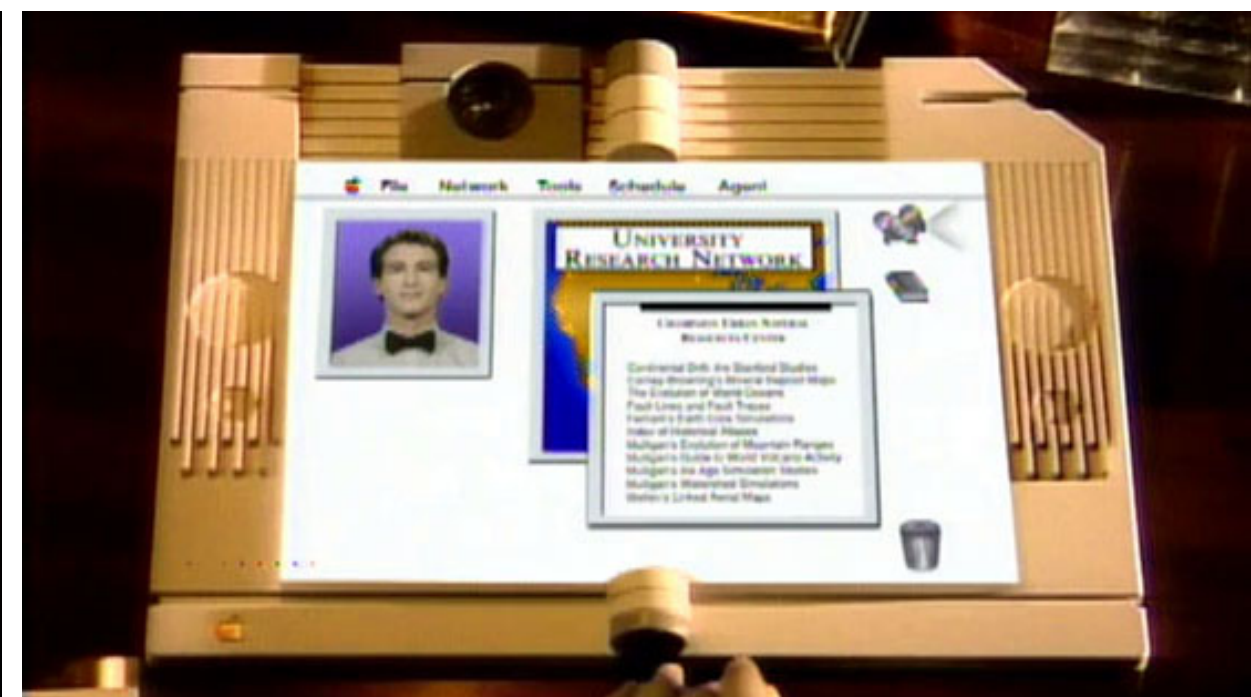
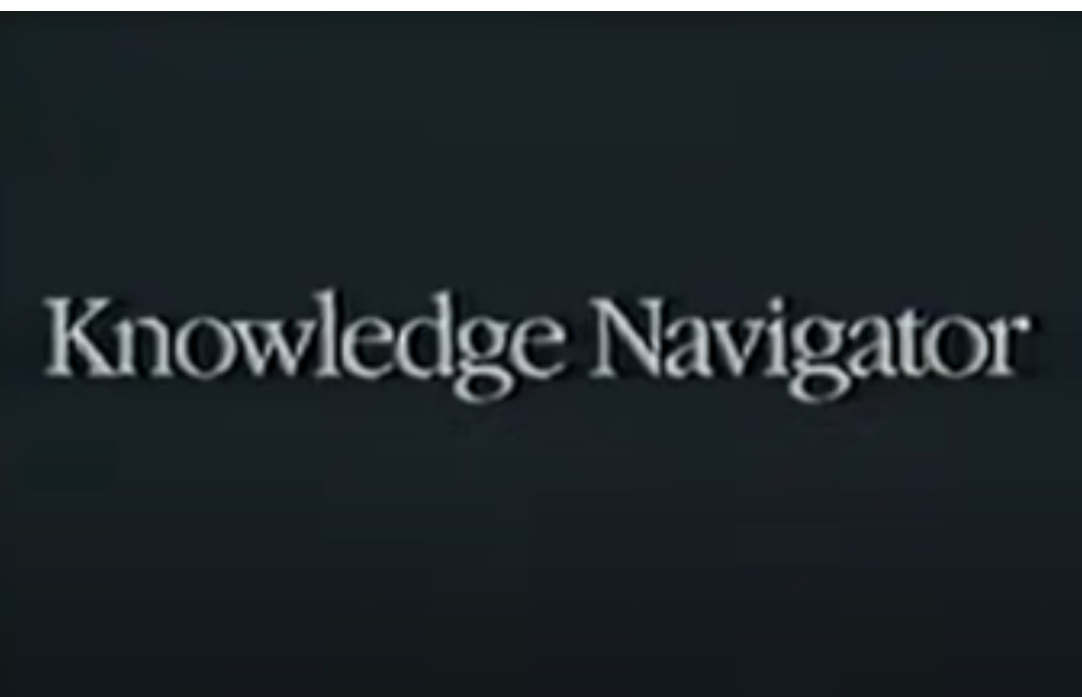


