LESSON 1

Course Introduction

Digital Innovation Development for Entrepreneurs

3 (3-0-6)

International College of Digital Innovation (ICDI)

Course Details

COURSE DETAILS

Dr. Séamus Lyons

Monday, Thursday

11 am to 12.30

ICB 1210

COURSE DETAILS

Dr Séamus Lyons

Assistant Professor Computer Science
Qualfied English Teacher
Chiang Mai

International College of Digital Innovation

COURSE OBJECTIVES

Students are able to

- explain the concepts of product research & development for digital innovation
- understand and apply good design and digital innovation development principles
- design and evaluate a digital innovative product or service prototype
- work as a team for carrying out a project, as well as be able to present their project effectively in both oral and written forms for entrepreneur

COURSE DETAILS

weeks 1 to 8
17th June to 9th August 2024

reading week 13th – 18th Aug
mid-term exams 19th – 25th Aug

weeks 9 to 15
26th August to 11th October 2024

final exams 15th - 27th Oct

course syllabus

COURSE DETAILS

Course Content	Hours
Introduction to digital innovation research & development	6
Digital innovative product research	6
Human cognition for digital innovative design	6
Digital innovative product analysis	6
Web-based digital innovation & design for entrepreneurs	6
Digital innovative product prototyping for entrepreneurs	6
Digital innovative product development for entrepreneurs	4.5
Digital innovative product testing for entrepreneurs	4.5
Total	45

COURSE DETAILS

M	Th	Monday	Thursday
17-Jun-24	20-Jun-24	Course Introduction	Project - Contextual Design
24-Jun-24	27-Jun-24	Usability & Guidelines	teachers day (am)
1-Jul-24	4-Jul-24	Principles & Theories	Lab 1: Contextual Inquiry for Digital
8-Jul-24	11-Jul-24	Cognition - Perceptions	Lab 2: Contextual Design – modelling I
15-Jul-24	18-Jul-24	Cognition - Limitations	Lab 3: Contextual Design – modelling II
22-Jul-24	25-Jul-24	closed	Lab 4: Contextual Design – modelling III
29-Jul-24	1-Aug-24	closed	Cognition - Memory
5-Aug-24	8-Aug-24	Cognition - Learning	review
12-Aug-24	15-Aug-24	reading week	
19-Aug-24	22-Aug-24	midterm exams	

COURSE DETAILS

M	Th	Monday	Thursday
26-Aug-24	31-Aug-24	Web usability	Lab 5: Contextual Design – models to design
2-Sep-24	7-Sep-24	Web design & navigation	Lab 6: Contextual Design – affinity diagram
9-Sep-24	14-Sep-24	Web diffusion 1	Lab 7: Contextual Design – storyboarding
16-Sep-24	21-Sep-24	Web diffusion 2	Lab 8: Marketing plan
23-Sep-24	28-Sep-24	Ethics	Lab 9: Design to Prototype to Testing
30-Sep-24	5-Oct-24	UX - Multi-device design	review
7-Oct-24	12-Oct-24	Demonstrations	Demonstrations
14-Oct-24	19-Oct-24	final exams	
21-Oct-24	26-Oct-24	final exams	

course marks

COURSE DETAILS

10% class participation
40% project assignment
25% midterm exam
25% final exam

COURSE DETAILS

project

Project

1.	Draft Proposal		week 2
2.	Proposal & Inquiry	stage I	week 4
3.	Design - modelling	stage 2	week 8
4.	Design - prototype	stage 3	week 13
5.	Demonstrations		week 14

Deliverables & Deadlines

COURSE DETAILS

- *Draft Proposal* — *week 2*
- Proposal — week 4
  - includes contextual inquiry
- Progress Report — week 8
  - includes models
- Final Report — week 14
  - includes design/testing
- Presentations — week 15

where can you access materials?

COURSE DETAILS

Teams	will stop soon, still can use for messages
Mango	are you using this yet?

all materials, course & project details, lessons
https://www.alps.academy/digital-interaction-design-development/

Design Good or Bad?

Digital Innovation Development for Entrepreneurs

What is Development?

development in innovation (888111 & 888147)

DEVELOPMENT

1. discovery – you already have your idea ✖
2. development
3. diffusion – we will do a little diffusion (seo/marketing)
4. impact – N/A ✖

design in project management

DEVELOPMENT

1. planning
2. analysis - modelling
3. design - design
4. development / coding / implementation
5. maintenance

development in contextual design

DEVELOPMENT

- inquiry = research & analysis
- modelling = analysis
- design = design

project

followed by diffusion

DEVELOPMENT

and design ?

- not graphical design
- logical & digital design
  - why does this digital … work well
  - why does this interface work, is easy to use, is useful

- design
  - interface
    - interaction
      - we focus on design from the ‘user interaction’

Design Good or Bad?

Interfaces & Interaction

INTERFACES
INTERACTION

LEARNING OBJECTIVES

To know the range of paradigms from digital interaction of human and computers

To be familiar with the development of interface design

Changing World

INTERFACES
INTERACTION

science & technology
IT, computers & communications
interfaces
'emerging' technologies – phones – really!

focus on functionality	25-50 years ago
7 +/- 2 short-term memory	12-14 years ago
phone screen too small	5-7 years ago

Changing World

INTERFACES
INTERACTION

Changed

technology
knowledge about our brain
user-centred
names / job titles

basis of the coursework project
IA, UX ..., etc.

