advent of the internet

History of Information

April 13, 2010

aob

The New York Times

U.S. Court Curbs F.C.C. Authority on Web Traffic

By EDWARD WYATT
Published: April 6, 2010

WASHINGTON — A federal appeals court ruled on Tuesday that regulators had limited power over Web traffic under current law. The decision will allow Internet service companies to block or slow specific sites and charge video sites like YouTube to deliver their content faster to users.

looking ahead

Corporate Social Responsibility 2.0: Social Media for Sustainable Business

Date: Thursday, April 15th
Time: 7pm-9pm
Location: Arthur Anderson Auditorium, Haas
Link: http://www.facebook.com/event.php?eid=116280515052657

With the emergence of new social media platforms such as Facebook and Twitter, it is easier for businesses to communicate their goals for sustainability and responsibility. Come listen to a diverse panel of four prestigious figures as they discuss the rise of social media and how it has changed the landscape in which business interacts with society. We will examine how social media is used as a tool for businesses to communicate with various stakeholders, influence consumers as citizens, and work together to create a positive impact on the world.

Professional Attire is recommended, resumes accepted.

Refreshments will be provided.

looking ahead

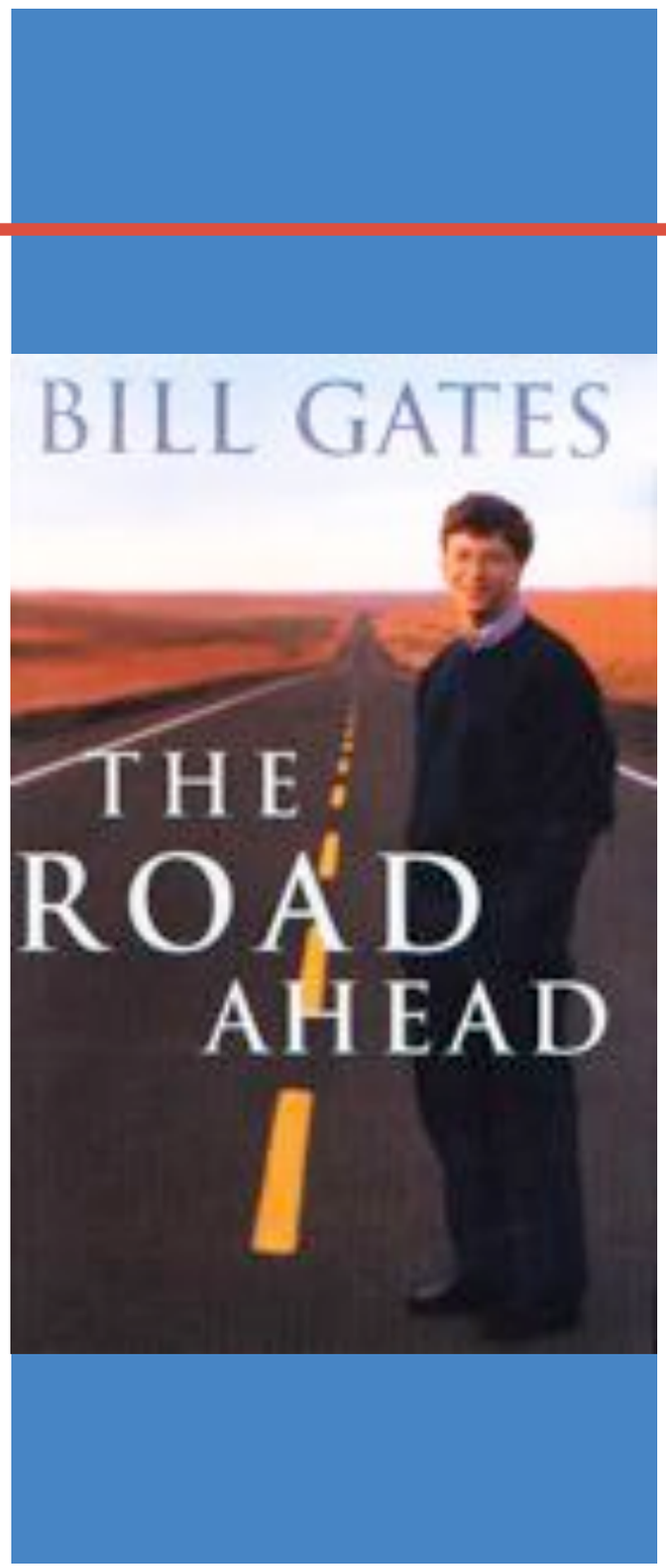
Exhibition: The Future of the Book: by Judith Donath, Gilad Lotan, and Martin Wattenberg
Exhibit - Sculpture | April 19 – August 6, 2010 *every day* | 340 Moffitt Undergraduate Library

Sponsor: New Media, Center for

Three glowing screen are set amidst arching piles of ghostly pale books. One continuously reconfigures Twitter posts about reading, on another bouncing letters randomly settle into place, revealing pointed quotes about reading drawn from well-known books, while the third uses the viewer's image to trace out a series of related passages.

The earliest writings were carved in stone or scratched in clay and tree-bark. By 2400 BCE people had begun rolling papyrus sheets into scrolls. These remained the most popular written form for the next three thousand years, until the Chinese invented paper and European scholars began to bind parchments sheets into codices. It would take thirteen more centuries for these two technologies to come together to form the book, and another hundred years, until around 1440, for the printing press to be invented and the modern industrial book object to be born. Since then, for over 500 years, the book has been the dominant form for written communication.

road ahead



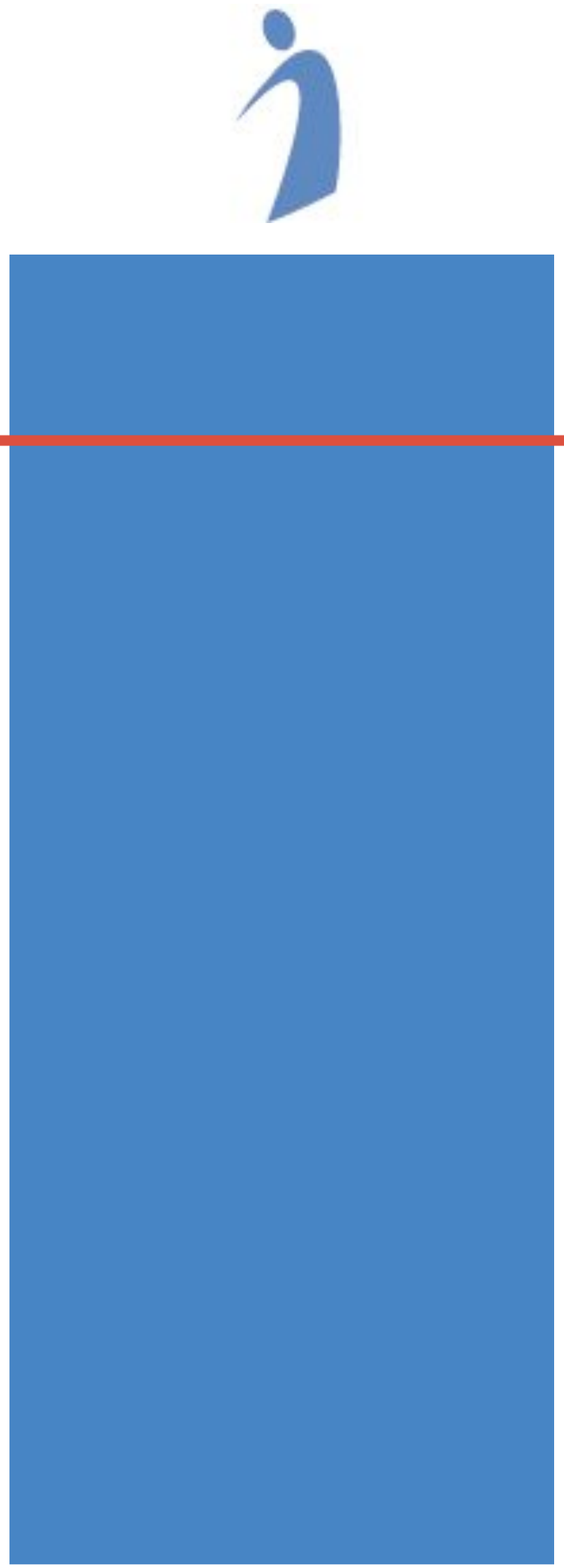
computer

to

internet

to

search



shaping the future

technology

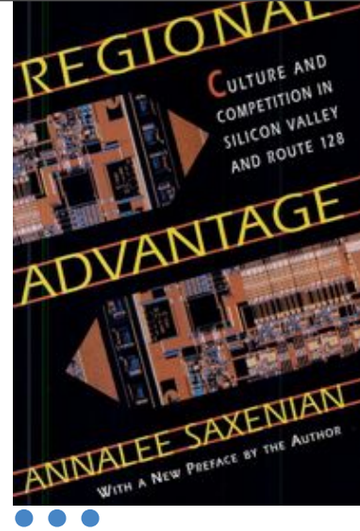
government

military / intelligence

science / university

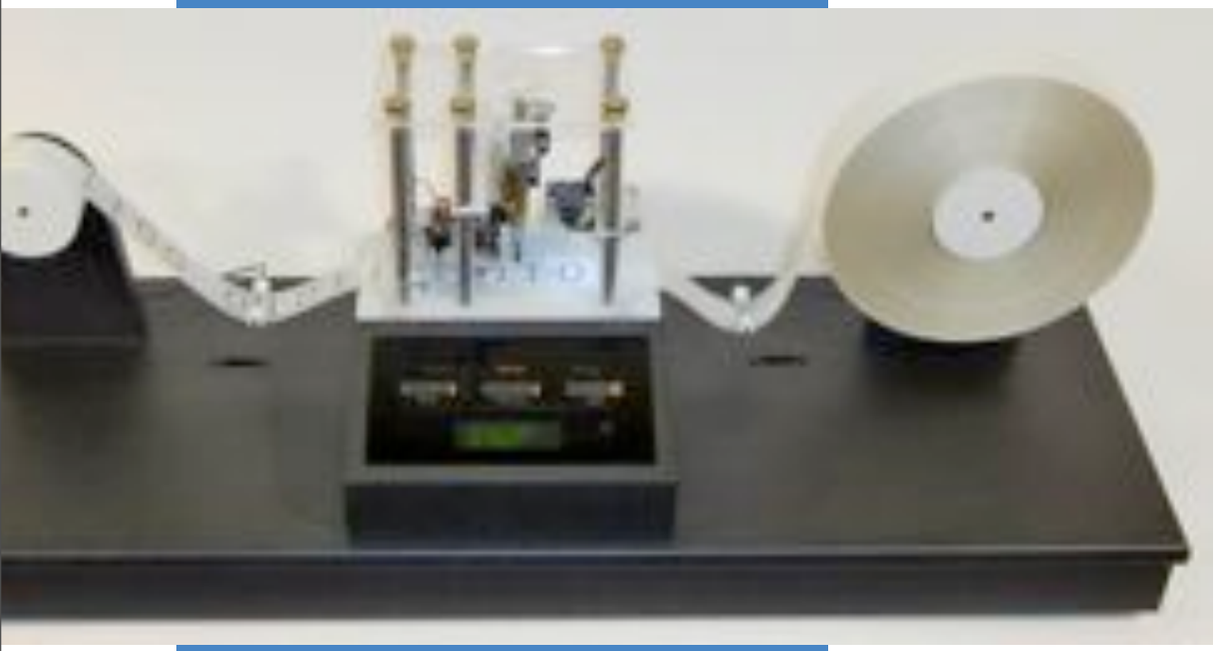
business

social activity



westward the course ...

in theory



aturingmachine.com

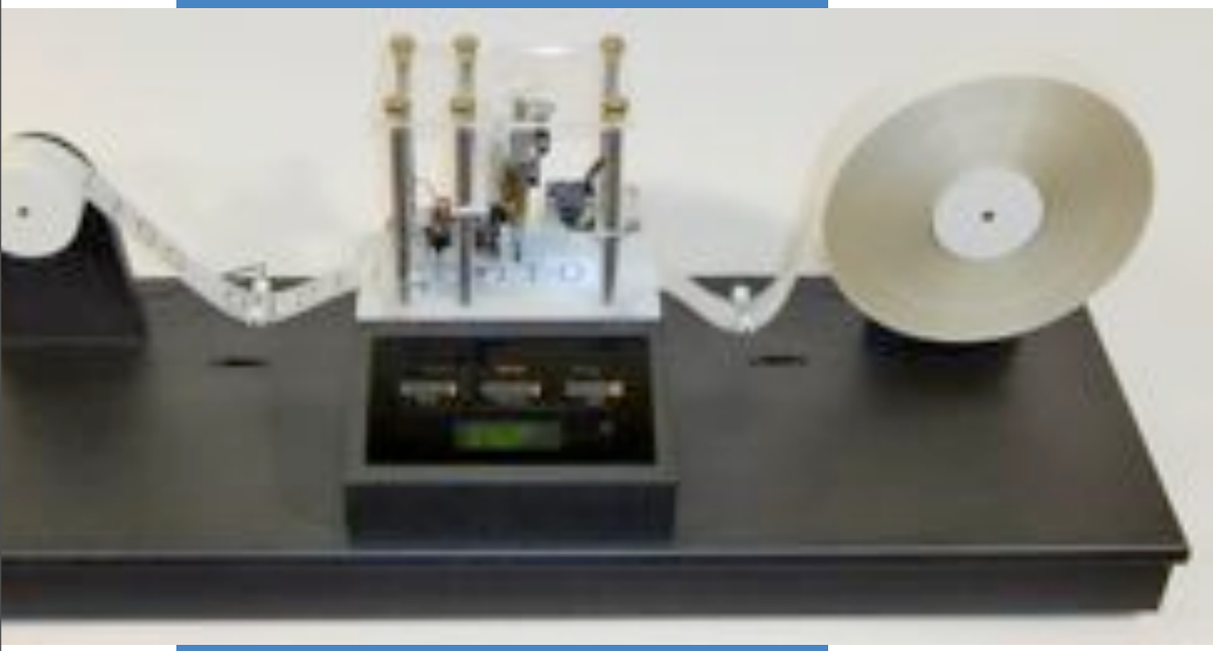
Turing machines/tests

von Neumann machines

cpu - storage

Weiner cybernetics

in theory



aturingmachine.com

Turing machines/tests

von Neumann machines

cpu - storage

Weiner cybernetics

Durkheim (1858-1917)

