



Mobile

INTERACTION DESIGN



W3 LECTURE

ILO 1

ILO 2

ILO 4

ASSIGNMENT 1

ASSIGNMENT 2





Waves of Mobile Computing



PORTABILITY

MINIATURISATION

CONNECTIVITY

CONVERGENCE

DIVERGENCE

APPS

ECOSYSTEMS

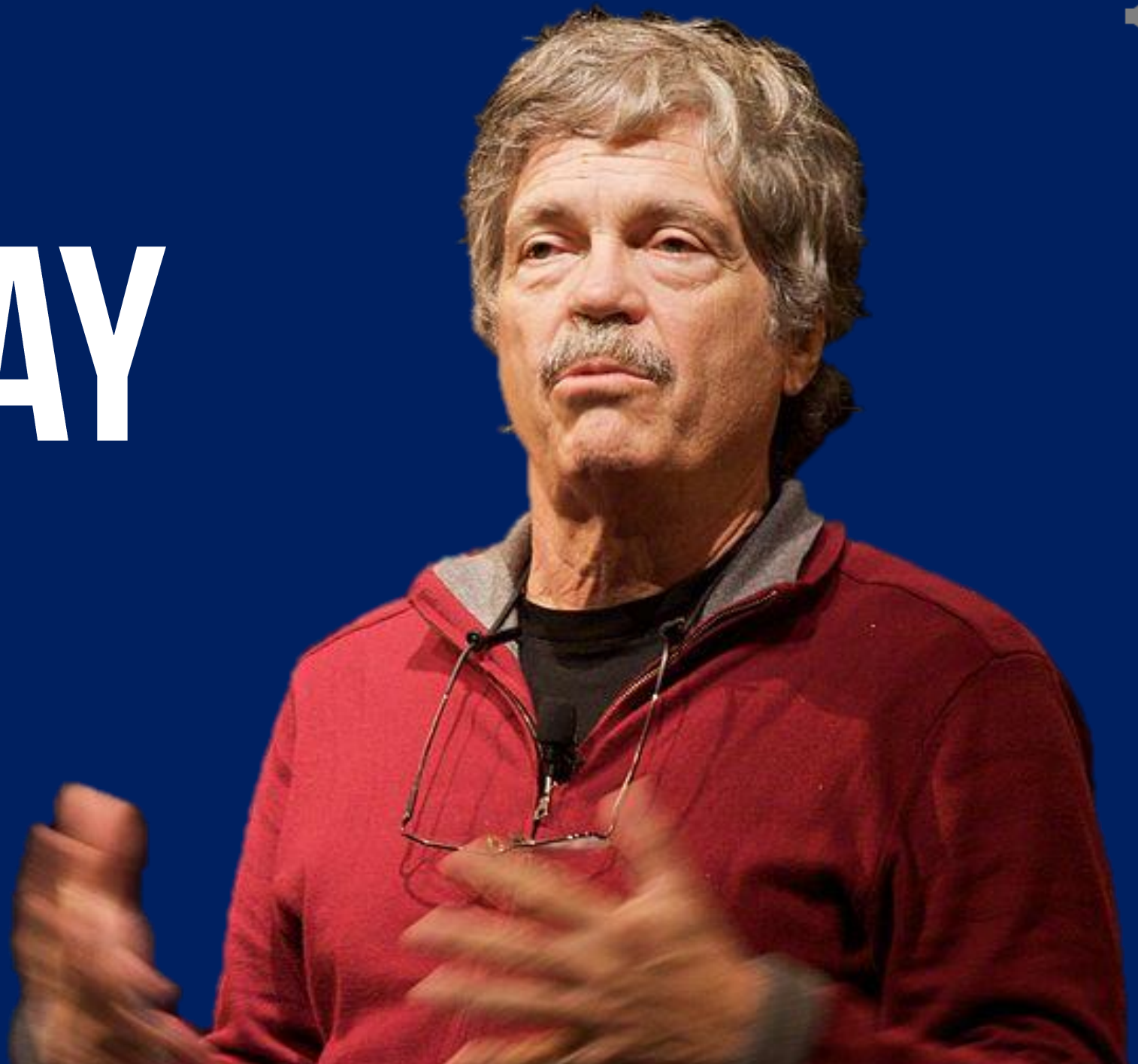


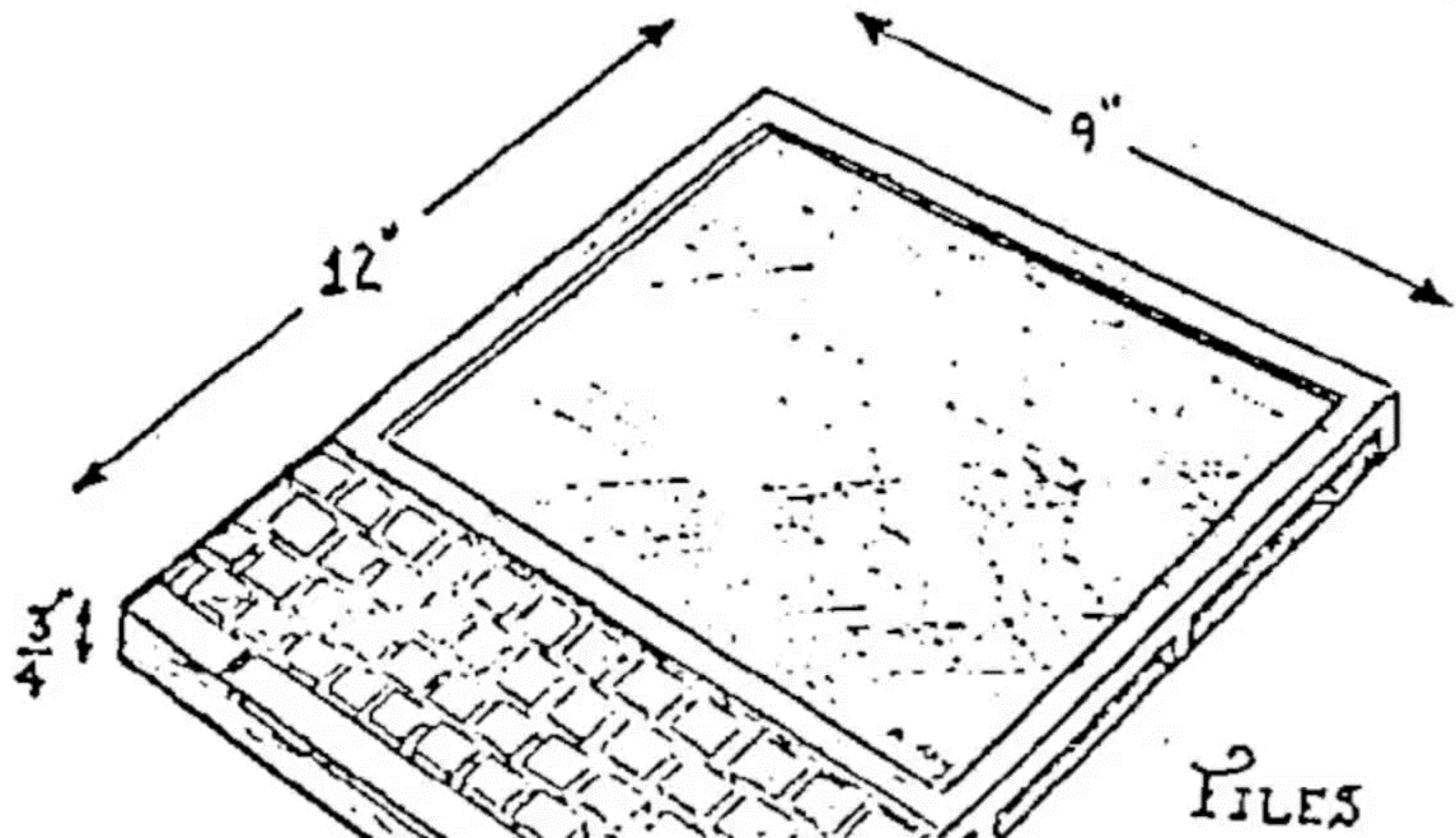


PORTABILITY

*Reducing the hardware size to
make it possible to move them
relatively easily*

ALAN KAY



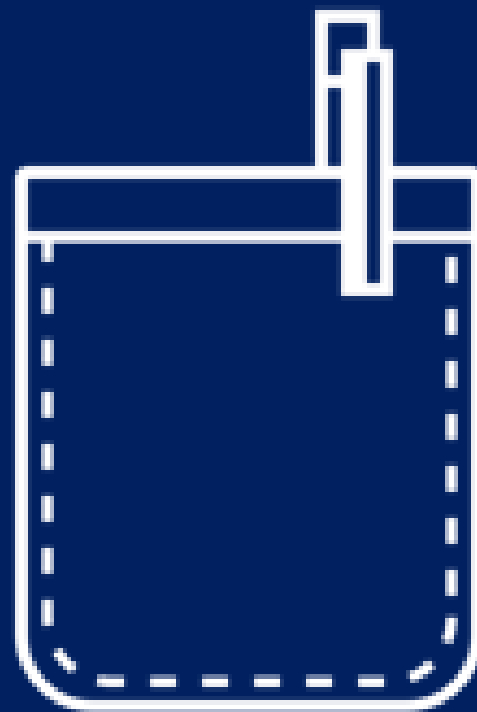




1968

Dynabook







BILL MOGGRIDGE



Relate Norman's three levels of processing to how Moggridge described the design of the Grid Compass.



1982 *GRiD* *Compass*



Relate how Moggridge describes the software experience to Mark Weiser's vision of ubiquitous computing.



1982

Compaq Portable



1988

GRiDpad



What kind of mobile computer was the Compaq Portable



☒ Allow Single Choice Only ☐ Allow Multiple Choices ☒ Shuffle Answers ☒ Allow Retry ☐ Limit Attempts