Same

pen & paper
early design

yes, really!
models, prototyping

Design Good or Bad?

Types of Digital Interfaces

DIGITAL
INTERFACES

DIGITAL INTERFACES

Types of Interactive Models

HCI

Human-to-Computer Interaction

how users engage with computational devices.
focuses on graphical user interfaces (GUIs), where visual elements guide the interaction

HHI

Human-to-Human Interaction

how technology mediates human interaction
social media platforms, collaboration tools

Types of Interactive Models

Multi-Modal Interaction

multiple methods of interaction
voice, touch, gesture, and more
phones, Virtual Reality (VR)

Conversational Interaction

interactions through natural language
voice assistants and chat bots

Human Computer Interaction

DIGITAL INTERFACES

"a discipline concerned with the study, design, construction and implementation of human-centric interactive computer systems"

Webopedia, http://www.webopedia.com/TERM/H/HCI.html Dec 14

Digital Interaction

DIGITAL
INTERFACES

- Humans interact with computers through a user interface
- developing effective interfaces
- incorporating usability and user experience goals for effective user interaction
- emerging technologies

Digital Interaction

DIGITAL
INTERFACES

- Desktop applications used in offices
- Billions of users access web
- Billions of users access mobile devices

Digital interaction is a design science

It applies the methods of experimental psychology

User Interfaces

DIGITAL
INTERFACES

- Help business success
- Help access to information and entertainment
- Involved in important systems
  - National defense
  - Health
  - Crime
  - 9/11 - the US congress blamed the User Interface (UI) for falling to detect the terrorists

Digital interaction design

DIGITAL
INTERFACES

Better

Doctors' diagnosis is more accurate
Pilots fly more safely
Children learn more effectively
Enable users with disabilities
Artists have more creative possibilities

Digital interaction design

DIGITAL
INTERFACES

Poorer

Frustration
Fear
Failure
Complexity
Confusion

Digital interaction

DIGITAL INTERFACES

In business

- Document sharing, decision support, video conferencing

Home

- phones, PC, TV, games

Life

- ATM, payment

Change

- Desktop (less)
- Mobile device (more)

Is there a link between economic growth and phone use?

Human-to-Human interaction

DIGITAL INTERFACES

pre-AI

Social networks

User-generated content

- YouTube
- Wikipedia

Design size

- Larger e.g. wall
- Smaller e.g. phone

Multiple languages

Accessibility

Multi-Modal interaction

DIGITAL
INTERFACES

pre-AI

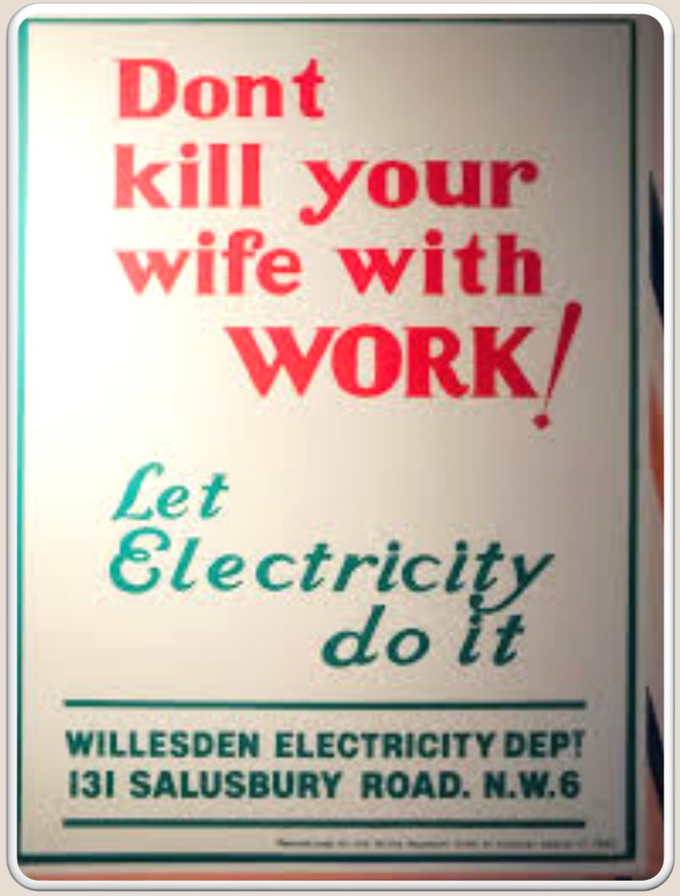
Wearable technology
Tracking sensors
Gesture interfaces
User behavior / emotional state

Conversational interaction

DIGITAL
INTERFACES

natural language and speech
- Siri, Alexa, Cortana
- online customer services
- robots, TVs, cars
- ‘smart devices’ to ‘AI’ devices

Design Good or Bad?