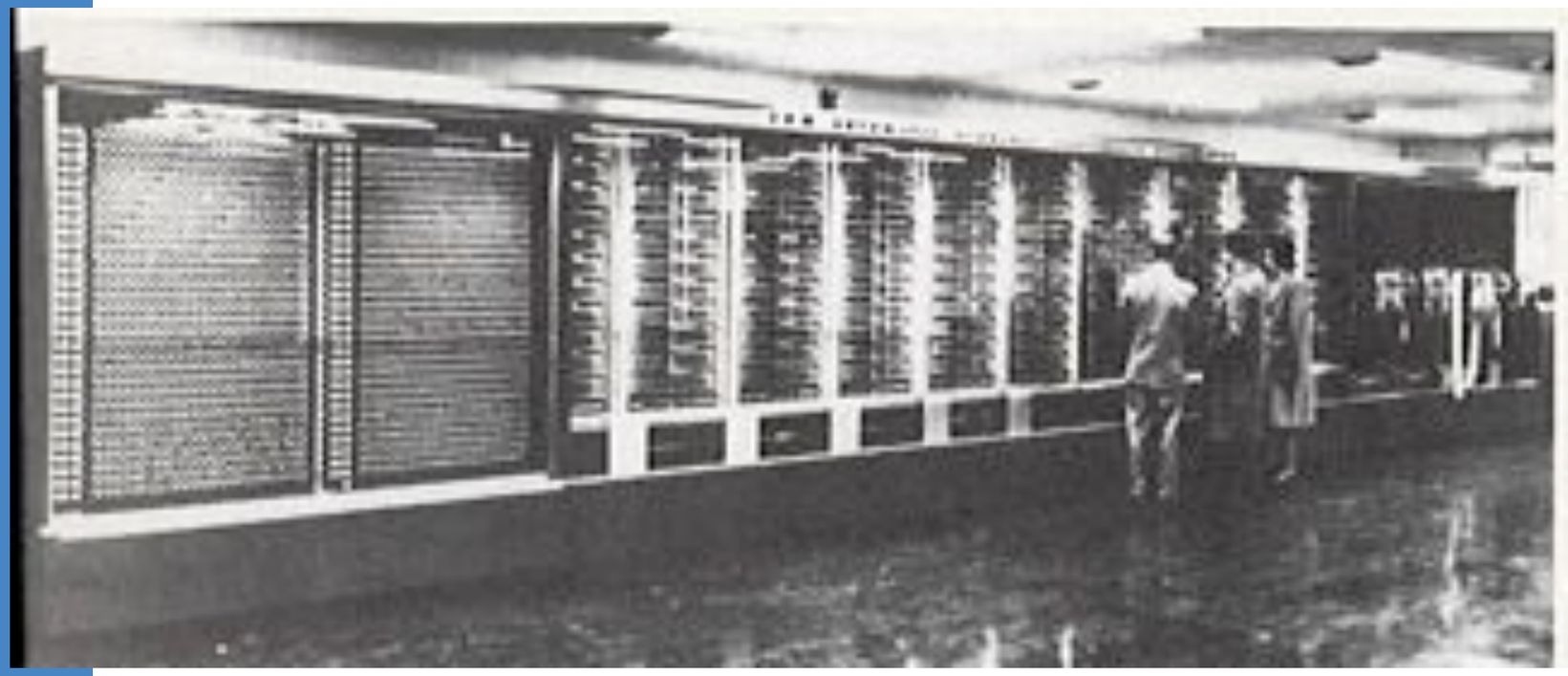
organic to mechanical solidarity

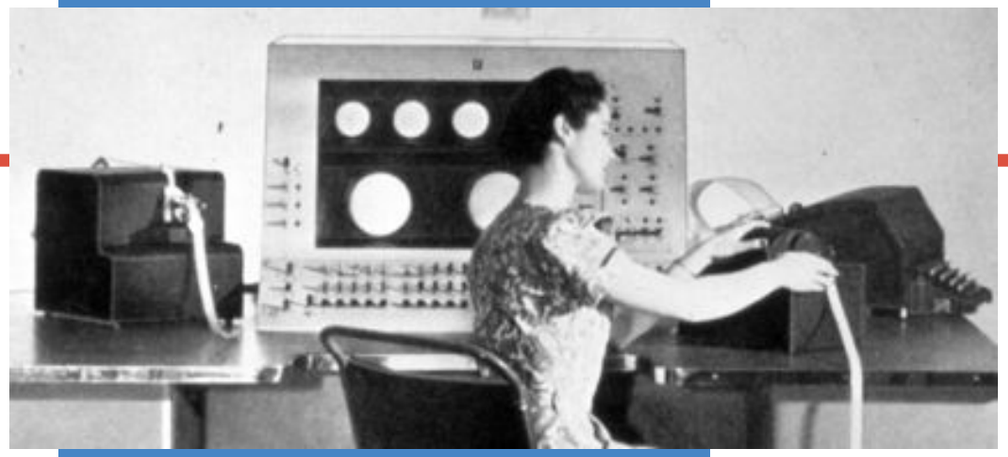
Weber (1864-1920)

rationality & the iron cage

in practice

Harvard mark I
aka IBM Automatic Sequence Controlled Calculator





Manchester Mark I

to **Ferranti Mark I**

back in business vertical integration

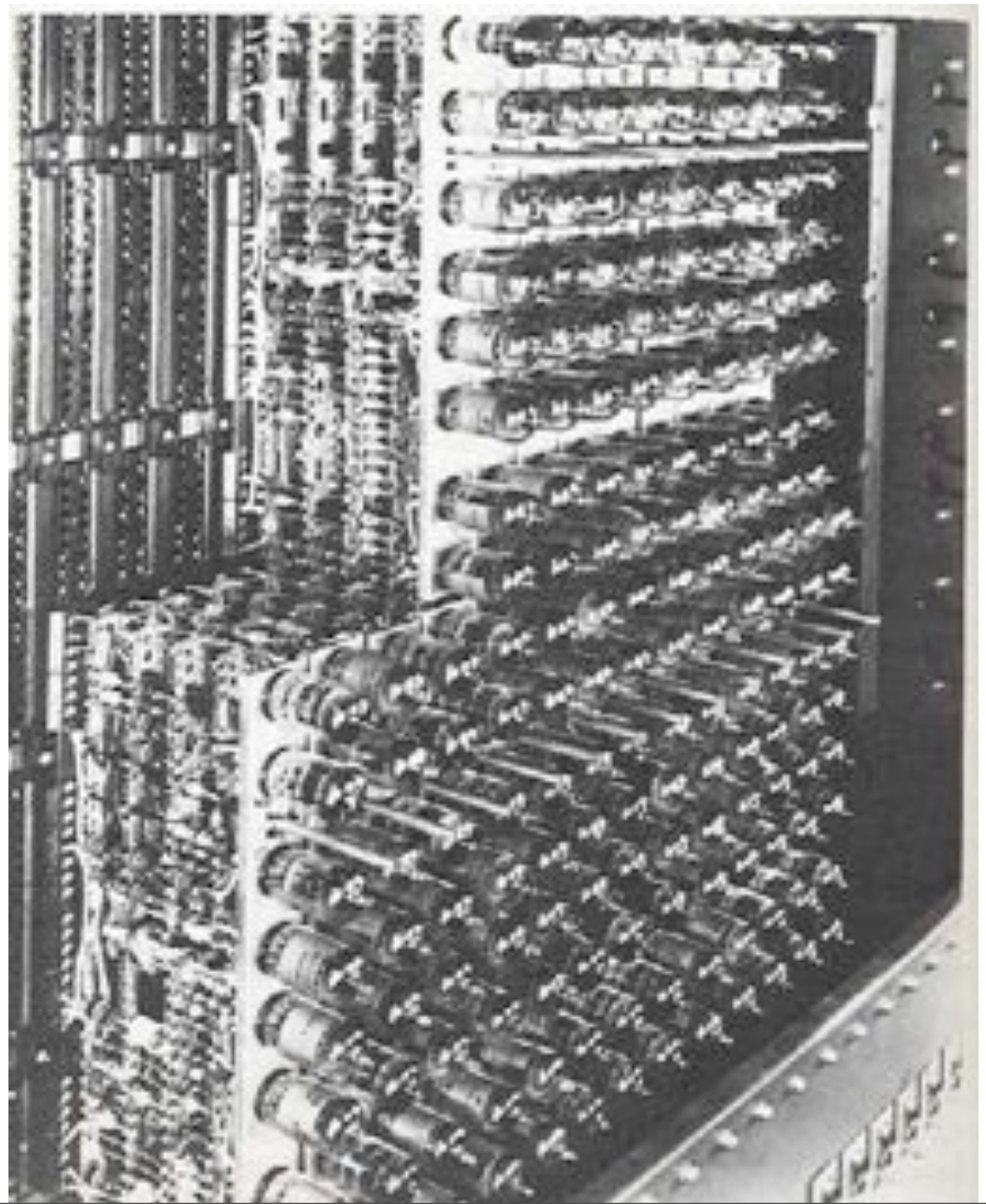
John Simmons
Lyons & Cambridge (1947)
ENIAC
EDVAC
UNIVAC
EDSAC

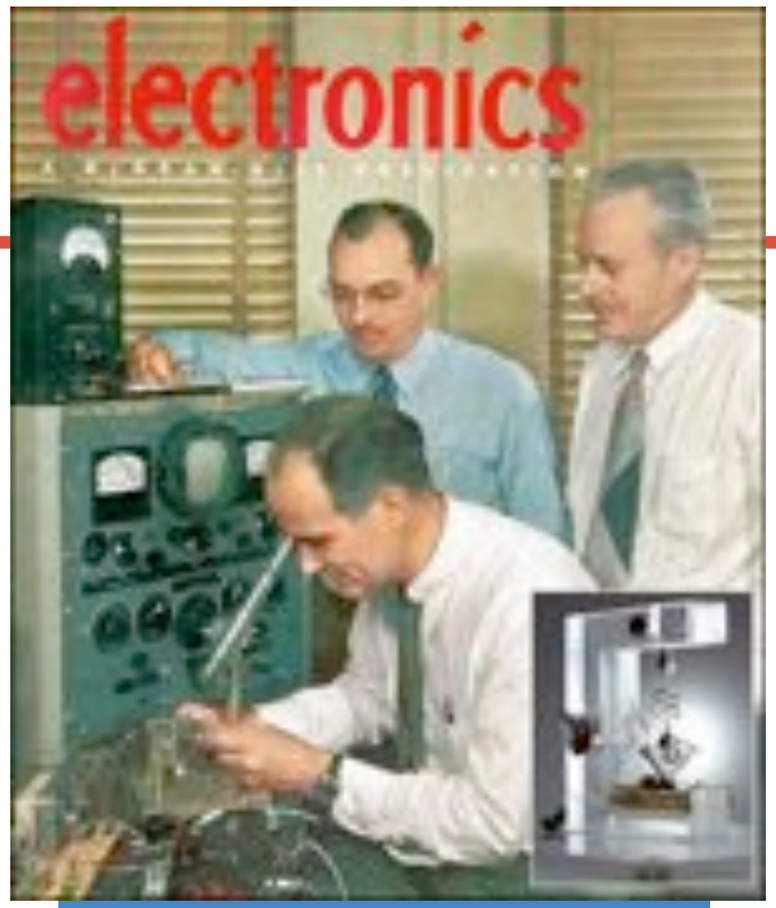
1954
LEO (Lyons electronic office)
CLEO (Clear language for expressing orders)
from payroll to baking

pros & cons?
LCL to ICL to IBM

breaking down

Cathode-ray tube memory, from the IBM 701 Defense Calculator, 1952





breaking things down

1947 transistor

Bell Labs

John Bardeen, William Brattain, William Shockley

1958 integrated circuit

Texas Instruments

Jack Kilby

Fairchild

Robert Noyce

Intel

Gordon Moore: Moore's Law

onward ...

Hardware

H. Edward Roberts, Creator of the Personal Computer, Dies

Jason Mick (Blog) • April 5, 2010 11:25 AM

Print E-mail del.icio.us listen now

10 comment(s) - last by **ggordonliddy..** on **Apr 5** at **10:46 PM**

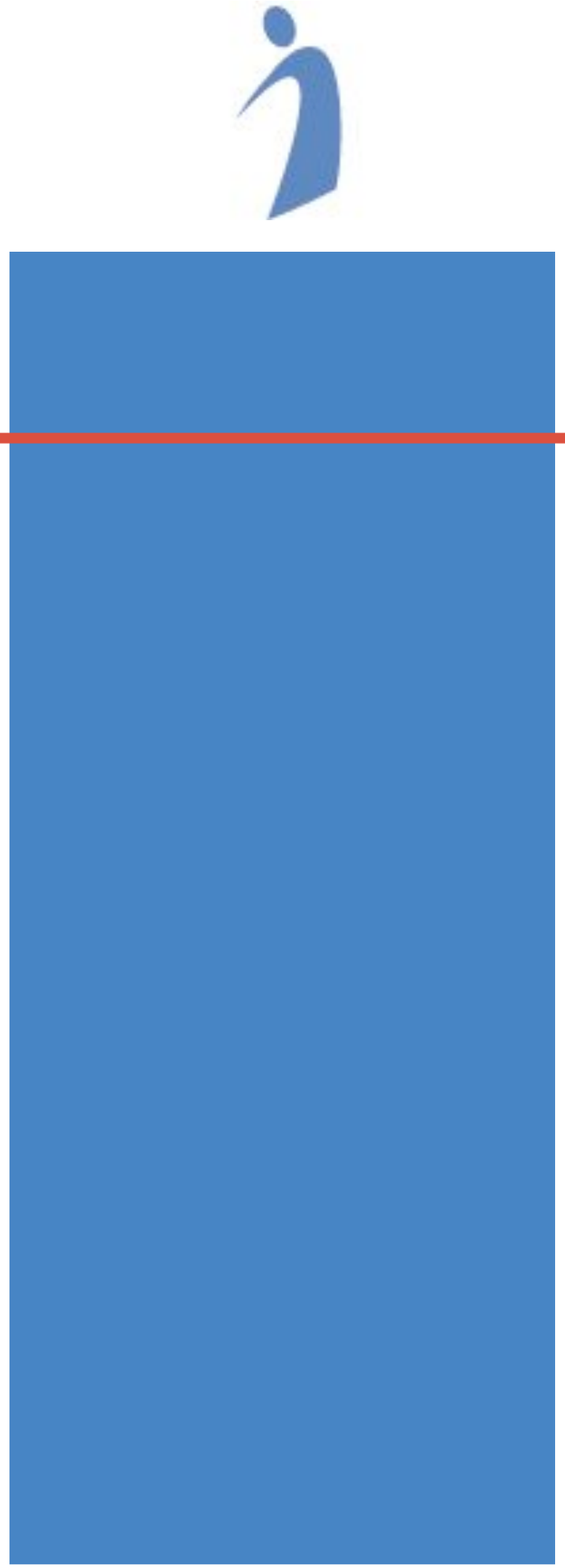
Roberts helped launch the career of Bill Gates and Microsoft, delivered the first consumer PC

H. Edward Roberts died this week at age 68. If you don't know the story of how Roberts helped launch the personal computing revolution, let us fill you in.

Back in 1970, Ed Roberts had just finished serving at the Air Force Weapons Laboratory designing circuits for missiles. Along with a close friend, Forrest M. Mims III, he decided to open a business from his garage selling build-it-yourself electronics kits to hobbyists.

The new company, MITS, sold its first product, the MITS 816 calculator, in 1971 for $175 ($275 assembled). The calculator was featured in publications such as *Popular Electronics* and proved a commercial hit. Several more models followed, and to keep up with demand MITS moved to a new building with an assembly line and commercial soldering equipment.

H. Edward Roberts, M.D., stands next to the first PC, the Altair 8800. (Source: ArsTechnica)



culture clash

home brew, fone freaks, 'open source'

Jobs
Wozniak
Gates
Allen

....

February 3, 1976

An Open Letter to Hobbyists

To me, the most critical thing in the hobby market right now is the lack of good software courses, books and software itself. Without good software and an owner who understands programming, a hobby computer is wasted. Will quality software be written for the hobby market?

Almost a year ago, Paul Allen and myself, expecting the hobby market to expand, hired Monte Davidoff and developed Altair BASIC. Though the initial work took only two months, the three of us have spent most of the last year documenting, improving and adding features to BASIC. Now we have 4K, 8K, EXTENDED, ROM and DISK BASIC. The value of the computer time we have used exceeds $40,000.

The feedback we have gotten from the hundreds of people who say they are using BASIC has all been positive. Two surprising things are apparent, however. 1) Most of these "users" never bought BASIC (less than 10% of all Altair owners have bought BASIC), and 2) The amount of royalties we have received from sales to hobbyists makes the time spent of Altair BASIC worth less than $2 an hour.

Why is this? As the majority of hobbyists must be aware, most of you steal your software. Hardware must be paid for, but software is something to share. Who cares if the people who worked on it get paid?

Is this fair? One thing you don't do by stealing software is get back at MITS for some problem you may have had. MITS doesn't make money selling software. The royalty paid to us, the manual, the tape and the overhead make it a break-even operation. One thing you do do is prevent good software from being written. Who can afford to do professional work for nothing? What hobbyist can put 3-man years into programming, finding all bugs, documenting his product and distribute for free? The fact is, no one besides us has invested a lot of money in hobby software. We have written 6800 BASIC, and are writing 8080 APL and 6800 APL, but there is very little incentive to make this software available to hobbyists. Most directly, the thing you do is theft.

What about the guys who re-sell Altair BASIC, aren't they making money on hobby software? Yes, but those who have been reported to us may lose in the end. They are the ones who give hobbyists a bad name, and should be kicked out of any club meeting they show up at.

I would appreciate letters from any one who wants to pay up, or has a suggestion or comment. Just write me at 1180 Alvarado SE, #114, Albuquerque, New Mexico, 87108. Nothing would please me more than being able to hire ten programmers and deluge the hobby market with good software.

Bill Gates

Bill Gates
General Partner, Micro-Soft

culture clash

w, fone freaks, 'open source'

Jobs
Wozniak
Gates
Allen

....

culture clash

w, fone freaks, 'open source'

Jobs
Wozniak

February 3, 1976

An Open Letter to Hobbyists

To me, the most critical thing in the hobby market right now is the lack of good software courses, books and software itself. Without good software and an owner who understands programming, a hobby computer is wasted. Will quality software be written for the hobby market?

Almost a year ago, Paul Allen and myself, expecting the hobby market to expand, hired Monte Davidoff and developed Altair BASIC. Though the initial work took only two months, the three of us have spent most of the last year documenting, improving and adding features to BASIC. Now we have 4K, 8K, EXTENDED, ROM and DISK BASIC. The value of the computer time we have used exceeds $40,000.