Luggable



Handheld



Ubiquitous



Wearable



Pluggable



+ Add another answer



MINIATURISATION

*Radically smaller, enabling
usage on the move*

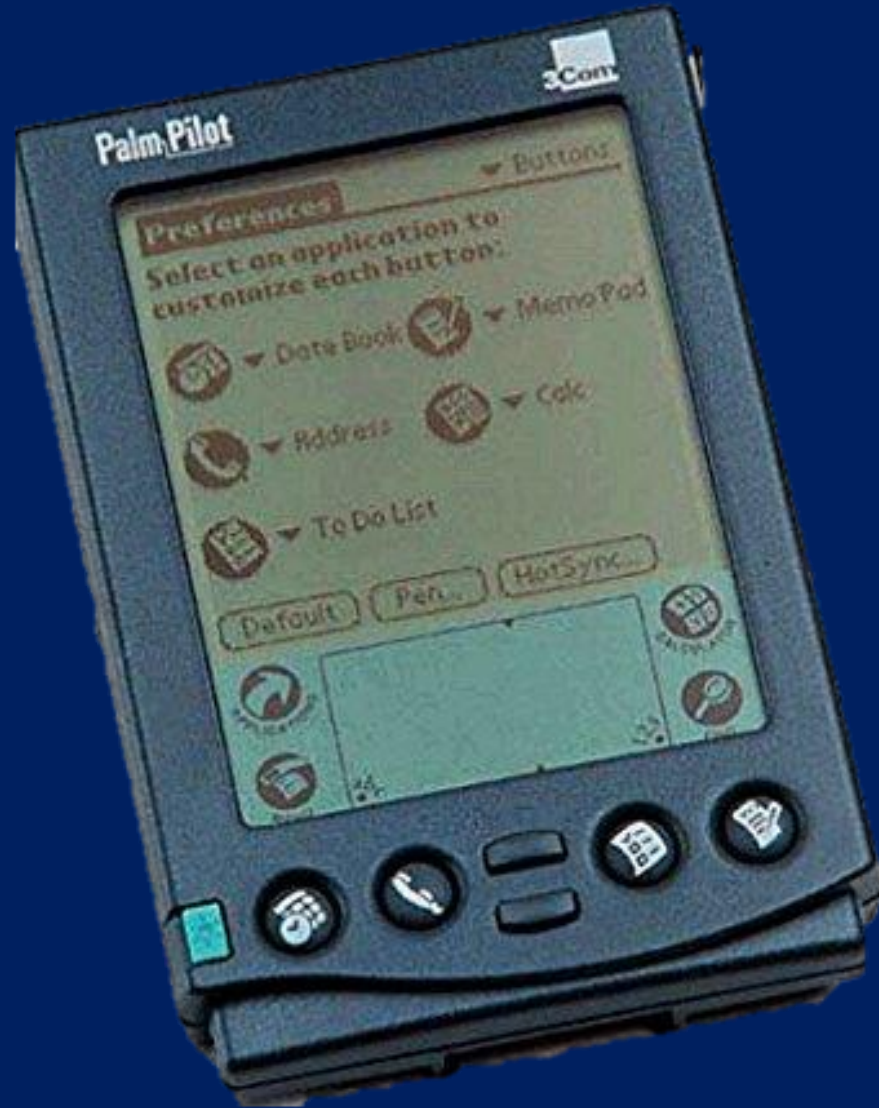


Intelligence by Newton

1992

Apple Newton





1997

Palm Pilot

JEFF HAWKINS



According to Hawkins, what was Palm's biggest competitor?



☒ Allow Single Choice Only ☐ Allow Multiple Choices ☐ Shuffle Answers ☒ Allow Retry ☐ Limit Attempts

Paper



Apple Newton



Motorola Talkabout



Grid



+ Add another answer



CONNECTIVITY

*Wireless data networks
on the move*

1982

Mobira
Senator

**THE Carphone
Warehouse**





1983

*Motorola
DynaTAC
8000X*



1996

*Motorola
StarTAC*



Nokia 3110

A black Nokia 1110 mobile phone is shown vertically. The screen is green and displays the text 'TELE' and 'Menu'. The phone has a standard numeric keypad and a few function buttons. A white arrow points to the left arrow button on the navigation pad.





