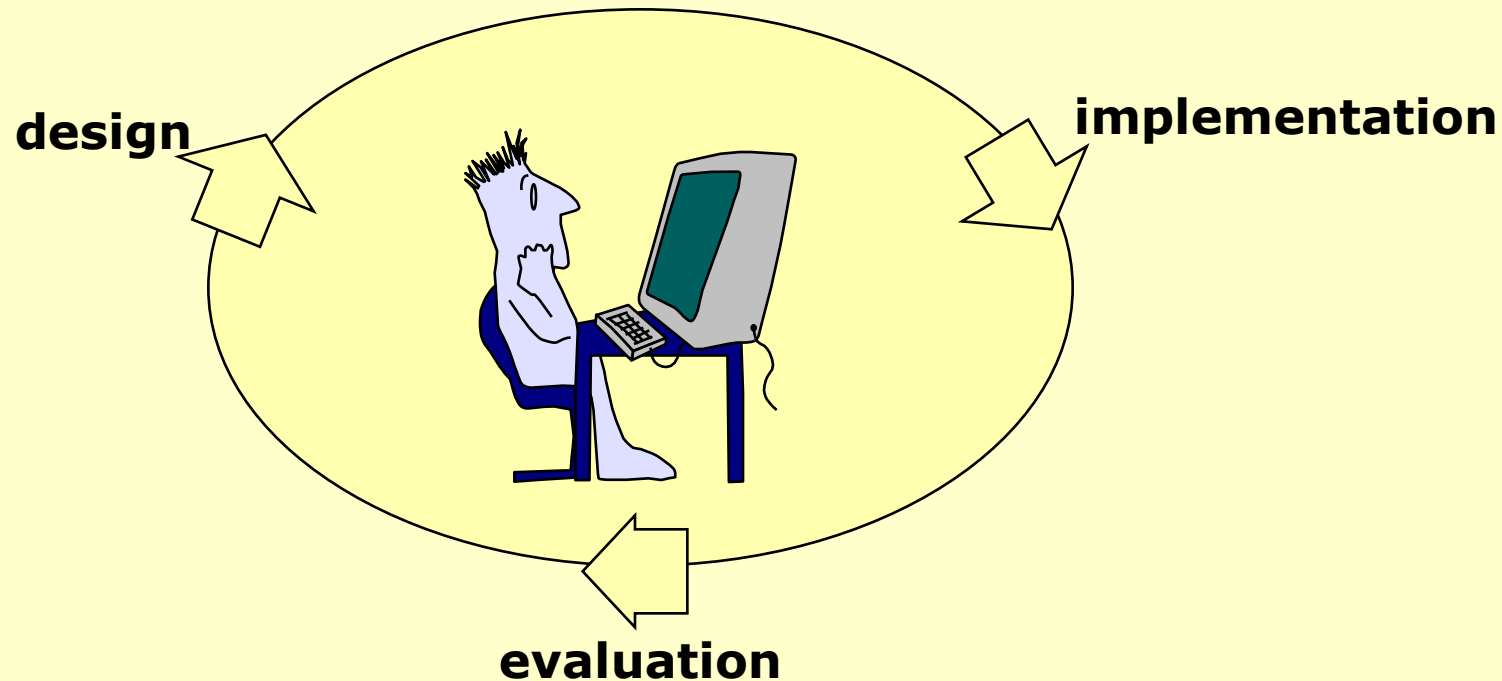
of interactive computing systems for human use

An interface design process

Goals:

| Articulate: • who users are • their key tasks | Brainstorm designs | Refined designs | Completed designs |

Methods:

Task centered system design

Participatory design

User-centered design

Evaluate

Psychology of everyday things

User involvement

Representation & metaphors

Participatory interaction

Task scenario walk-through

low fidelity prototyping methods

Graphical screen design

Interface guidelines

Style guides

Usability testing

Heuristic evaluation

high fidelity prototyping methods

Field testing

Products:

| User and task descriptions | Throw-away paper prototypes | Testable prototypes | Alpha/beta systems *or* complete specification |

Why an interface design process?