The feedback we have gotten from the hundreds of people who say they are using BASIC has all been positive. Two surprising things are apparent, however. 1) Most of these "users" never bought BASIC (less than 10% of all Altair owners have bought BASIC), and 2) The amount of royalties we have received from sales to hobbyists makes the time spent of Altair BASIC worth less than $2 an hour.

Why is this? As the majority of hobbyists must be aware, most of you steal your software. Hardware must be paid for, but software is something to share. Who cares if the people who worked it get paid?

Is this fair? One thing you don't do by stealing software get back at MITS for some problem you may have had. MITS doesn' make money selling software. The royalty paid to us, the manual the tape and the overhead make it a break-even operation. One t you do do is prevent good software from being written. Who can ford to do professional work for nothing? What hobbyist can put 3-man years into programming, finding all bugs, documenting his duct and distribute for free? The fact is, no one besides us h invested a lot of money in hobby software. We have written 6800 BASIC, and are writing 8080 APL and 6800 APL, but there is very tle incentive to make this software available to hobbyists. Ma directly, the thing you do is theft.

What about the guys who re-sell Altair BASIC, aren't they m ing money on hobby software? Yes, but those who have been repu to us may lose in the end. They are the ones who give hobbyist bad name, and should be kicked out of any club meeting they sto at.

I would appreciate letters from any one who wants to pay u has a suggestion or comment. Just write me at 1180 Alvarado SE Albuquerque, New Mexico, 87108. Nothing would please me more t being able to hire ten programmers and deluge the hobby market good software.

Bill Gates

Bill Gates
General Partner, Micro-Soft

breaking down

1946 SRI

1969 Xerox PARC

"the architecture of information"
WYSIWYG, GUI, OOP

1973 Alto

1976 Apple I

1981 IBM PC

1983 Lisa

1984 Macintosh

programming to programs

Charles Simonyi
Xerox PARC

Dan Briklin &
Bob Frankston
HBS

Bravo, 1974

Visicalc, 1978

Lotus 1-2-3, 1983

Excel (for Mac), 1984

Ken Thompson
Dennis Ritchie
Bell Labs

unix

Thompson, Ritchie, & AT&T

1965: AT&T, MIT& GE work on multics

1969: multics to unix

"What we wanted to preserve was not just a good environment in which to do programming, but a system around which a fellowship could form. We knew from experience that the essence of communal computing, as supplied by remote-access, time-shared machines, is not just to type programs into a terminal instead of a keypunch, but to encourage close communication."
--Ritche, "Evolution of the Unix Time-Sharing System"

unix at ucb

Bill Joy
UCB

1973: Thompson at Berkeley

Bill Joy develops em editor

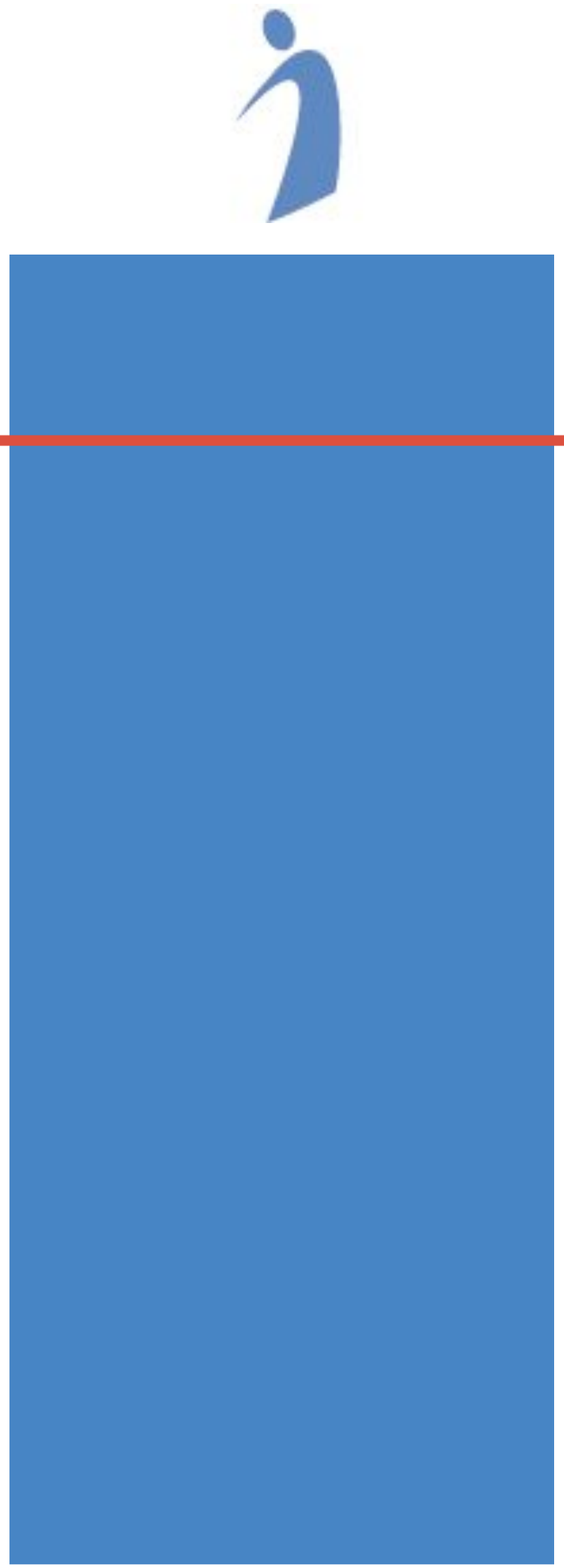
1977: 1BSD released

1979: 3BSD (for Vax)

1981: 4.1BSD

1983: 4.2 BSD (with tcp/ip stack)

1-800-ITS-UNIX



SO ...

1991: Networking release 2; 386 BSD

1992: AT&T sues UCB

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

UNIX SYSTEM LABORATORIES, INC.

Plaintiff,

vs.

BERKELEY SOFTWARE DESIGN, INC., and certain named individuals in their collective capacity as The Regents of the University of California,

Defendants.

Civ. No. 92-1667
O P I N I O N

settlement

1994 settlement: USL, UCB, Novell

SETTLEMENT AGREEMENT

This Settlement Agreement is entered into between UNIX System Laboratories, Inc. ("USL"), a Delaware corporation, and The Regents of the University of California (the "University"), a California corporation.

Recitals

1. USL contends it is the owner of the intellectual property rights in portions of certain computer operating system software (the "UNIX System").

2. USL and USL's predecessor in interest, the American Telephone and Telegraph Co. ("AT&T"), have licensed the University to use certain versions of UNIX® system software,

meanwhile in Helsinki...

From: torvalds@klaava.Helsinki.FI (Linus Benedict Torvalds)
Newsgroups: comp.os.minix
Subject: What would you like to see most in minix?
Summary: small poll for my new operating system
Message-ID:
Date: 25 Aug 91 20:57:08 GMT
Organization: University of Helsinki

Hello everybody out there using minix -

I'm doing a (free) operating system (just a hobby, won't be big and professional like gnu) for 386(486) AT clones. This has been brewing since april, and is starting to get ready. I'd like any feedback on things people like/dislike in minix, as my OS resembles it somewhat (same physical layout of the file-system (due to practical reasons) among other things).

I've currently ported bash(1.08) and gcc(1.40), and things seem to work. This implies that I'll get something practical within a few months, and I'd like to know what features most people would want. Any suggestions are welcome, but I won't promise I'll implement them :-)

Linus (torvalds@kruuna.helsinki.fi)

PS. Yes - it's free of any minix code, and it has a multi-threaded fs. It is NOT protable (uses 386 task switching etc), and it probably never will support anything other than AT-harddisks, as that's all I have :-(.

vertical disintegration 1970-1990

Software	IBM
OS	IBM
CPU	IBM
Hardware	IBM

the business machine

"no one ever lost their job for buying IBM"

vertical disintegration 1970-1990

Software	IBM	DEC
OS	IBM	DEC
CPU	IBM	DEC
Hardware	IBM	DEC

the business machine

"no one ever lost their job for buying IBM"

vertical disintegration 1970-1990

Software	IBM	DEC	3d party
OS	IBM	DEC	Apple
CPU	IBM	DEC	Apple
Hardware	IBM	DEC	Apple

the business machine

"no one ever lost their job for buying IBM"

vertical disintegration 1970-1990

Software	IBM	DEC	3d party	3d party
OS	IBM	DEC	Apple	AT&T-Unix
CPU	IBM	DEC	Apple	Sun
Hardware	IBM	DEC	Apple	Sun

the business machine

"no one ever lost their job for buying IBM"

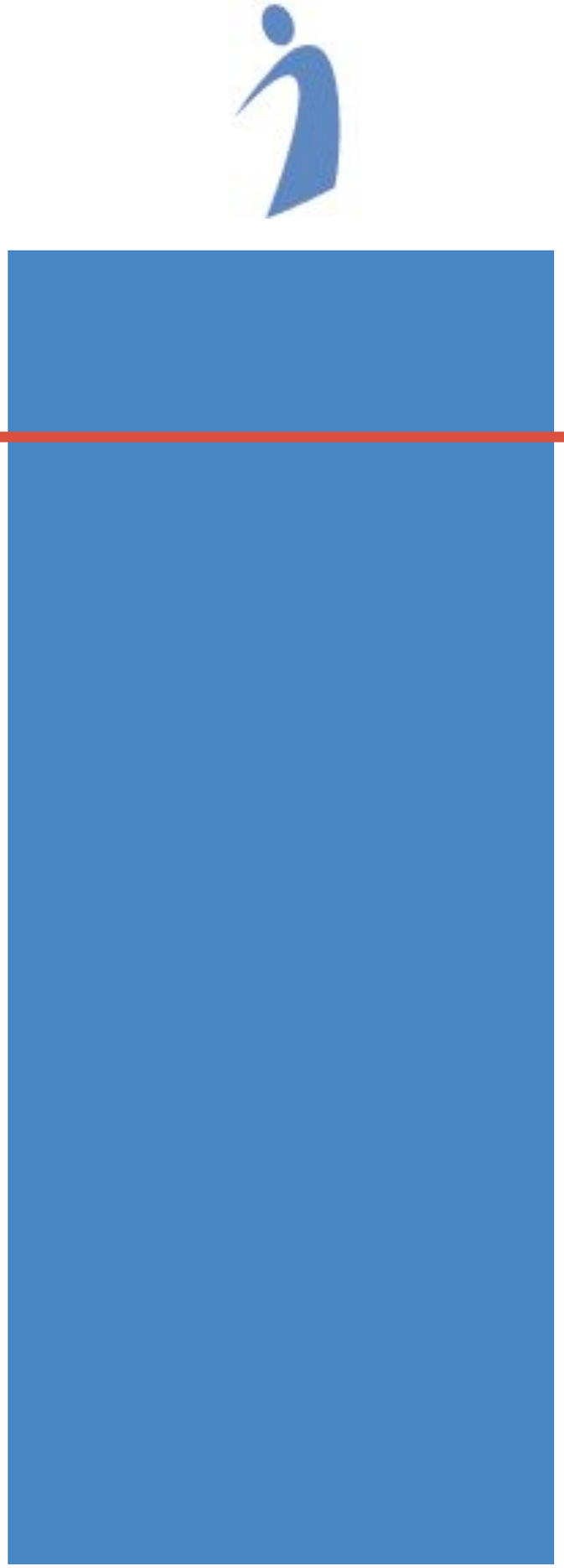
vertical disintegration 1970-1990

Software	IBM	DEC	3d party	3d party	3d party
OS	IBM	DEC	Apple	AT&T-Unix	Microsoft
CPU	IBM	DEC	Apple	Sun	Intel & co
Hardware	IBM	DEC	Apple	Sun	[IBM]/OEM

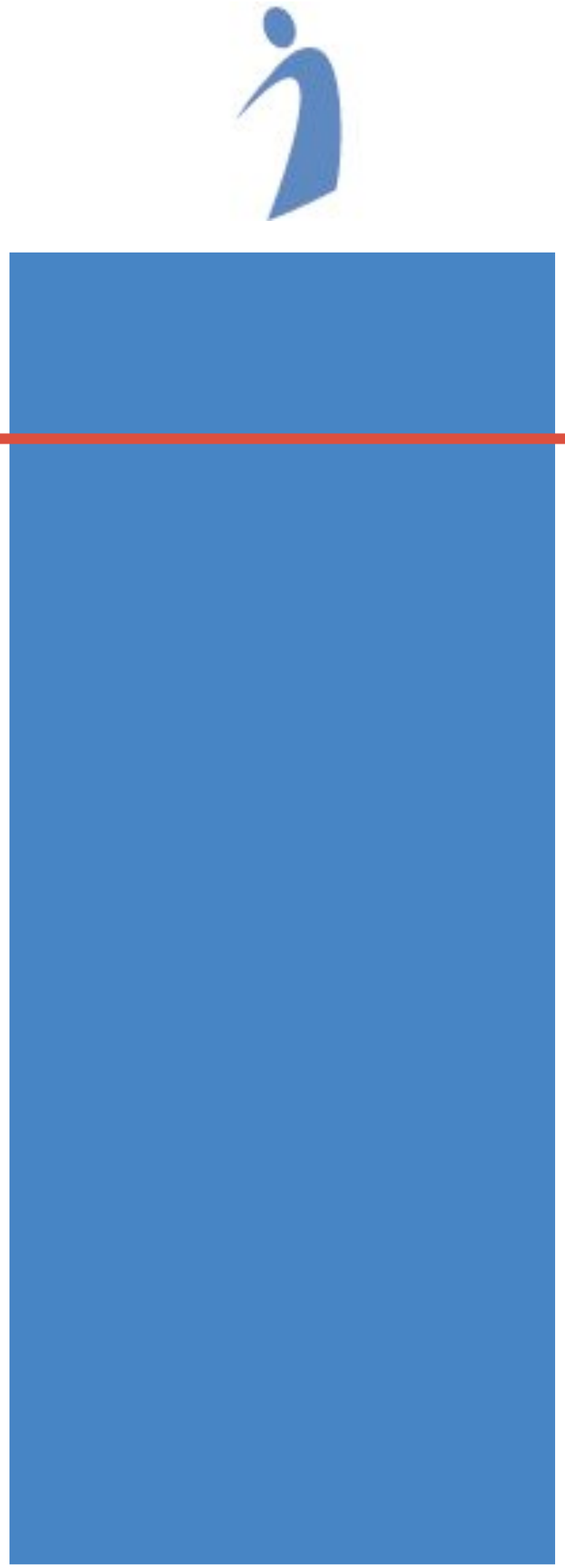
the business machine

"no one ever lost their job for buying IBM"