44 33 555 555 666
H e l l o



1999

Nokia 3210



4 3 5 5 6
H e l l o



the quick brown fox jumps over the lazy dog

843 78425 27696 369 58677 6837 843 5299 364

the quick brown fox jumps over the jazz dog

tie stick crown lumps muds tie lazy fog





1992

Twiddler

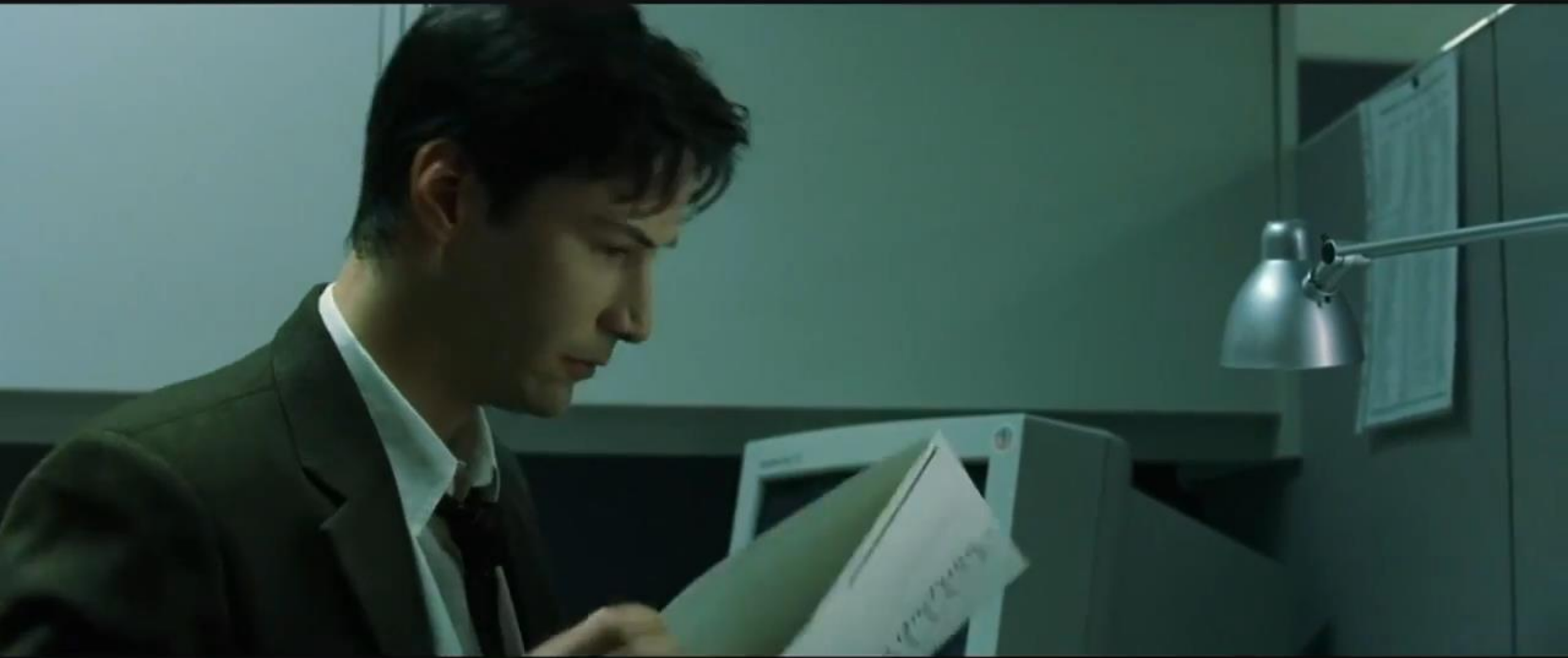






1999

Nokia 7110



WAP

*Wireless
Application
Protocol*



 All About
Symbian WAP

⌵

All About **Symbian**

News, forums and software for
Symbian devices.

[News/S60/P800/9210/Symb.](#)
[Forums \(Read & Post\)](#)
[Reviews/S60/P800/9210](#)
[Software Dir./S60/P800/9210](#)
[Downloads/S60/P800/92x0](#)
[External News](#)

Options ▼ History

CONVERGENCE

Bringing device types together



1992

IBM Simon



1996

Nokia
9000





2002 *Blackberry*
5810

2000 *Ericsson*
R380



2003 *Nokia N-Gage*



2005 *Nokia* *N90*





2005 *Sony Ericsson* *W600*





DIVERGENCE

*Specialised functionality rather
than generalised ones*





APPS

There's an app for that!

2007

*Apple
iPhone*











BEFORE

Tactile

Indirect

Key presses

Single Key Press