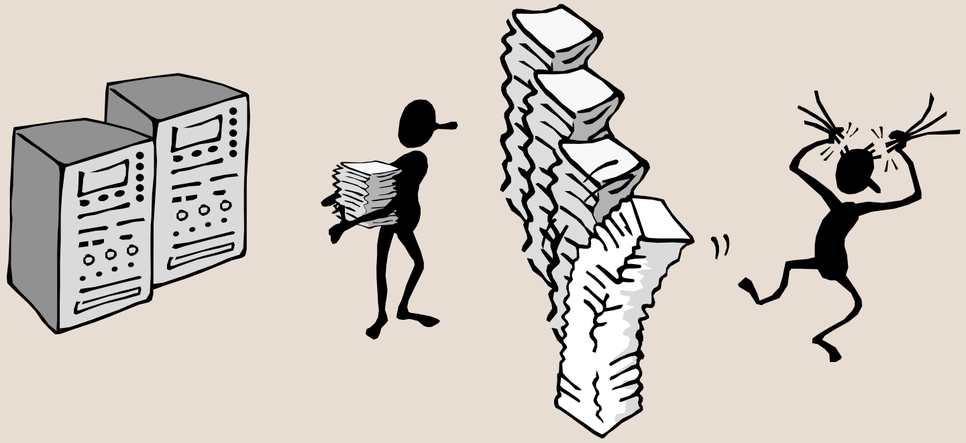
History of Digital Interfaces

New computing technologies arrive, creating a new perception of the digital interface.

We can trace some of these shifts in the history of interactive technologies.