brand wars

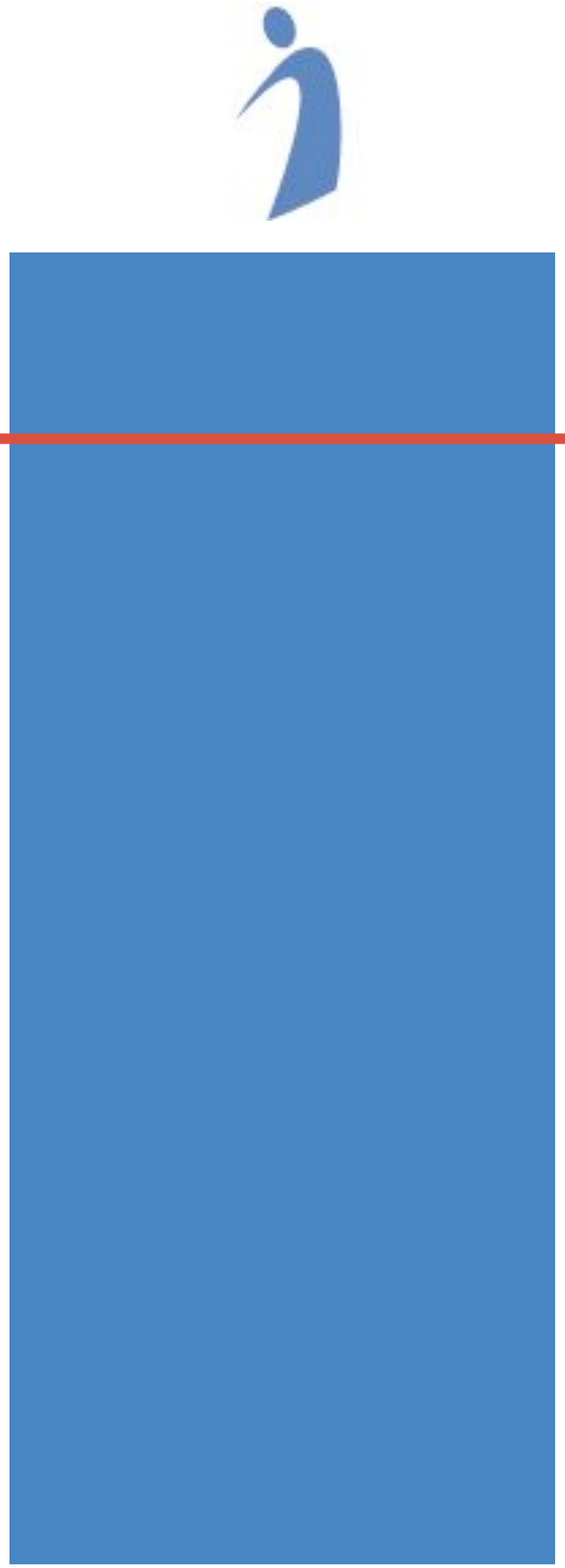


computer power



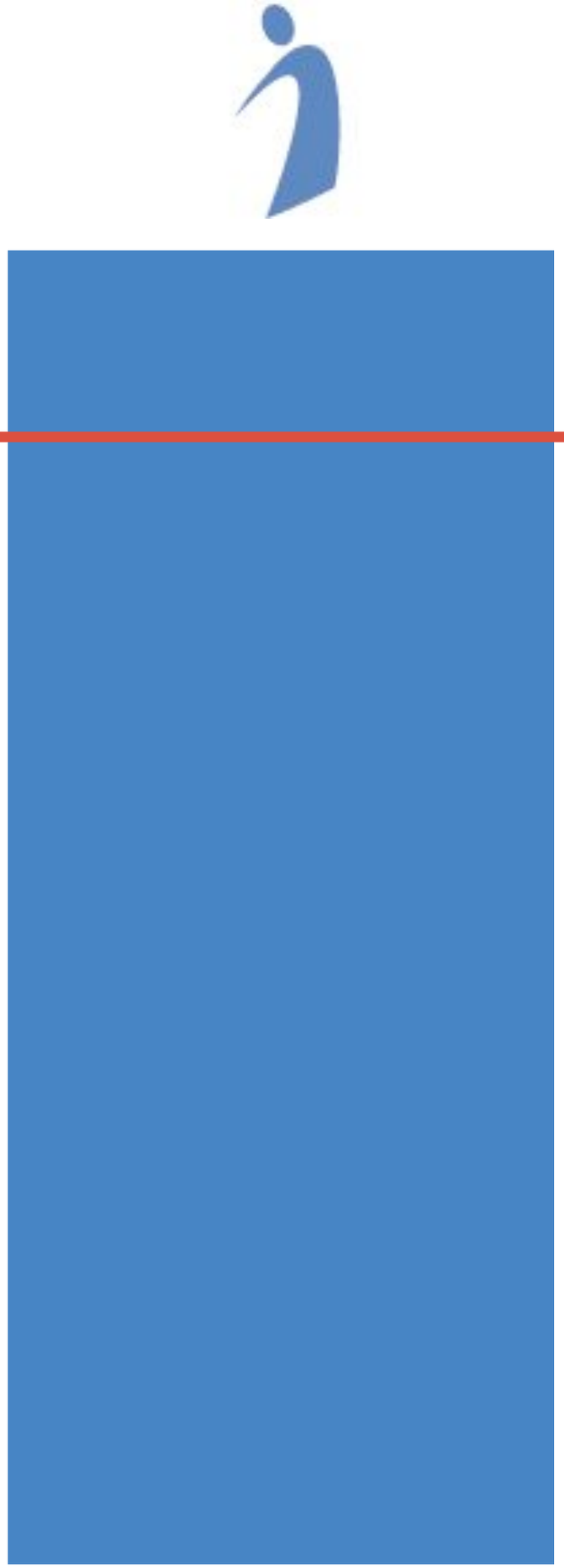
computer power

computer?



computer power

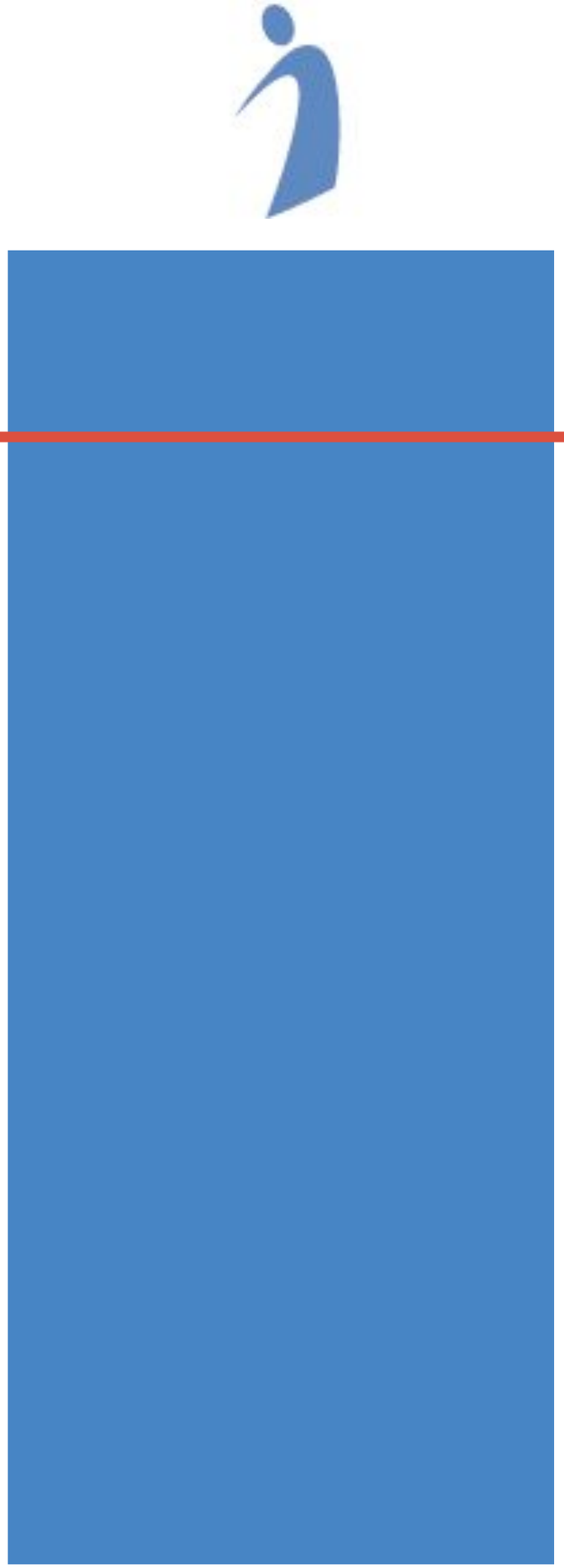
computer?



computer power

computer?

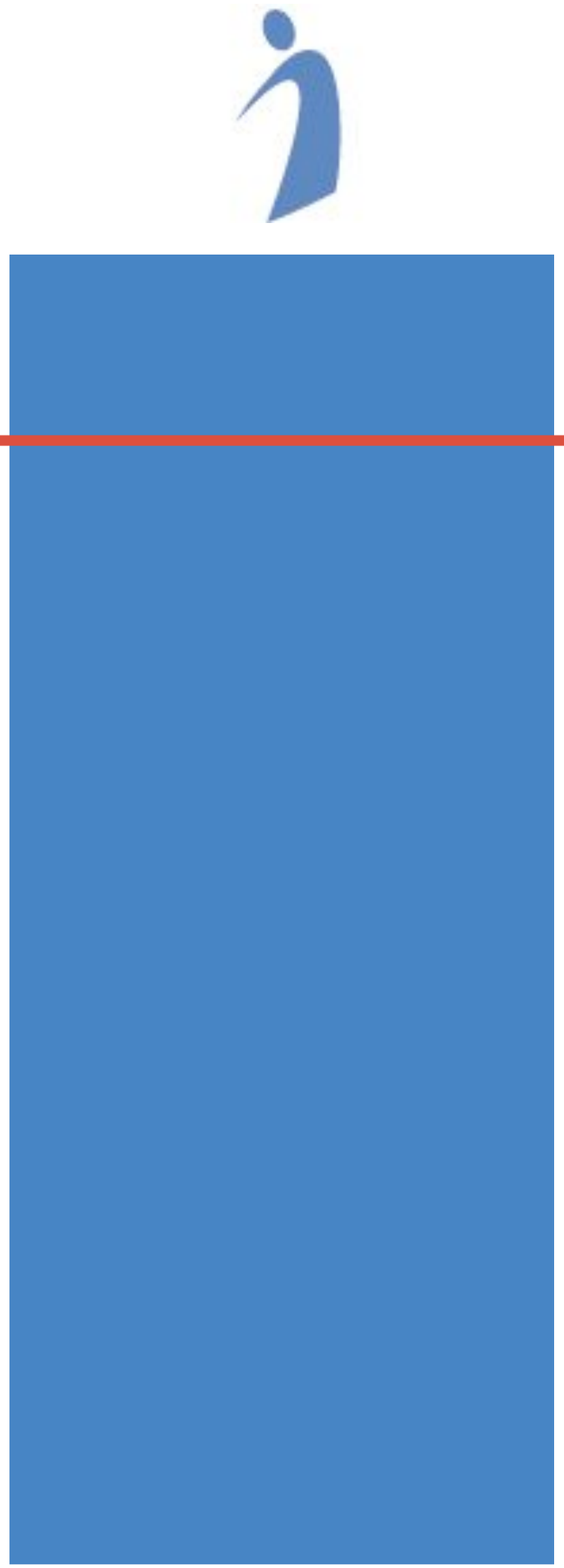
OS?



computer power

computer?

OS?

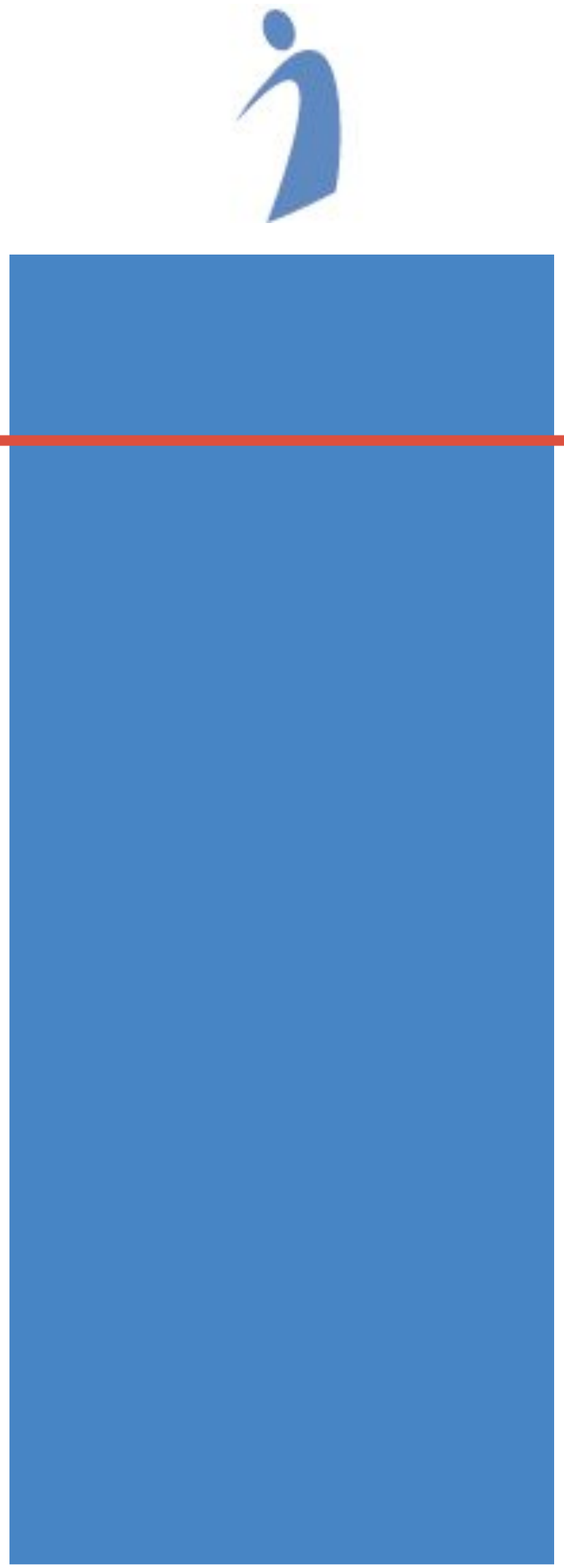


computer power

computer?

OS?

processor?

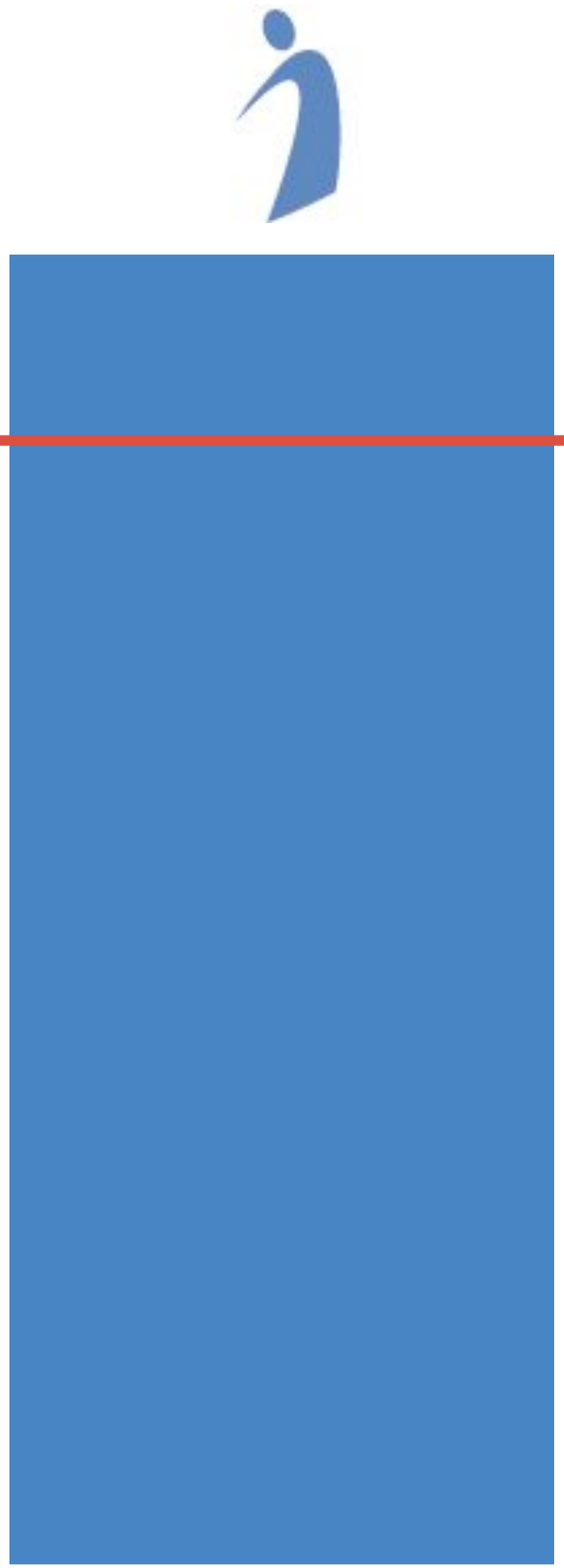


computer power

computer?

OS?

processor?