63% of large software projects go over cost
- managers gave four usability-related reasons
    - users requested changes
    - overlooked tasks
    - users did not understand their own requirements
    - insufficient user-developer communication and understanding

Usability engineering *is* software engineering
- pay a little now, or pay a lot later!
- far too easy to jump into detailed design that is:
    - founded on incorrect requirements
    - has inappropriate dialogue flow
    - is not easily used
   - is never tested until it is too late
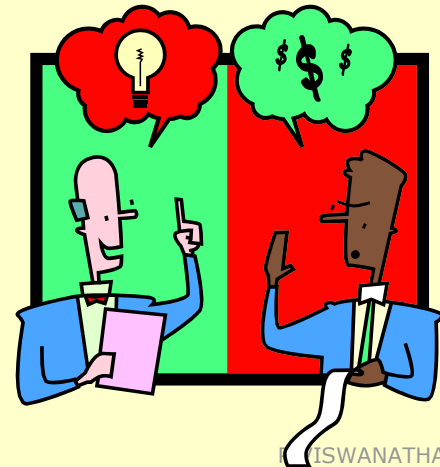
Day 1: The Interface Design Process

Understanding users and their tasks

- Task-centered system design
  - how to develop task examples
  - how to evaluate designs through a task-centered walk-through

Designing with the user

- User centered design and prototyping
  - methods for designing with the user
  - low and medium fidelity prototyping

- Evaluating interfaces with users
  - the role of evaluation in interface design
  - how to observe people using systems to detect interface problems
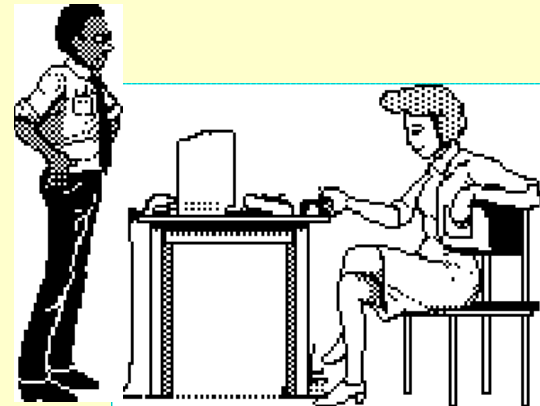
Day 2: Graphical Design Foundations

Designing visual interfaces

– Psychopathology/psychology of everyday things
  - what makes visual design work?

– Beyond screen design
  - representations and metaphors

– Graphical screen design
  - the placement of interface components on a screen

Principles for design (optional)

– Design principles, guidelines, and usability heuristics
  - using guidelines to design and discover usability problems

This is a great design!

Objectives

At the end of this course, you will know

- – methods for grounding your design in reality

- – methods for prototyping visual applications

- – methods for evaluating interface quality

- – fundamentals of screen design and representations

- – how to apply guidelines to interface design

- – have sufficient background to continue your education

How you can evaluate yourselves

On your next project involving interface design...

- – create a user- and task-centered requirements document

- – follow iterative interface design with the end user's involvement through paper, screen and system prototypes

- – apply guidelines to nuances of design

- – evaluate design throughout the entire process
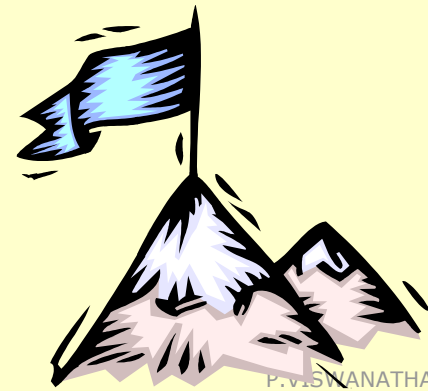
Excellent Books on Gui Design

Understanding design
- – Norman (1988): The Design of Everyday Things

Texts
- – Baecker, Grudin, Buxton, and Greenberg (1995): Readings in HCI
- – Preece (1994): Human Computer Interaction

Usability engineering
- – Nielsen (1993): Usability Engineering
- – Lewis & Reiman (1993): Task Centered User Interface Design

Graphical screen design
- – Mullet and Sano: Designing visual interfaces
- – Tufte (1983): Visual display of quantitative information
- – Cooper (1994): About face
- – Norman: Things that make us smart