The initial paradigm

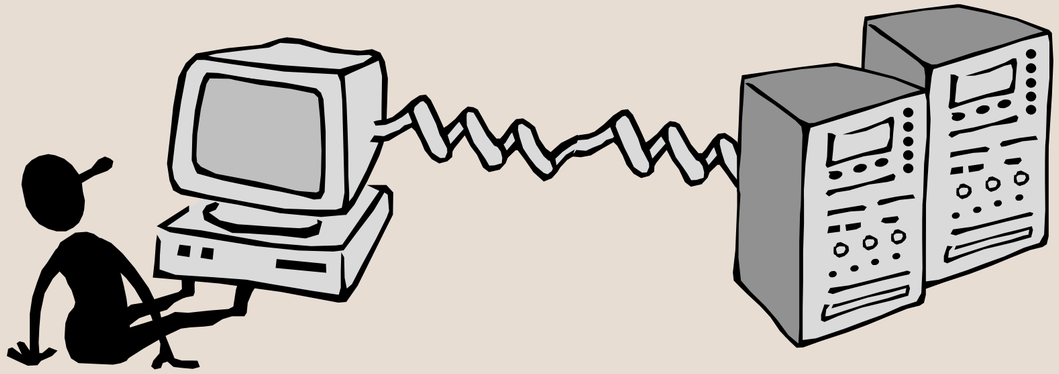
Batch processing



Impersonal computing

paradigm shifts

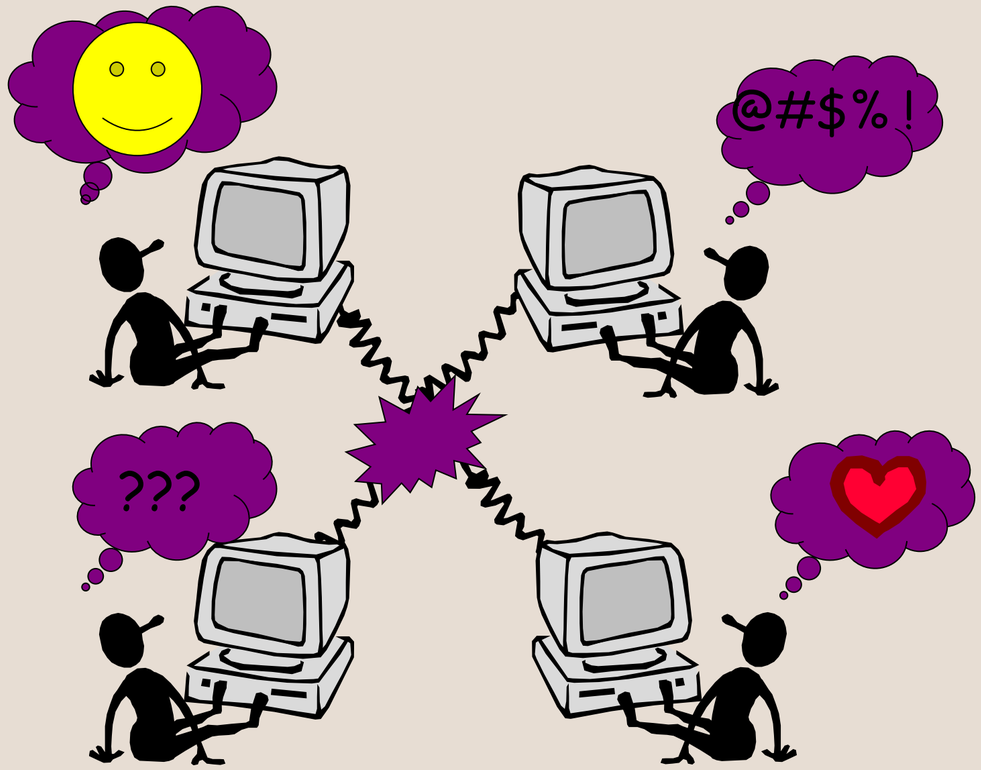
Time-sharing
sharing of resources



Interactive computing

paradigm shifts

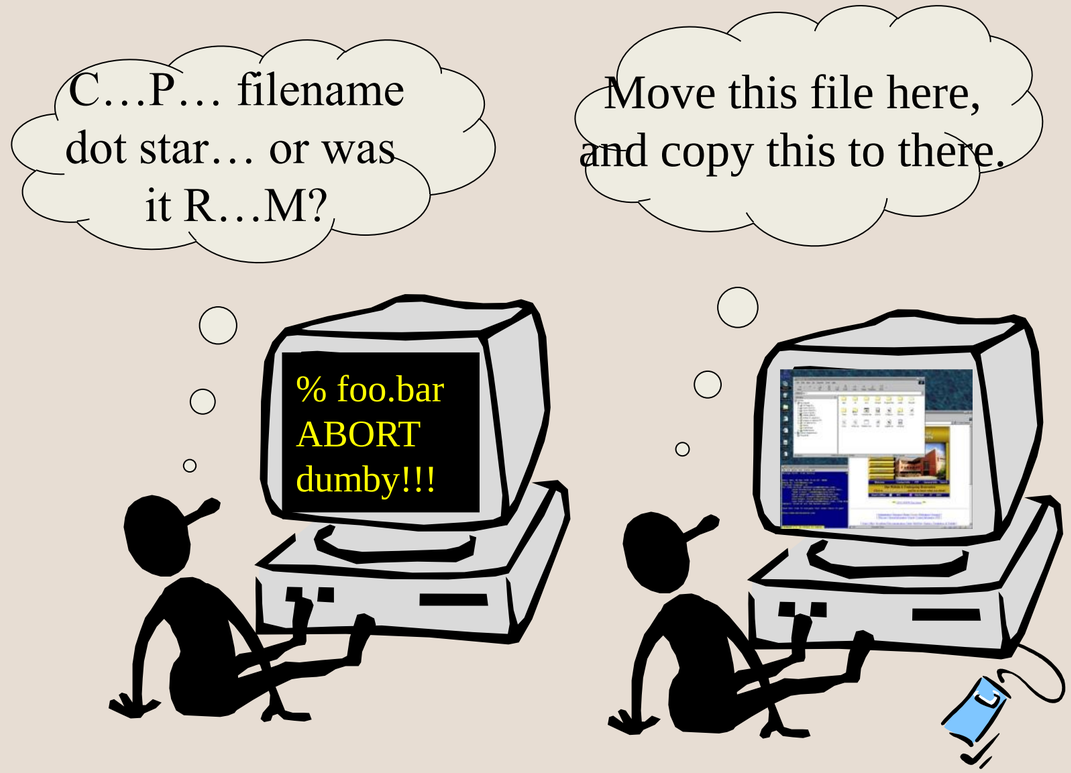
Networking



Community computing

paradigm shifts

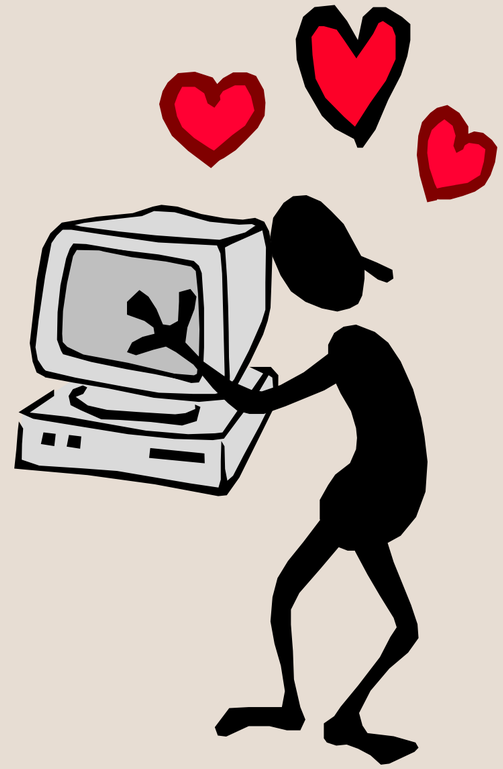
Graphical Displays



Direct manipulation

paradigm shifts

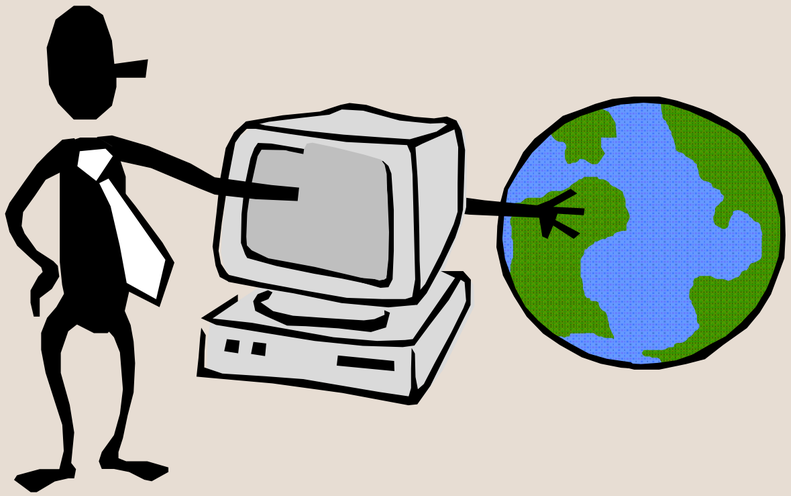
Microprocessor



Personal computing

paradigm shifts

World Wide Web

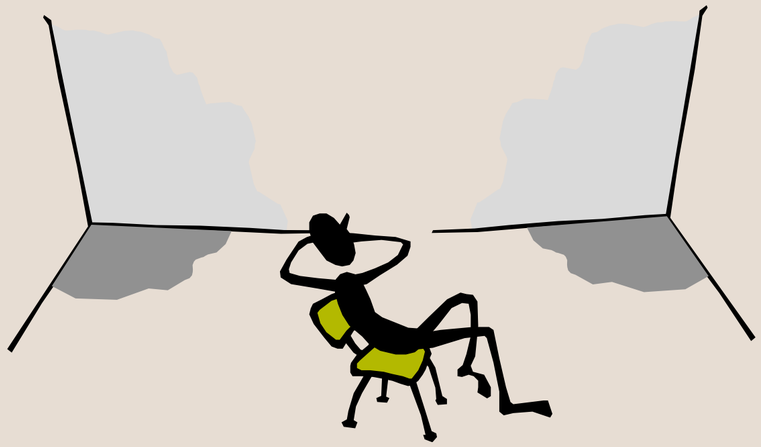


Global information

paradigm shifts

Ubiquitous computing

A symbiosis of physical and electronic worlds in service of everyday activities.



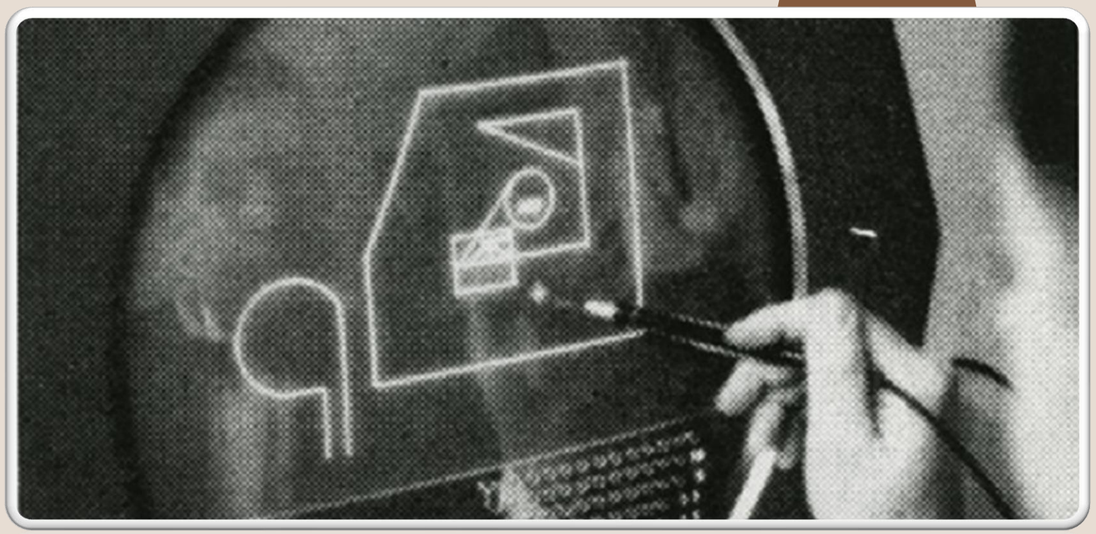
Design Good or Bad?

Time-sharing

1940s and 1950s – explosive technological growth