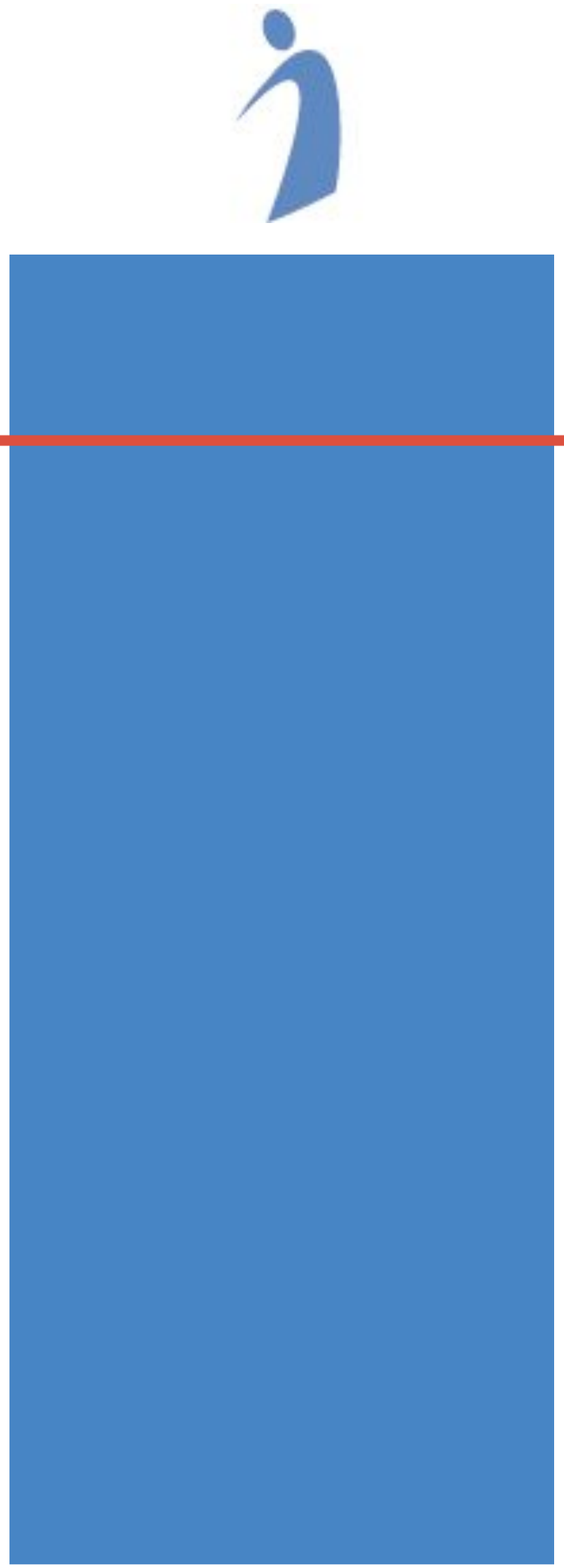
computer power

computer?

OS?

processor?

hard drive?



computer power

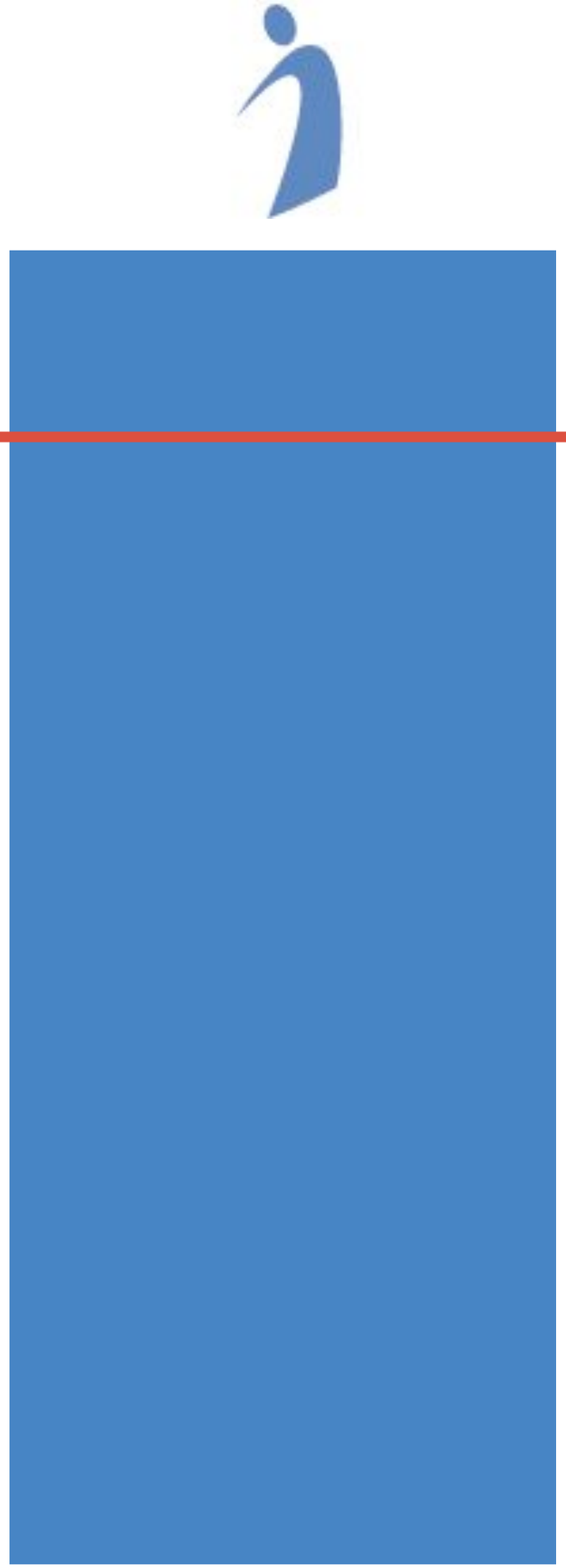
computer?

OS?

processor?

hard drive?

2000
6 hard drive companies



computer power

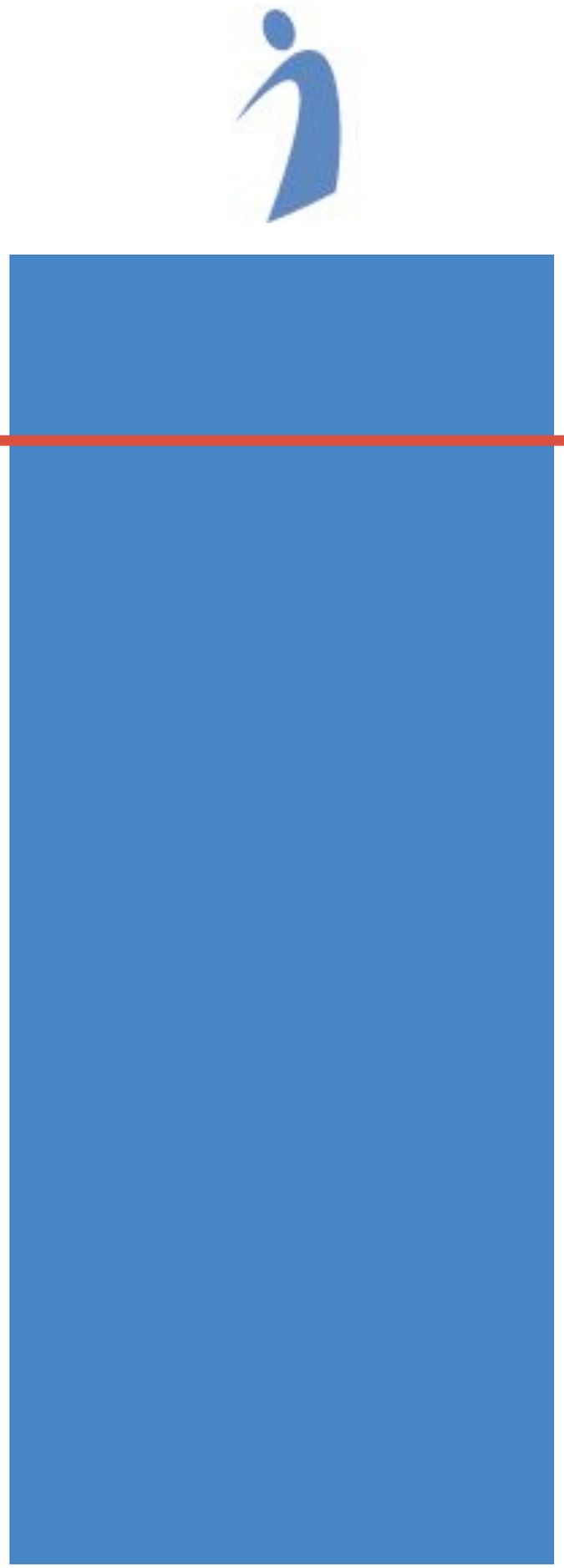
computer?

OS?

processor?

hard drive?

2000
6 hard drive companies
196 million disks



computer power

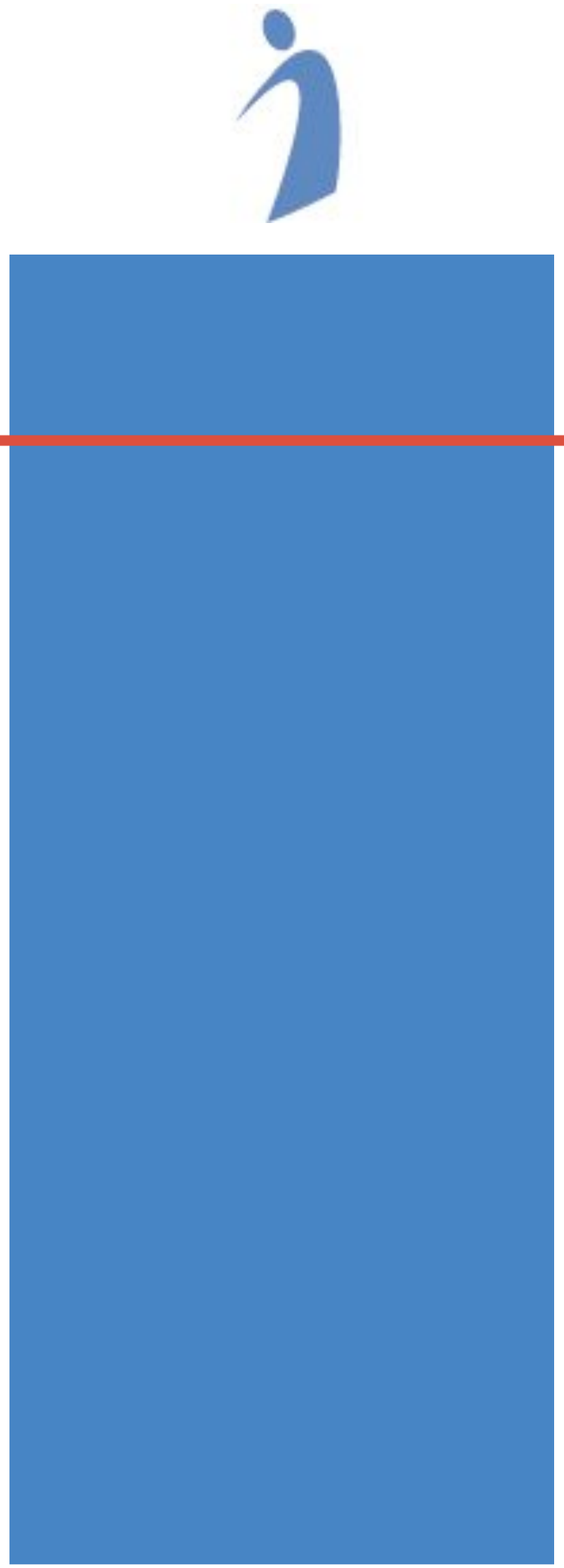
computer?

OS?

processor?

hard drive?

2000
6 hard drive companies
196 million disks
0 profit



computer power

computer?

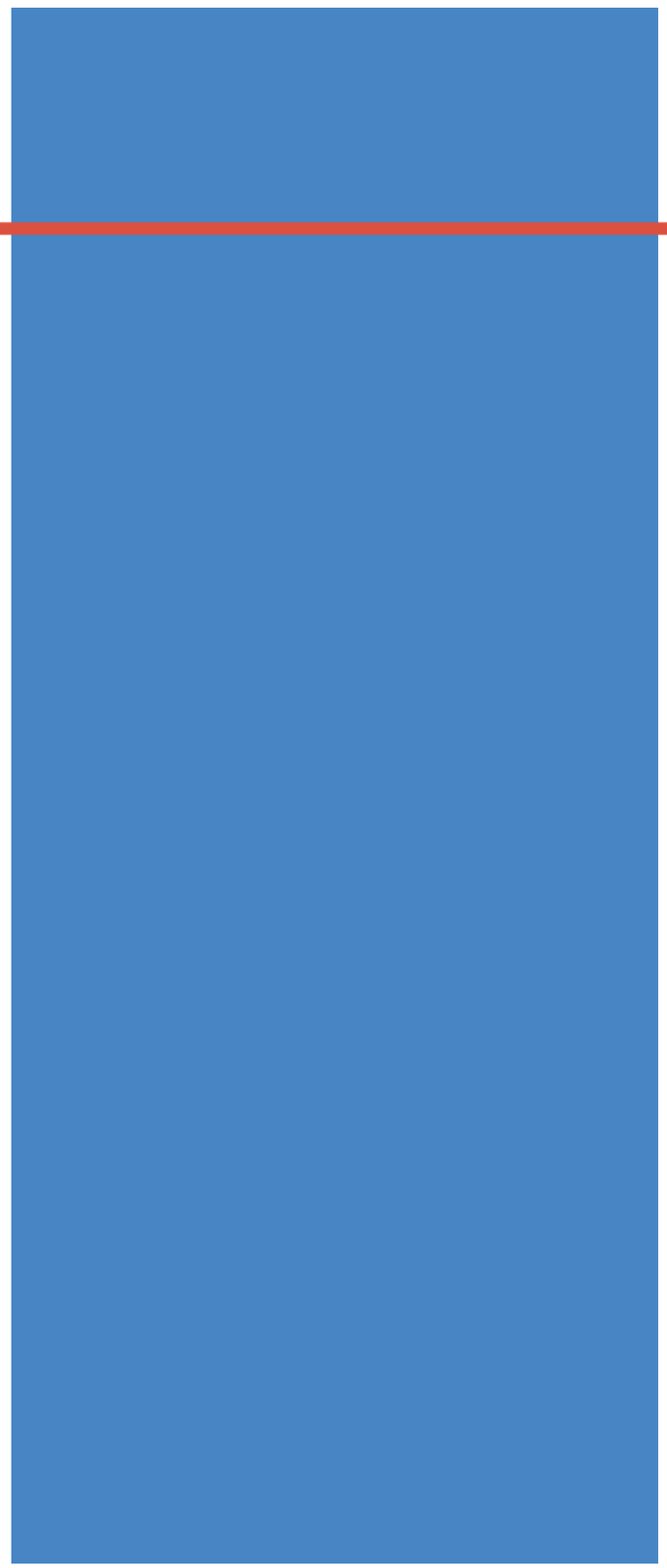
OS?

processor?

hard drive?

2000
6 hard drive companies
196 million disks
0 profit

Dell: 7%



computer power

computer?

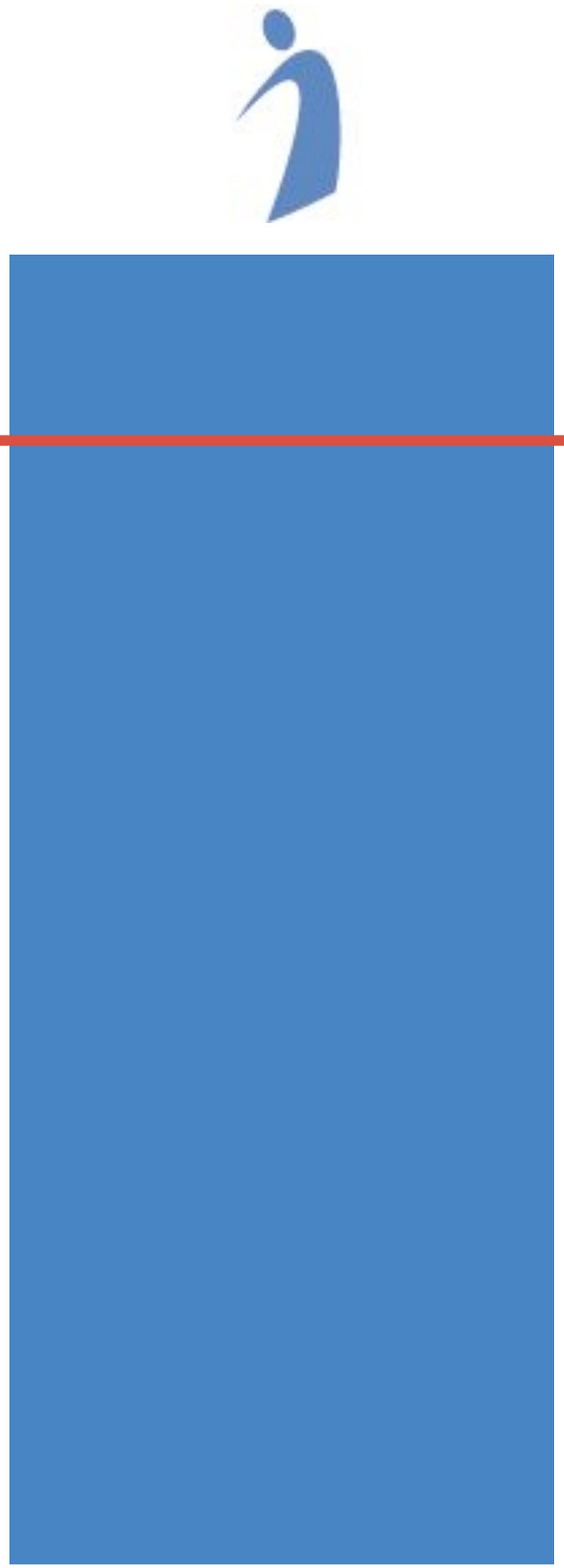
OS?

processor?

hard drive?