Portrait

AFTER

Touch

Direct

Gestures

Multi-touch

Portrait or Landscape





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Updates

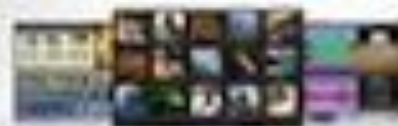


iWork

Documents,
spreadsheets,
presentations.
The Mac way.



iLife '11



New and Noteworthy [See All >](#)



Pixelmator

Graphics Design

★★★★☆ 502 ratings

[GET IT NOW](#)



Bejeweled 3

Casual

★★★★☆ 655 ratings

[GET IT NOW](#)



Family Tree Maker

Productivity

★★★★☆ 482 ratings

[GET IT NOW](#)



Diner Dash 5: BOOM!

Casual

★★★★☆ 355 ratings

[GET IT NOW](#)



GarageSale

Lifestyle

★★★★☆ 128 ratings

[GET IT NOW](#)



Clarus

Lifestyle

★★★★☆ 497 ratings

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All Categories ▾

iLife '11
iWork



BlackBerry
App World™



NOKIA

ovi



2010

*Apple
iPad*





DIGITAL ECOSYSTEMS

*Pervasive and interrelated
technologies working together*





Join at kahoot.it

With game-pin:

8888

kahoot.it

Kahoot!

Game pin

Enter

30
Players

Kahoot!

Start now ▶

Kahoot!

Game pin

Enter

Kahoot!

Game pin

Enter

Kahoot!