1960s – need to channel the power
J.C.R. Licklider at ARPA (thoughts on interactive computing / interface)
single computer supporting multiple users

Video display units

INTERFACES
HISTORY



more suitable medium than paper
1962 – Sutherland's Sketchpad
computers for visualizing and manipulating data
one person's contribution could drastically change the history of computing

Programming toolkits

INTERFACES
HISTORY

Engelbart at Stanford Research Institute
Founder of HCI? (mouse, GUI)
1963 – augmenting man's intellect
1968 NLS/Augment system demonstration
the right programming toolkit provides building blocks to producing complex interactive systems

Personal computing

INTERFACES
HISTORY

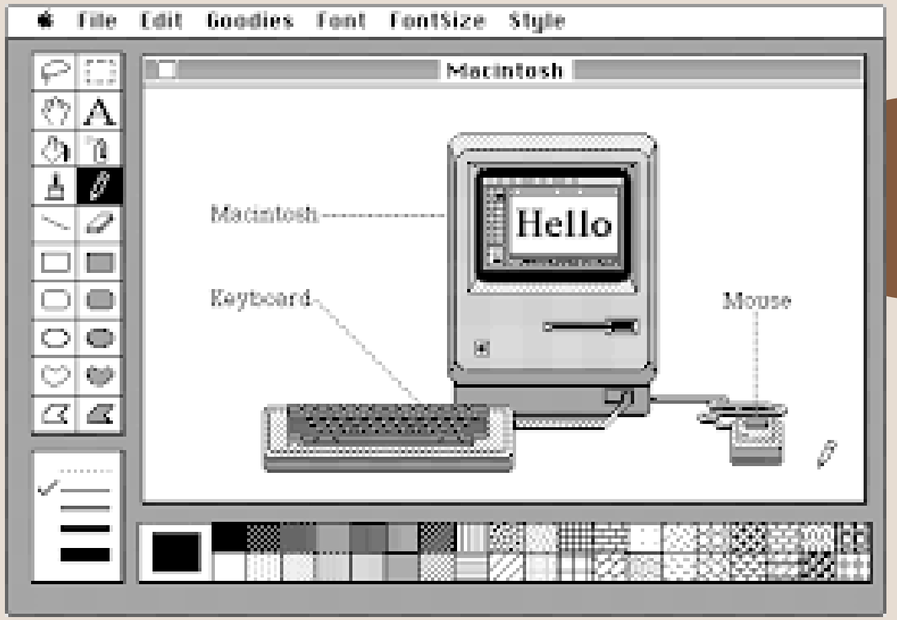
1970s – Papert's LOGO language for simple graphics programming by children