2000
6 hard drive companies
196 million disks
0 profit

Dell: 7%
Microsoft: 31%



computer power

computer?

OS?

processor?

hard drive?

2000
6 hard drive companies
196 million disks
0 profit

Dell: 7%
Microsoft: 31%
Intel: 13%

the story so far

registering

predicting

calculating

controlling

communicating

and

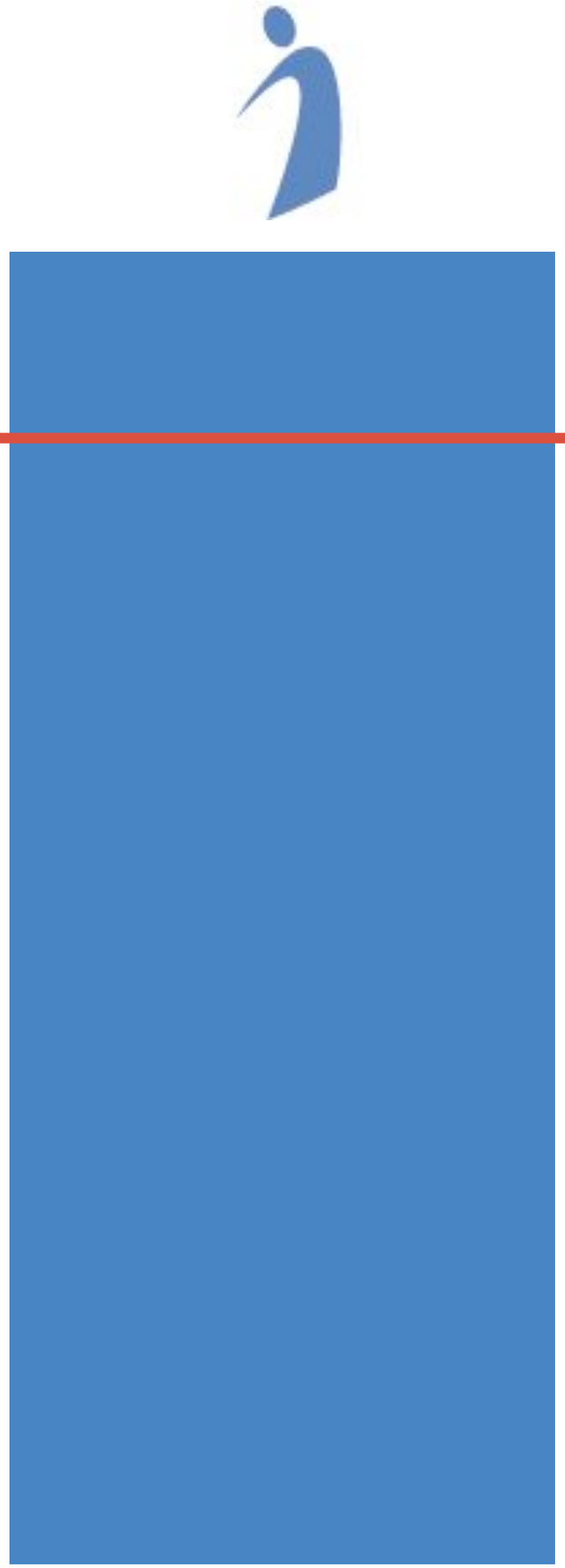
reconnecting

communicating

intra-machine
time-sharing

different machines
computer to printer
[Scheutz's differential engine]
[Gold & Stock telegraph Co]
[the stock ticker]

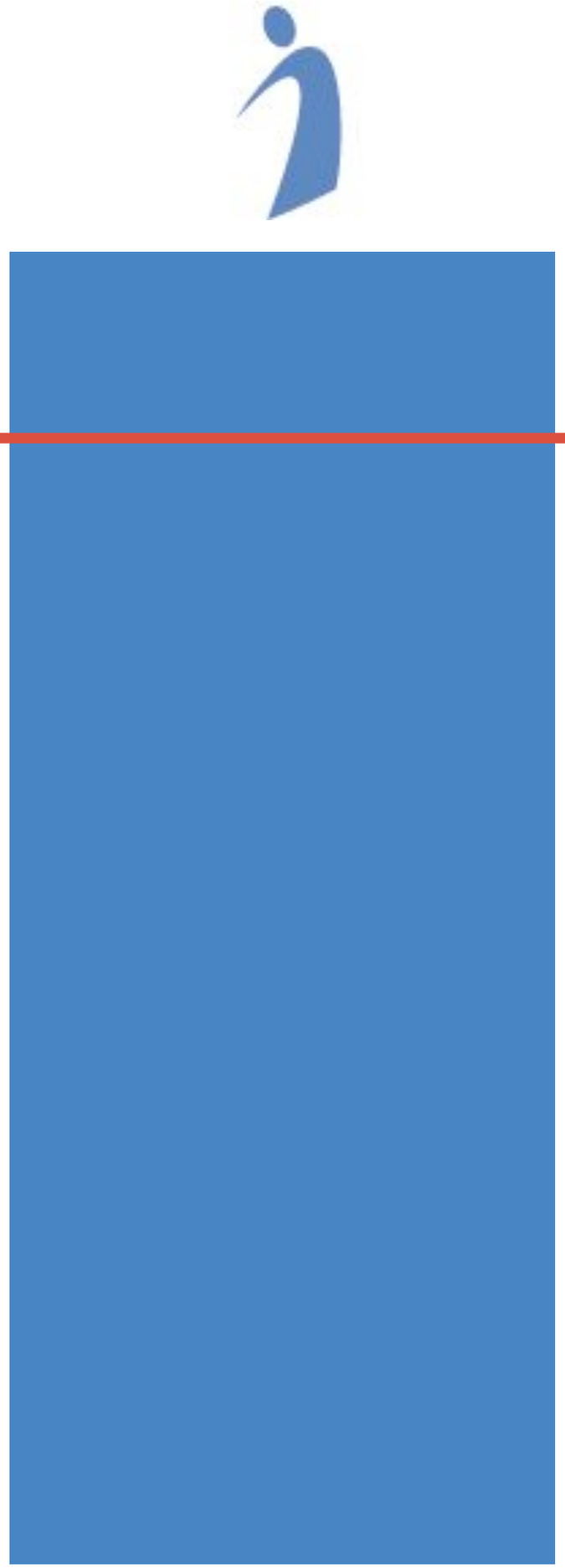
arpanet (coming up)
to ethernet to printer
Bob Metcalfe



the internet

the big question:

has the internet changed the world?

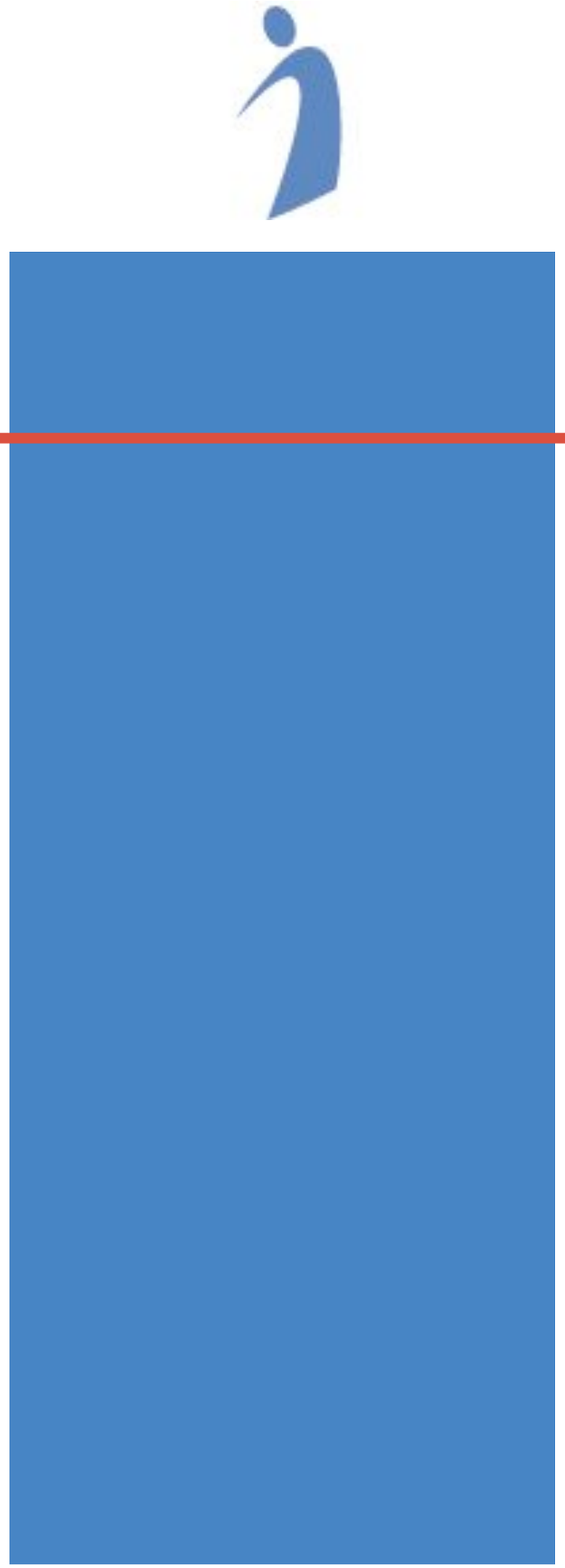


the internet

the big question:

has the internet changed the world?

Technology | **Applications** | **Media** | **Genres**



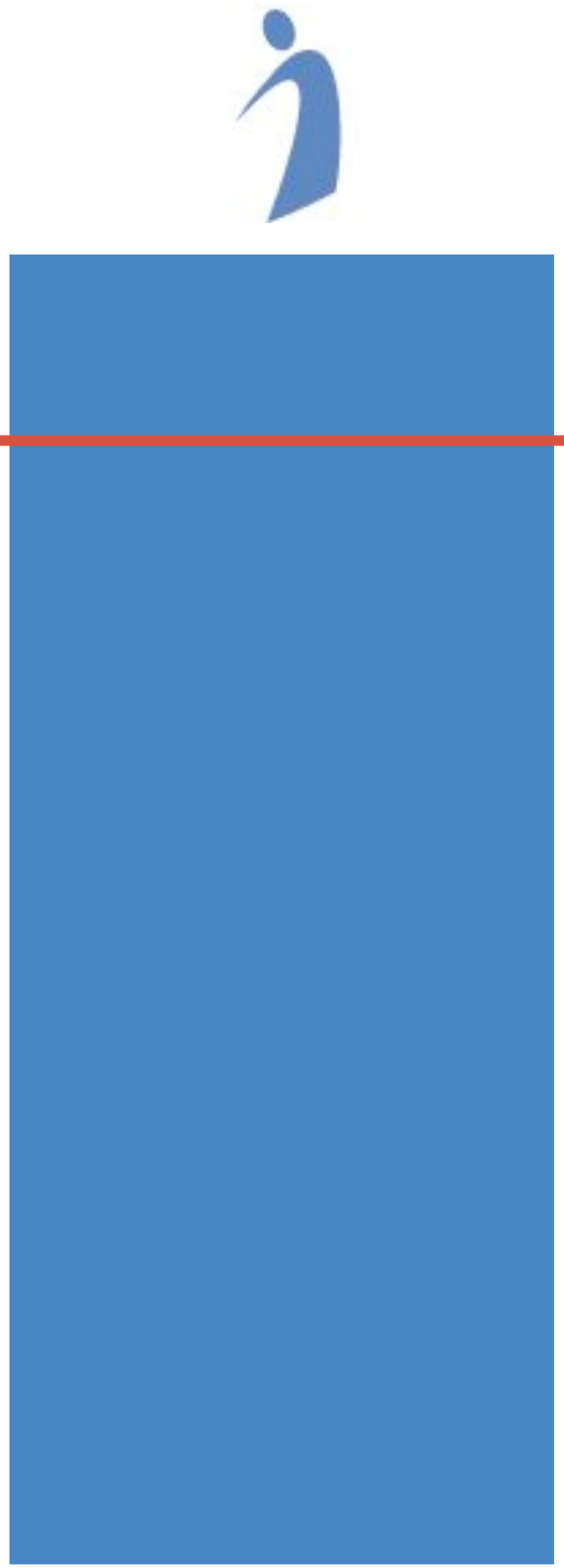
the internet

the big question:

has the internet changed the world?

Technology | **Applications** | **Media** | **Genres**

a technology?



the internet

the big question:

has the internet changed the world?

Technology	Applications	Media	Genres

a technology?

a network?

the internet

the big question:

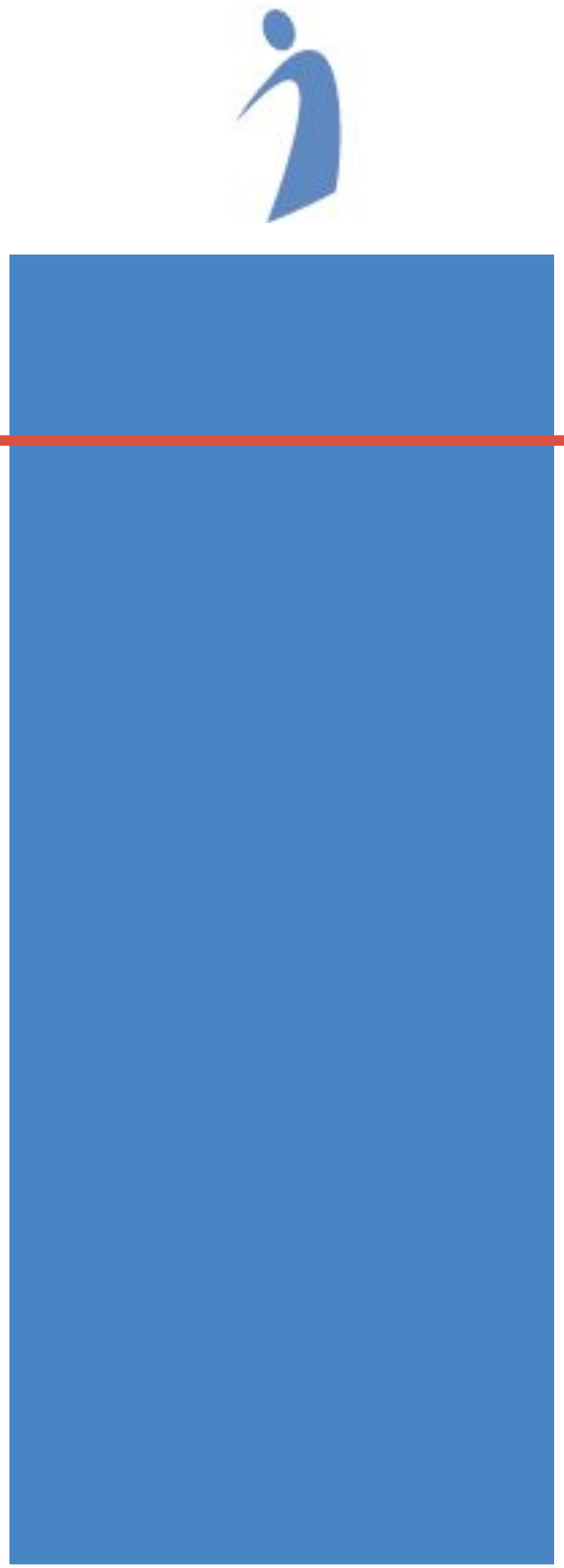
has the internet changed the world?

Technology	Applications	Media	Genres

a technology?

a network?

a set of applications?



the internet

the big question:

has the internet changed the world?