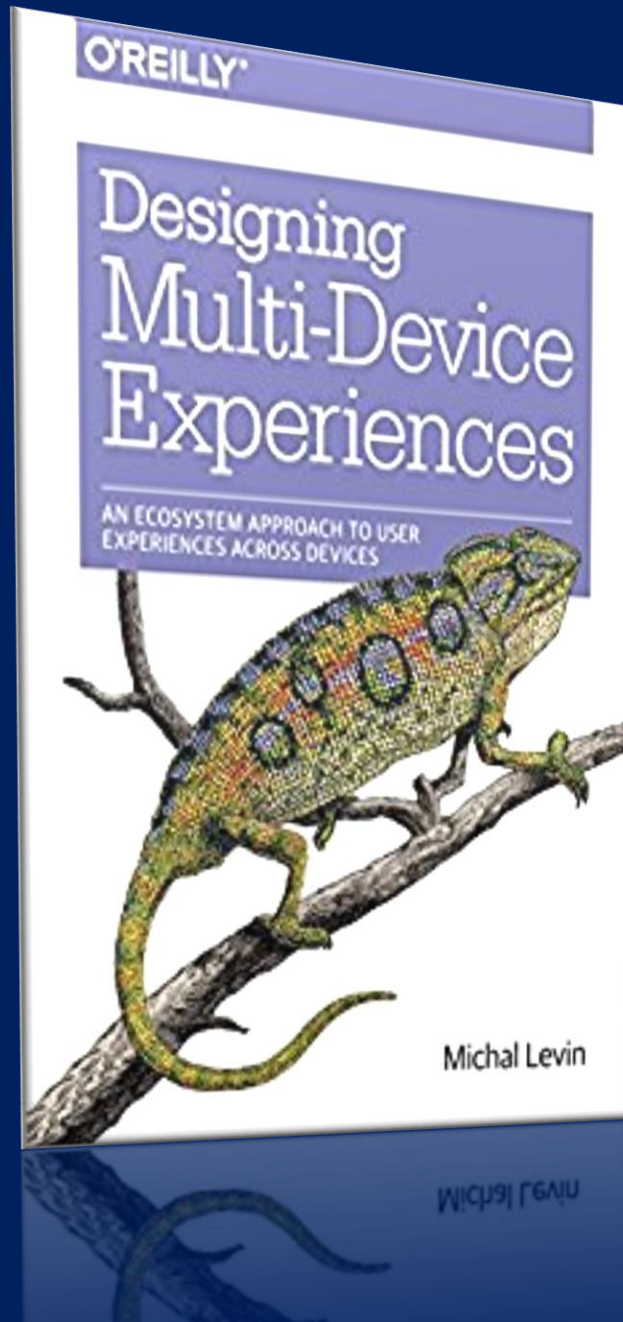
Game pin

Enter

Kahoot!

Game pin

Enter



4C FRAMEWORK

Sorensen et al. 2014





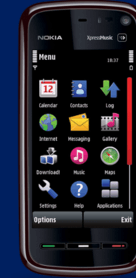
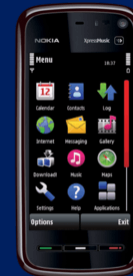
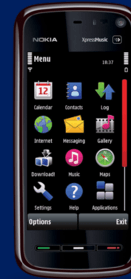
DUET

Chen et al., 2014



PHONETOUCH

Schmidt et al., 2010





Augmenting the Interaction with

SENSORS



Orientation Sensor



FLEXCASE

Rendl et al., 2016



FlexCase:

Enhancing Mobile Interaction with a Flexible Sensing and Display Cover

Christian Rendl¹, David Kim², Patrick Parzer¹, Sean Fanello², Martin Zirkel³, Gregor Scheipl³, Michael Haller¹, Shahram Izadi²

¹Media Interaction Lab (Austria) ²Microsoft Research (Redmond, WA, USA) ³Joanneum Research (Austria)

Music: Janiev - Into The City

TABLET + PEN

Hinckley et al., 2014



ORBITS

Esteves et al., 2015







4C Framework

Case studies

Convergence

Waves of Mobile

Connectivity

Divergence

RECAP

*Digital
Ecosystems*

Portability

Apps

Sensor augmentation

Miniaturisation