A system is more powerful as it becomes easier to use

Future of computing in small, powerful machines dedicated to the individual

Kay at Xerox PARC – the Dynabook as the ultimate personal computer

Windows – WIMP



Windows, Icons, Menus and Pointers
humans can pursue more than one task at a time
windows used for dialogue partitioning, to “change the topic”
1981 – Xerox Star first commercial windowing system
windows, icons, menus and pointers now familiar interaction mechanisms

Metaphor

relating computing to other real-world activity is effective teaching technique

LOGO's turtle dragging its tail

file management on an office desktop

Trash bin / dustbin

Problems

some tasks do not fit into a given metaphor

cultural bias

Direct Manipulation

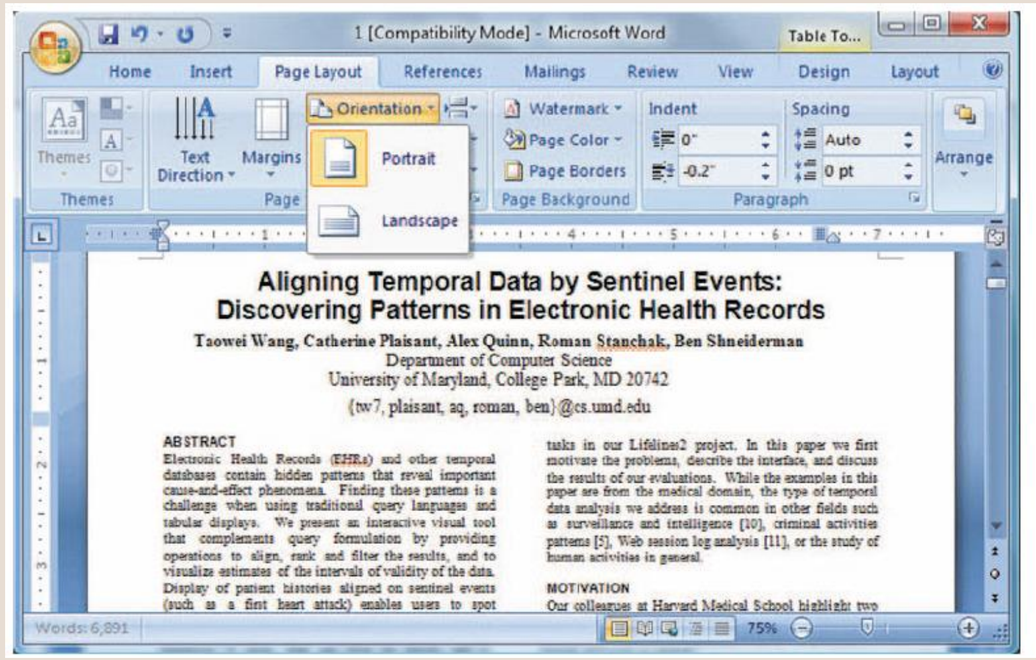
Shneiderman 1982

describes appeal of graphically-based interaction
visibility of objects
incremental action and rapid feedback
reversibility encourages exploration
syntactic correctness of all actions
replace language with action