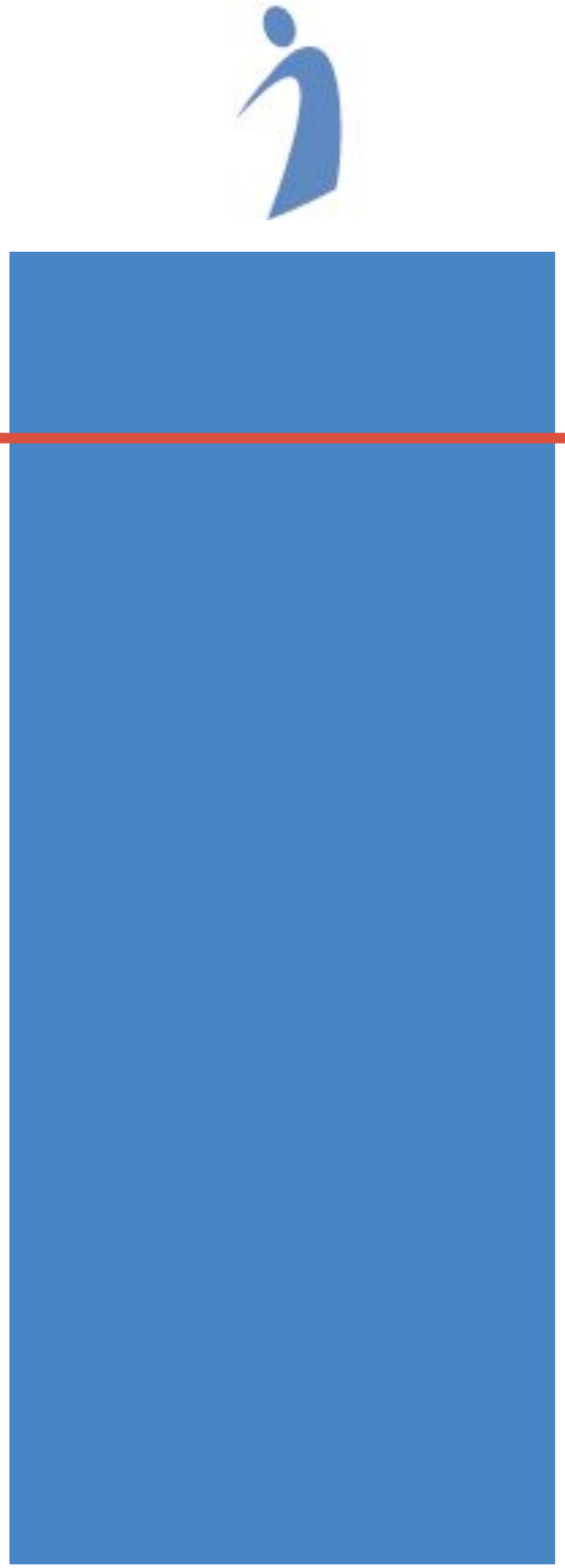
Technology **Applications** **Media** **Genres**

a technology?

a network?

a set of applications?

a communications channel?



the internet

the big question:

has the internet changed the world?

Technology	Applications	Media	Genres

a technology?

a network?

a set of applications?

a communications channel?

media?

the internet

the big question:

has the internet changed the world?

Technology	Applications	Media	Genres

a technology?

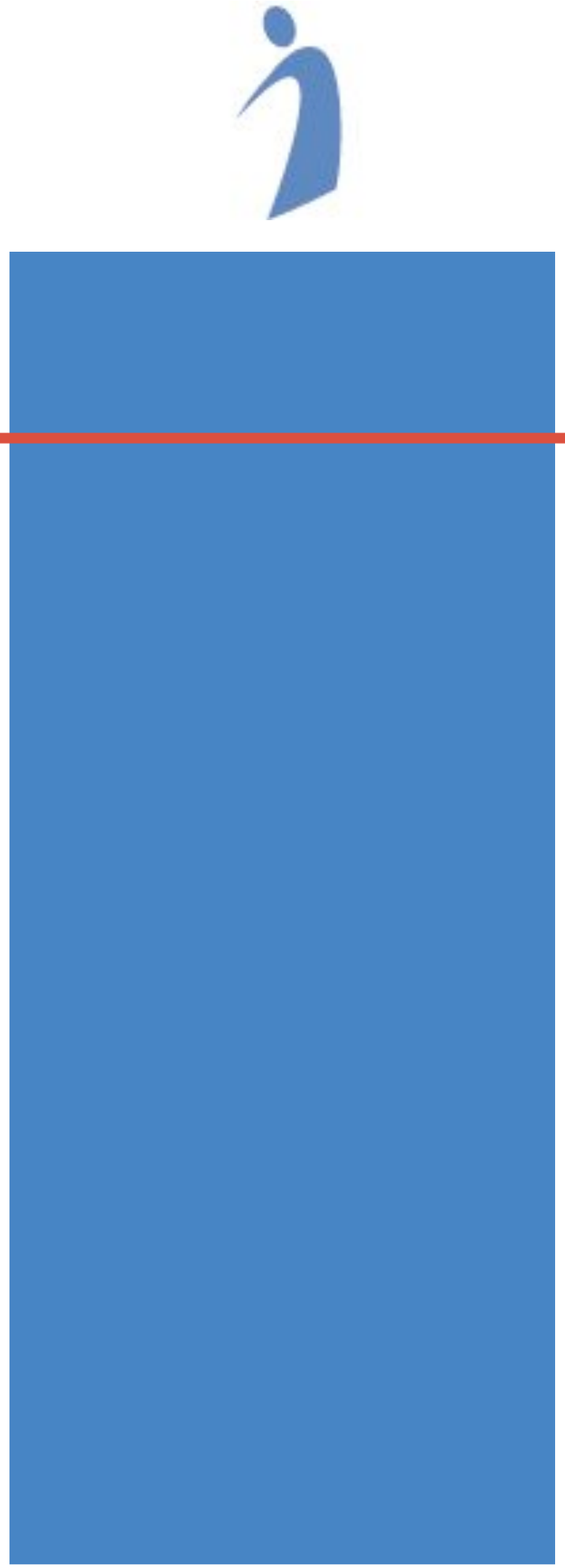
a network?

a set of applications?

a communications channel?

media?

a place?



the internet

the big question:

has the internet changed the world?

Technology	Applications	Media	Genres

a technology?

a network?

a set of applications?

a communications channel?

media?

a place?

"one vast unintended consequence"

technology & network

Rand, NPL

1963 Baron; Davies, packet switching

1968, Larry Roberts,

Resource Sharing Computer Networks

"Just as time-shared computer systems have permitted groups of hundreds of individual users to share hardware and software resources with one another, networks connecting dozens of such systems will permit resource sharing between thousands of users."

1969 ARPANET

technology & network

Rand, NPL

1963 Baron; Davies, packet switching

- Numerical computation at various levels of generality
- Editing and typesetting of text
- Design services and problem oriented languages
- Availability of goods for sale
- Ordering of goods
- Invoicing, delivery notes, etc.
- Booking of transport
- Banking, establishing credit
- Remote access to national records, e.g. MPNI, tax, police, medical, on a secure basis
- Betting

1969 ARPANET

technology & network

Rand, NPL

1963 Baron; Davies, packet switching

- Numerical computation at various levels of generality
- Editing and typesetting of text
- Design services and problem oriented languages
- Availability of goods for sale
- Ordering of goods
- Invoicing, delivery notes, etc.
- Booking of transport
- Banking, establishing credit
- Remote access to national records, e.g. MPNI, tax, police, medical, on a secure basis
- Betting

Donald Davies, 1965

1969 ARPANET

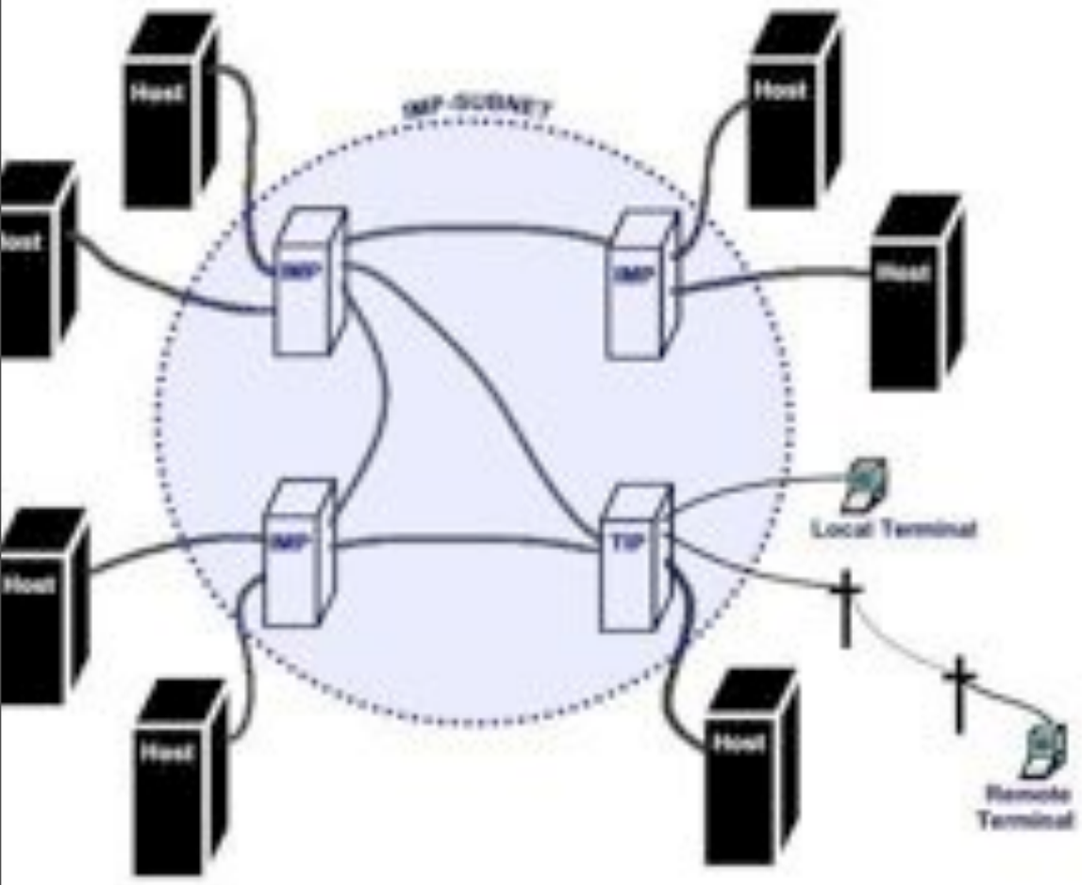
network of networks

1969 SRI, BBN & the
Interface Message Processor (IMP)

UCLA's IMP

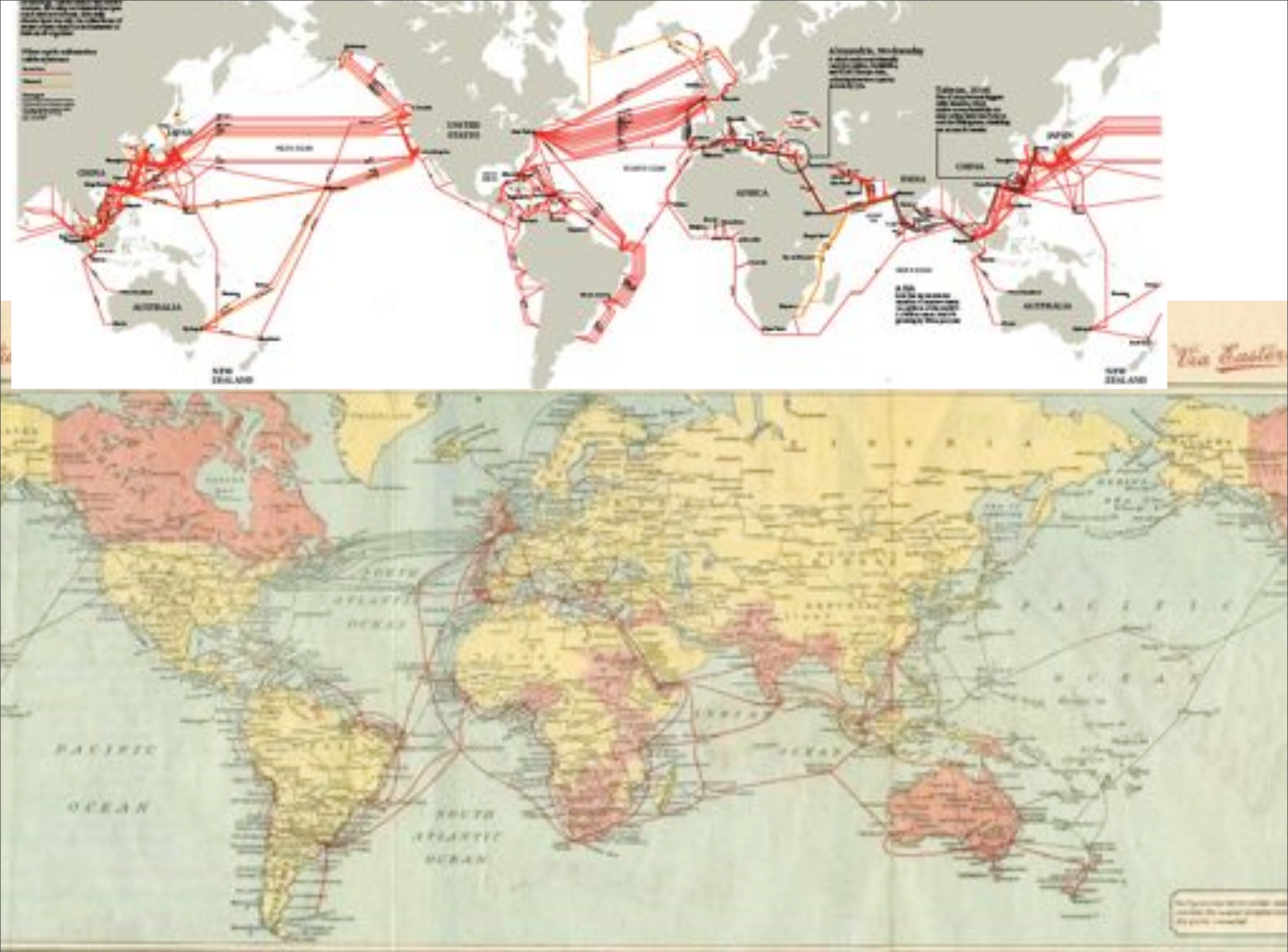
the 4 node network
UCLA, SRI, UCSB, Utah

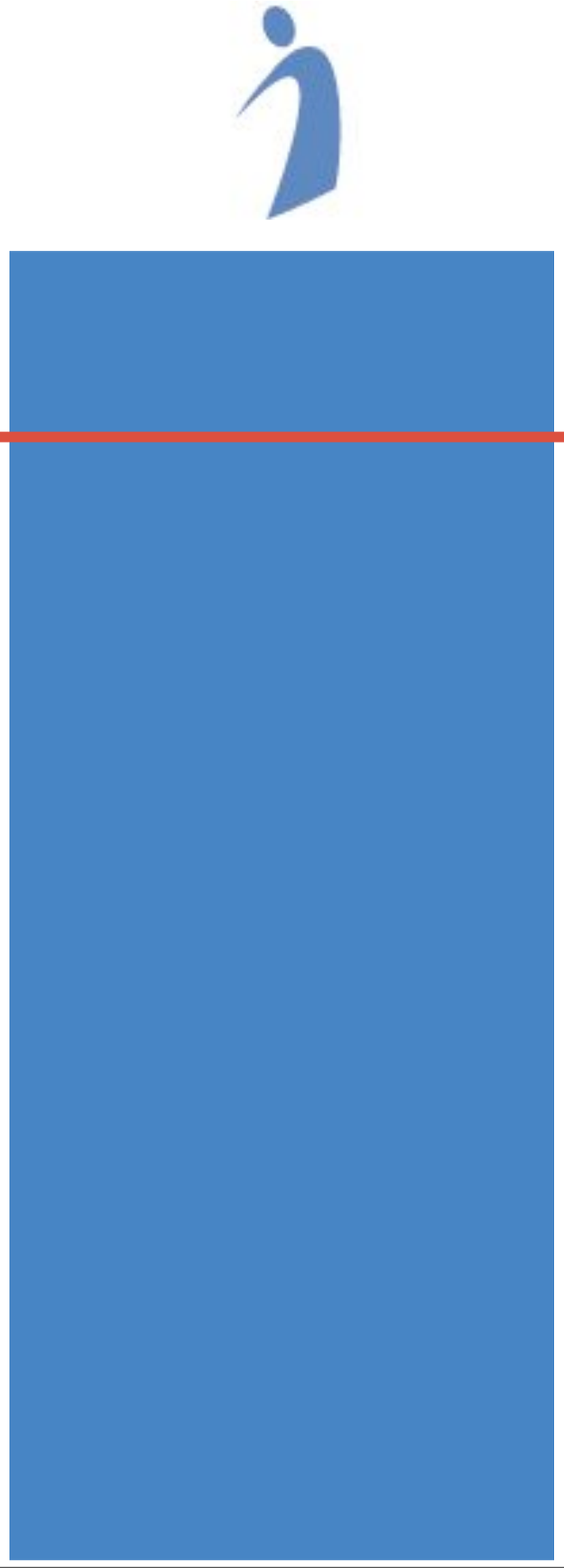
Aloha Project



an end-to-end network

similar infrastructure?