Direct Manipulation

WYSIWYG

what you see is what you get
1984 – Apple Macintosh
the model-world metaphor

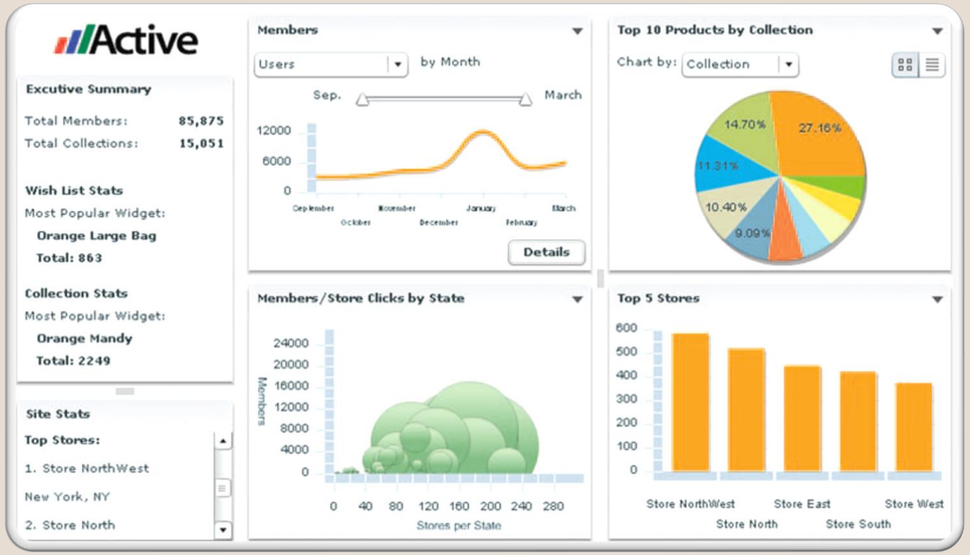


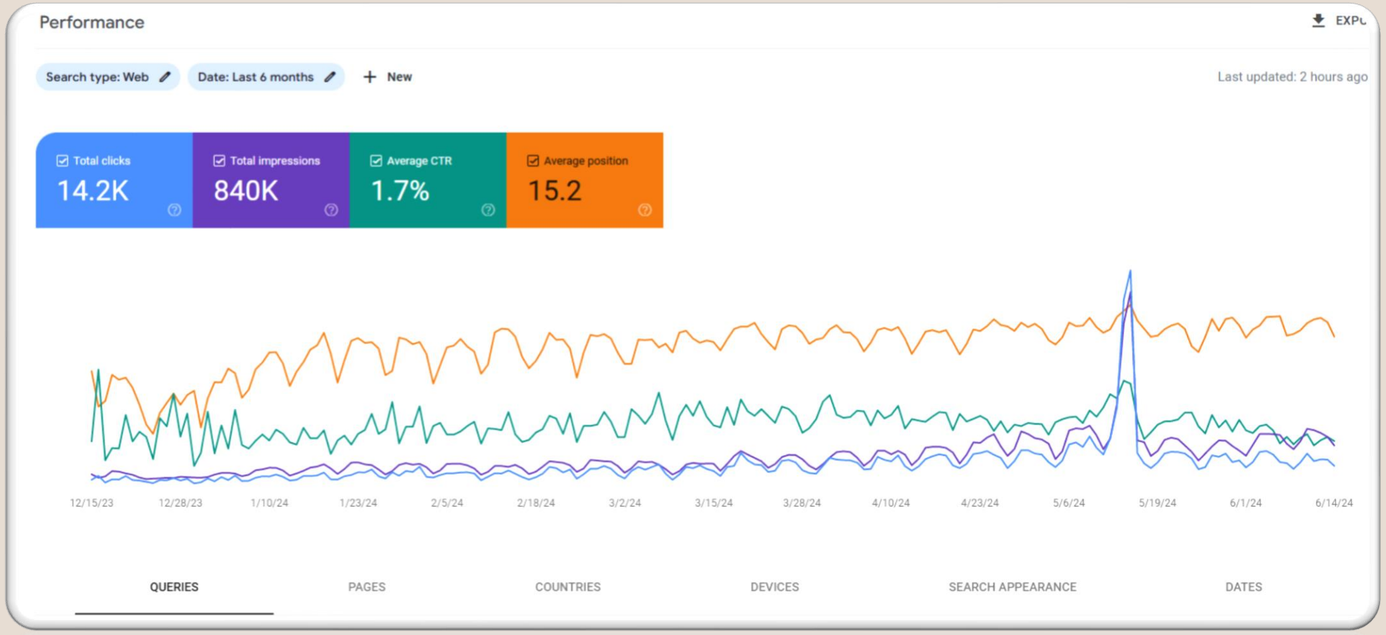
difference between notepad and Word

Direct Manipulation

INTERFACES
HISTORY

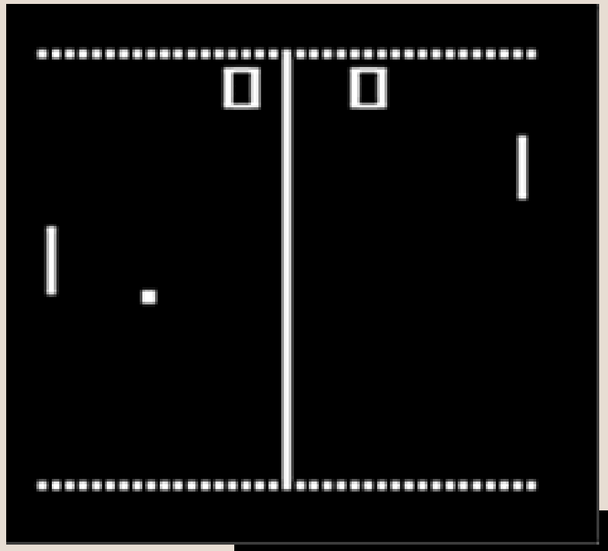
DASHBOARDS

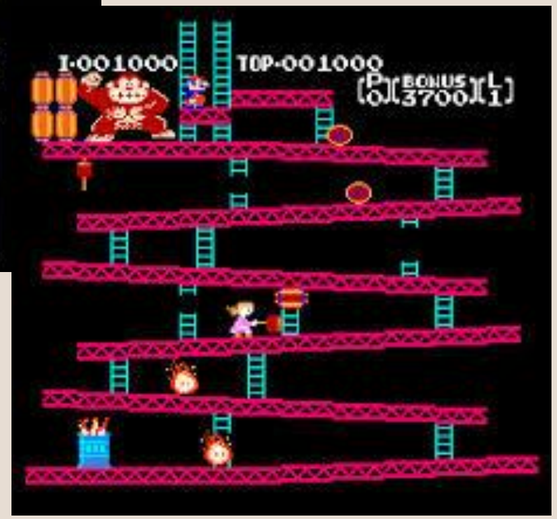




Direct Manipulation

GAMES





Direct Manipulation

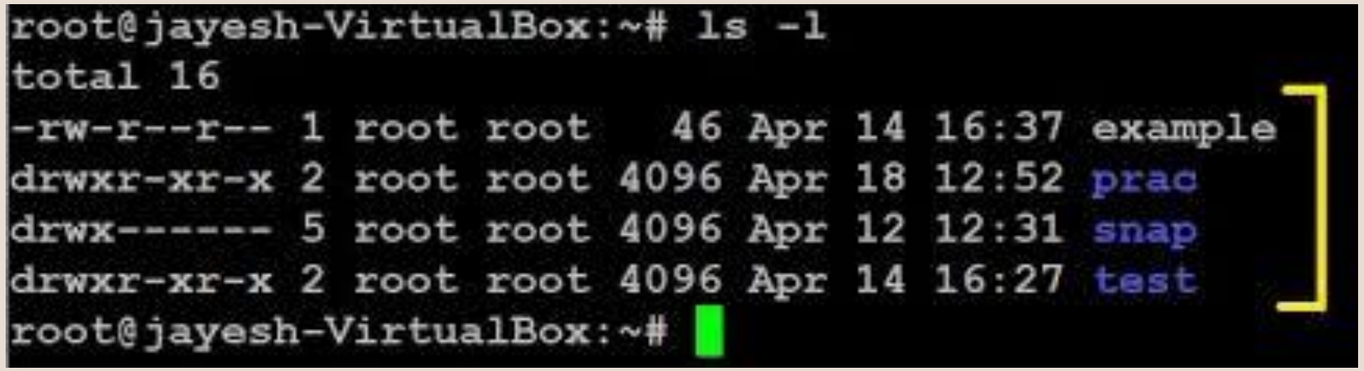
GAMES

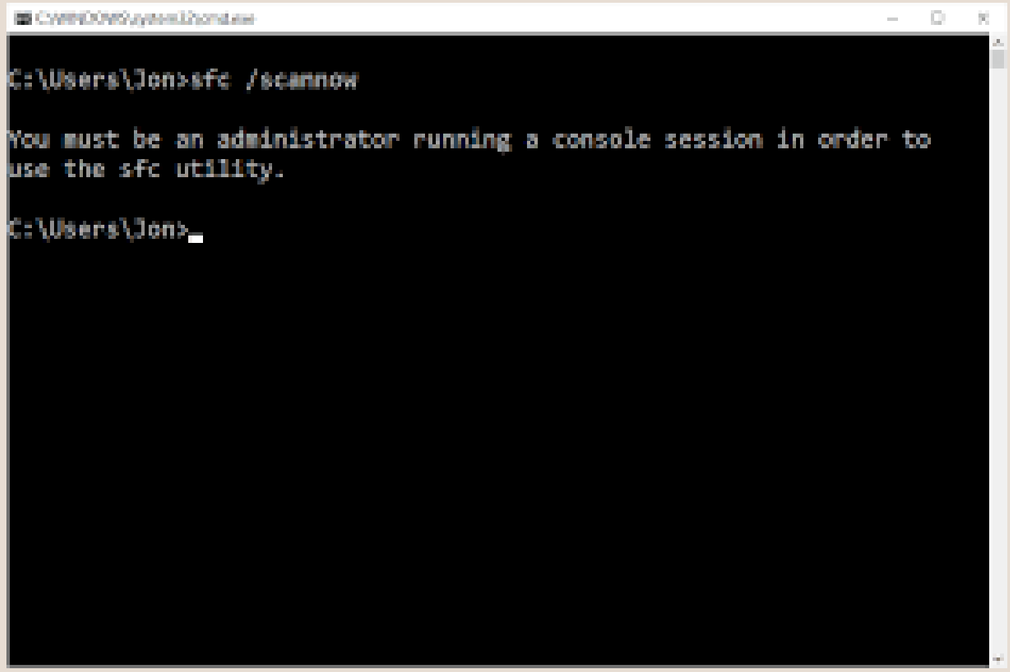
Direct Manipulation

GAMES

INTERFACES HISTORY

History or Future?





CONCLUSION

Digital interaction is an ever-changing, evolving area of design science.
Billions of users access digital, web and mobile devices
It applies the methods of experimental psychology to the digital world

References

- Benyon D. (2010) *Designing Interactive systems,* 2nd Edition, Addison Welsey, Harlow
- Dix A., Finlay J., Abowd G. Beale R. (2004) *Human-Computer Interaction,* 3rd Edition, Prentice-Hall, Inc., Upper Saddle River, NJ, USA.
- Johnson J. (2010) *Designing with the Mind in Mind: Simple Guide to Understanding User Interface Design Rules.* Morgan Kaufmann, San Francisco
- Shneiderman B. and Plaisant C. (2010) *Designing the User Interface Strategies for effective Human-Computer Interaction*, 5th Edition, Pearson, Boston
- Webopedia *(2014) HCI.* [online] Available from: *http://www.webopedia.com/TERM/H/HCI.html* [Accessed: 3rd Dec 2014].

Recommended Reading

- Shneiderman B. and Plaisant C. (2010) *Designing the User Interface Strategies for effective Human-Computer Interaction*, 5th Edition, Pearson, Boston (Course)
- Benyon D. (2010) *Designing Interactive systems,* 2nd Edition, Addison Welsey, Harlow (Contextual Design, PACT)
- Johnson J. (2010) *Designing with the Mind in Mind: Simple Guide to Understanding User Interface Design Rules.* Morgan Kaufmann, San Francisco (Human Cognition)
- Dix A., Finlay J., Abowd G. Beale R. (2004) *Human-Computer Interaction,* 3rd Edition, Prentice-Hall, Inc., Upper Saddle River, NJ, USA. (HCI)
- Krug S. (2006) *Don't make me think: A Common Sense Approach to Web Usability,* 2nd Edition, New Riders, Berkeley, California, USA (Web design)

Thank You!

any questions?