UNITED STATES
CHINA
AUSTRALIA
NEW ZEALAND
AFRICA
INDIA
JAPAN
PACIFIC OCEAN
SOUTH ATLANTIC OCEAN
INDIAN OCEAN



technologies & "applications "

1971, FTP (file transfer protocol)

1973, TCP (transmission control protocol)
Bob Kahn, Vince Cerf

communicating

email

1971 Ray Tomlinson (BBN)

"user@hostname.domain"

bulletin boards

1972-4, Berkeley "community memory project"

Leopold Records, Durant Ave

1985-1985, The Well

1980 usenet

towards peer-to-peer architecture

new media (again)

From: Laurence Canter - view profile Not yet rated
Date: Tues, Apr 12 1994 12:40 am show options

Green Card Lottery 1994 May Be The Last One!
THE DEADLINE HAS BEEN ANNOUNCED

The Green Card Lottery is a completely legal program giving away a certain annual allotment of Green Cards to persons born in certain countries. The lottery program was scheduled to continue on a permanent basis. However, recently, Senator Alan J Simpson introduced a bill into the U. S. Congress which could end any future lotteries. THE 1994 LOTTERY IS SCHEDULED TO TAKE PLACE SOON, BUT IT MAY BE THE VERY LAST ONE.

PERSONS BORN IN MOST COUNTRIES QUALIFY, MANY FOR FIRST TIME.

The only countries NOT qualifying are: Mexico; India; P.R. China; Taiwan, Philippines, North Korea, Canada, United Kingdom (except Northern Ireland), Jamaica, Domican Republic, El Salvador and Vietnam.

Lottery registration will take place soon. 55,000 Green Cards will be given to those who register correctly. NO JOB IS REQUIRED.

THERE IS A STRICT JUNE DEADLINE. THE TIME TO START IS NOW!!

For FREE information via Email, send request to
c_@indirect.com

--
****

Canter & Siegel, Immigration Attorneys
3333 E Camelback Road, Ste 250, Phoenix AZ 85018 USA
c_@indirect.com Telephone (602)661-3911 Fax (602) 451-7617

towards the web

Vannevar Bush
NSF

1945, Vannevar Bush
"As We May Think"
"memex"

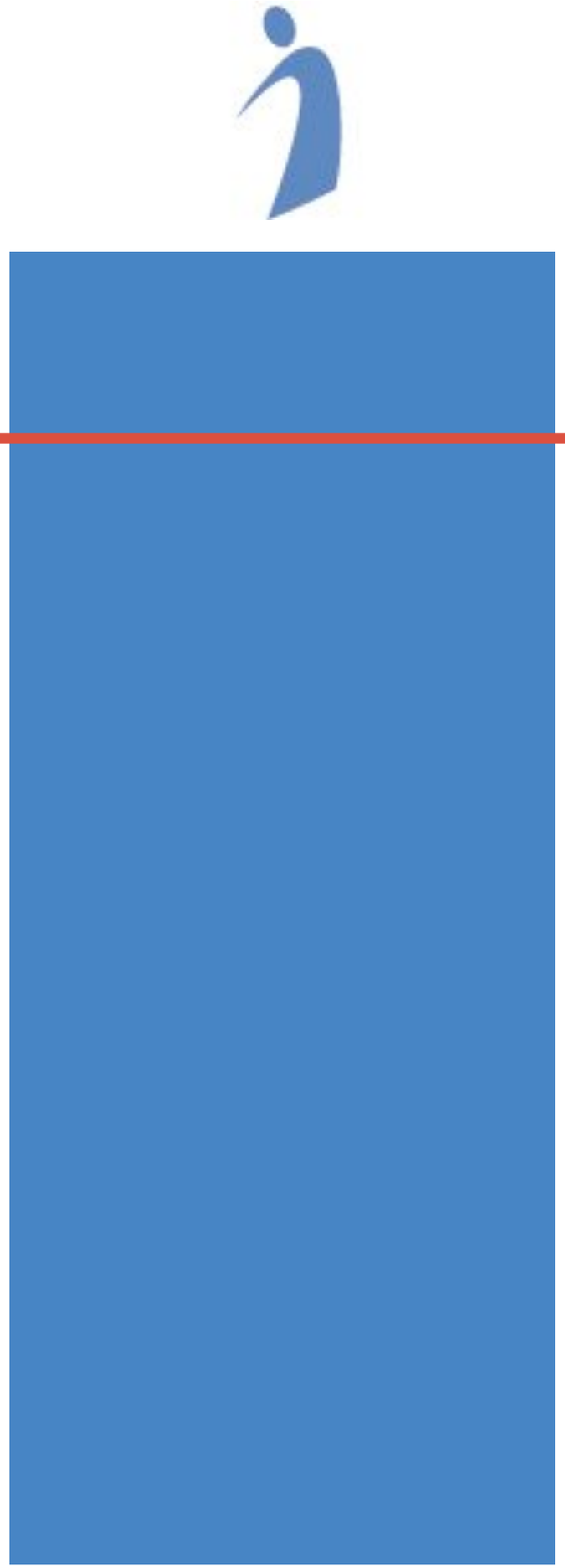
1965, Ted Nelson
"Hypertext"

Tim Berners-Lee
CERN

www

towards a better phone book?

1990, HTTP



opening the net

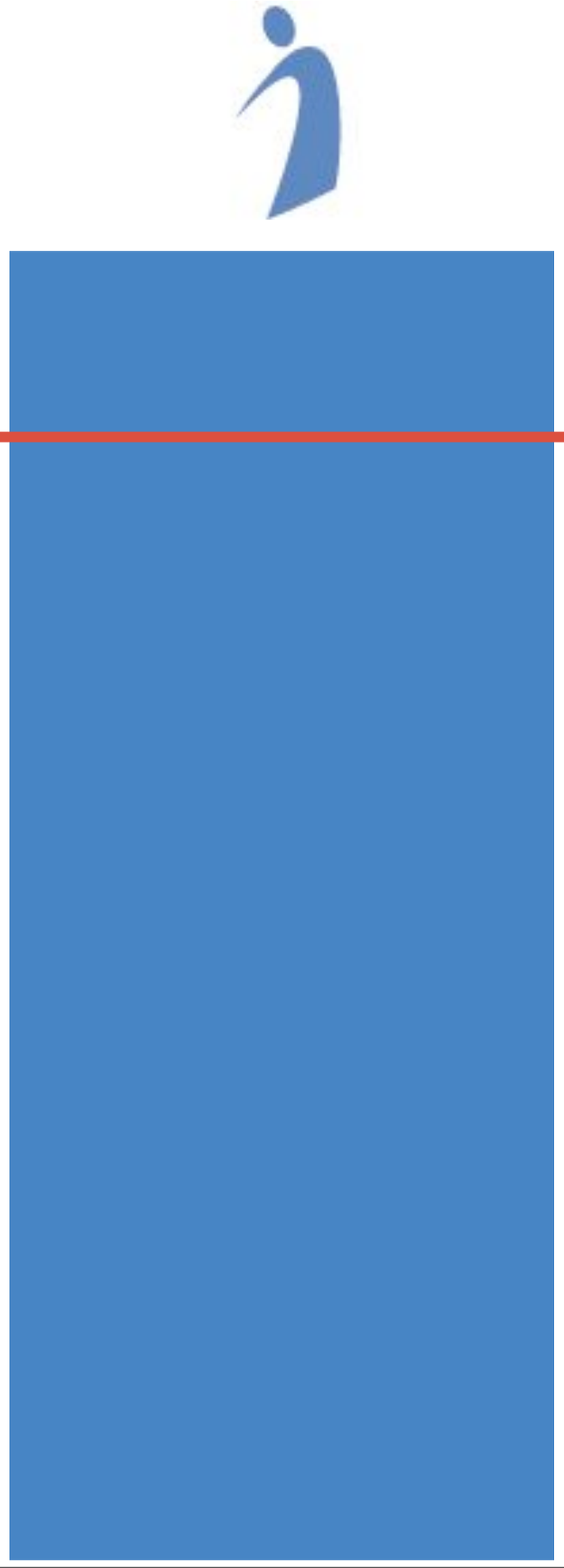
1990, ARPANET shuts down

1991, NSF opens internet to commercial use

1995, NSF ends support of infrastructure

1995, Apache

1998, Internet Corporation for Assigned Names and Numbers (ICANN) established to oversee domain names and IP addresses



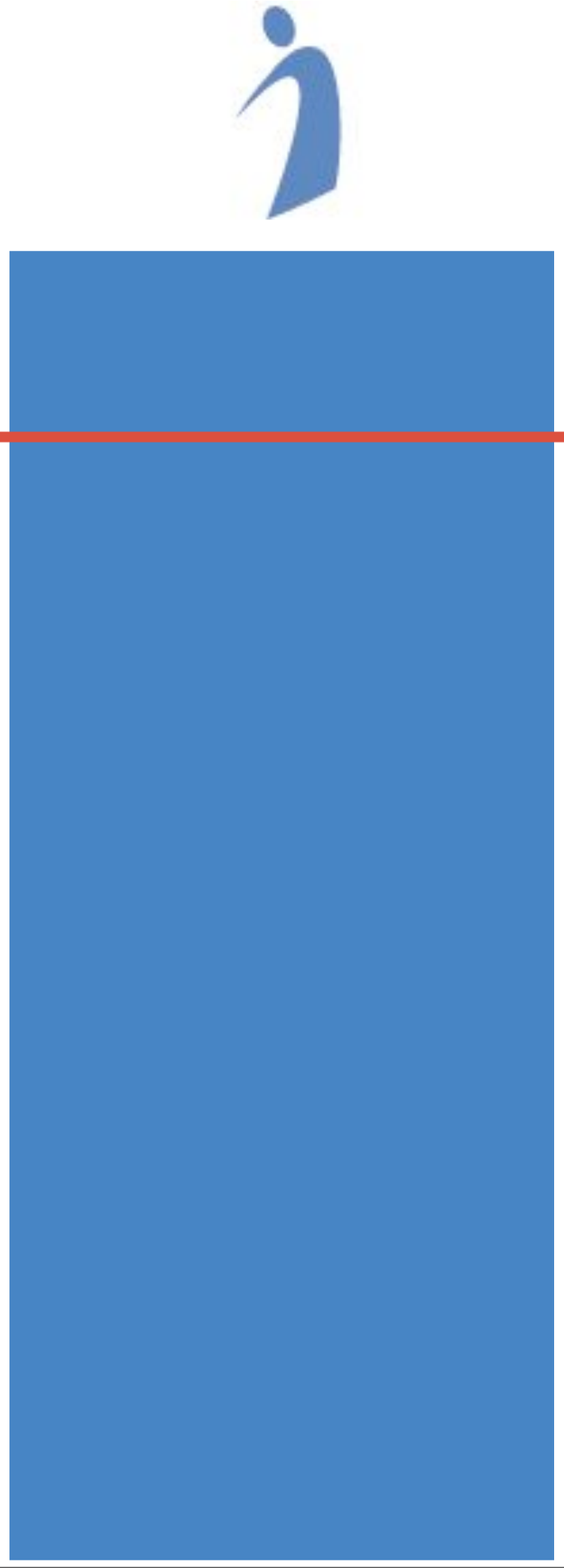
commercial service

gated communities

Compuserve

Prodigy

AOL



commercial service

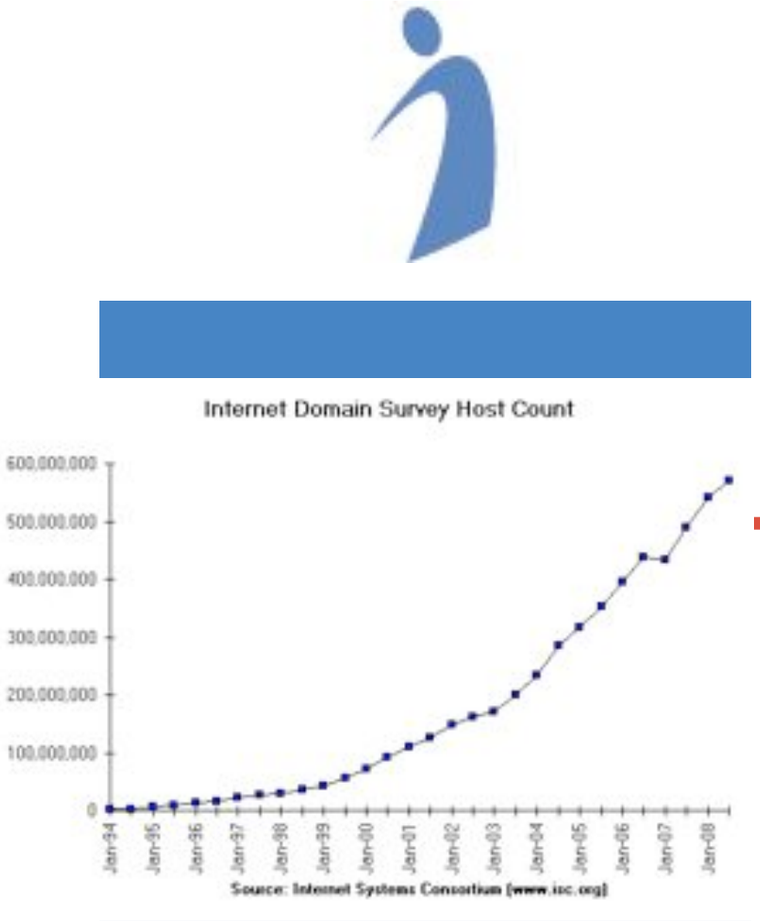
gated communities

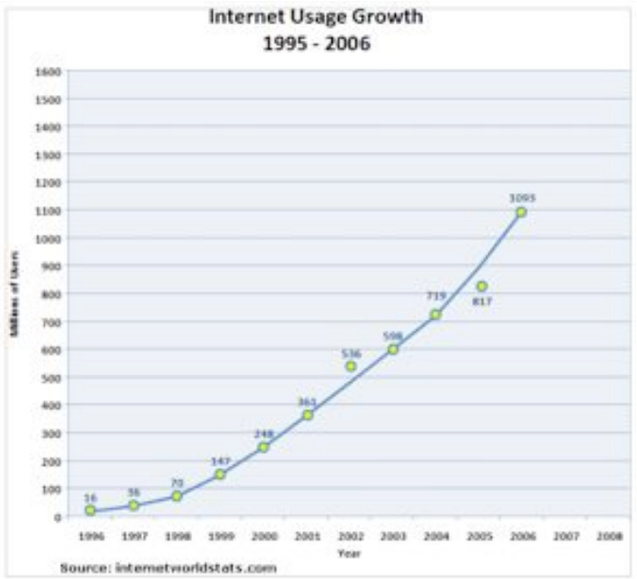
Compuserve

Prodigy

AOL

facebook?





the browser

1993, NCSA Mosaic
Mark Andressen

CERN releases W3 technology

1994, 200+ HTTP servers; traffic up x 1,000

1994, Netscape

1995, Internet Explorer

2009, Google Chrome

coming up: finding our way around

1988, WAIS

1990, Archie

1992, Veronica (Gopher)

1994, Lycos

1995, Alta Vista, Yahoo

1996, Inktomi

1997, Ask Jeeves

coming up: what changed?

1. Death of distance
2. Fate of Location
3. Improved Connections
4. Increased Mobility
5. More Customized Networks
6. Deluge of Information
7. Increased Value of Brand
8. More Minnows, more Giants
9. More Competition
10. Increased Value of Niches
11. Communities of Practices
12. Loose-Knit Corporation Culture
13. Openness
14. Manufacturers as Service Providers
15. Inversion of Home and Office
16. Proliferation of Ideas
17. Decline of National Authority
18. Loss of Privacy
19. Global Premium for Skills
20. Rebirth of Cities
21. Rise of English
22. Communities of Culture
23. A New Trust
24. People as Scarce Resource
25. Global Peace

Thursday's reading

15 Apr: Storage and search

Required reading:

- Battelle, John. 2005. Epilogue, pp 281-4 in John Battelle, *Search: How Google and Its Rivals Rewrote the Rules of Business and Transformed our Culture*. New York: Portfolio/Penguin.
- Bush, Vannevar. 1945. As We May Think , *Atlantic Monthly*; 176 (1): 101-108

Additional material:

- Search Engine Land, 2009. "Google Now Personalizes Everyone's Search Results," Dec. 4.
- NPR, Intelligence Squared Debate, 2008. Did Google Violate Its 'Don't Be Evil' Motto?