DesignMap Conversations San Francisco March 29, 2024

# Making Knowledge Navigator

Hugh Dubberly  
Dubberly Design Office

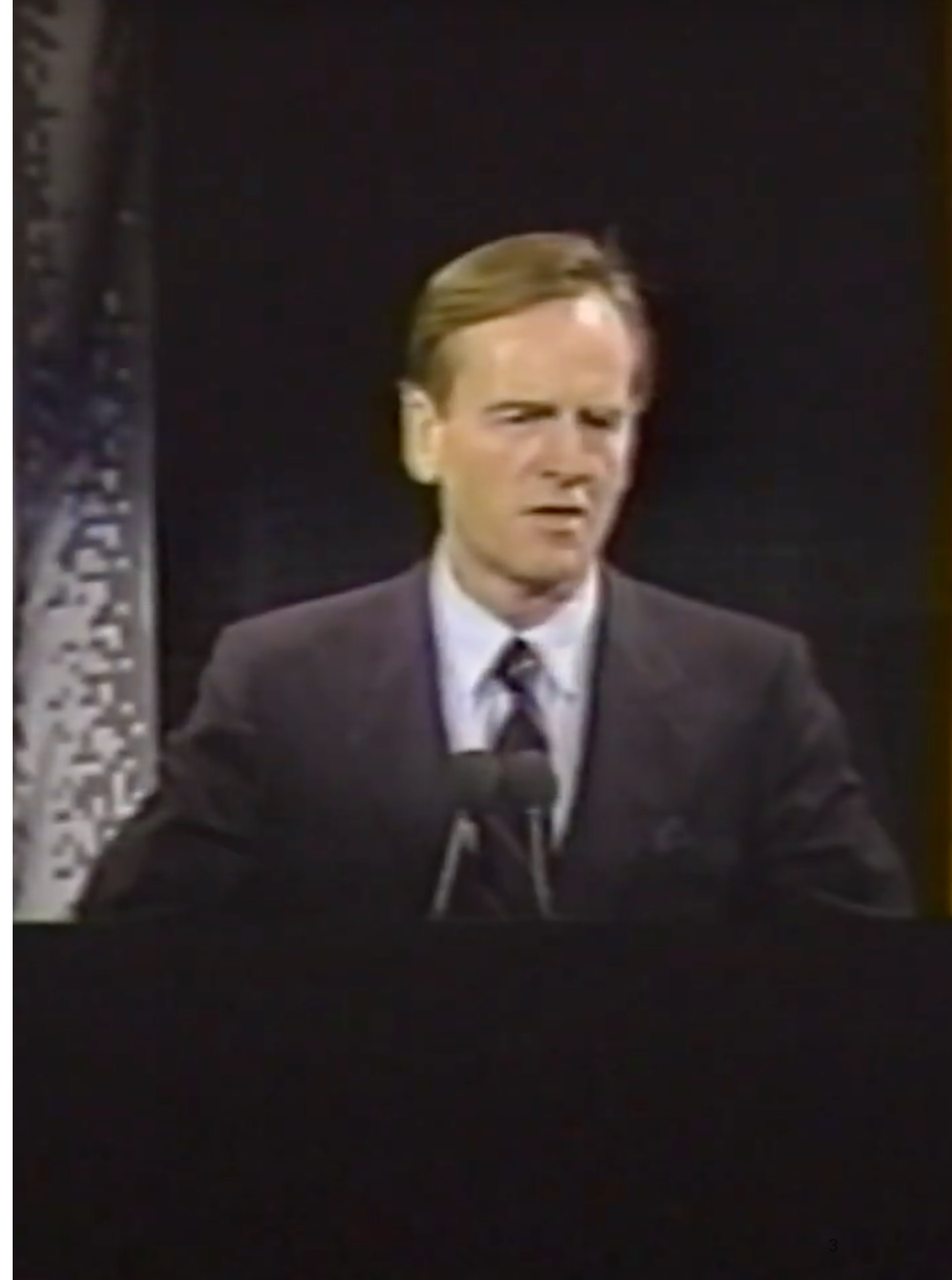
**Knowledge Navigator is a 5-minute video about the future of computing.**



**We made *KN* as speaker support for a presentation at Educom.**

Apple CEO John Sculley was giving a keynote on the future of computers in education.

He began with examples of Macs being used in classrooms; he also showed new research from universities; and he closed by presenting a vision of the future.



# A professor collaborates with a colleague at another school, pulling together a data-driven simulation for a lecture.

In 1987, the video illustrated technologies including:

- Tablet computer
  - Memory cards
  - Foldable touch screen
  - Touch interface
  - University research networks
  - Hypertext
  - Creating simulations
  - Video conferencing
  - Collaborative work
  - Intelligent agents
- iPad, 2010
  - SIM card, 1991
  - Royole FlexPai, 2018
  - iPhone, 2007
  - NSFNET, 1986
  - WWW, 1993
  - MATLAB, 1984; Desmos, 2011
  - Python, 1991, Notebooks, 2011
  - CU-SeeMe, 1990; Skype, 2006
  - Google Docs, 2006
  - Siri, 2011, ChatGPT, 2022



**At the time, state-of-the-art PCs were stand-alone devices.**

Apple released its flagship Macintosh II on March 2, 1987.

- 68020 Motorola microprocessor running at 16 MHz,
- up to 8 MB of RAM
- 40 MB internal hard-drive
- 3.5" floppy disks were standard
- Mac OS 2
- 8-bits of color
- 13-inch, 72-dpi CRT display  
640x480 pixels (10% of an iPhone 14)
- No modem
- Illustrator launched at the same time.
- HyperCard launched that fall.



# The internet was barely a toddler.

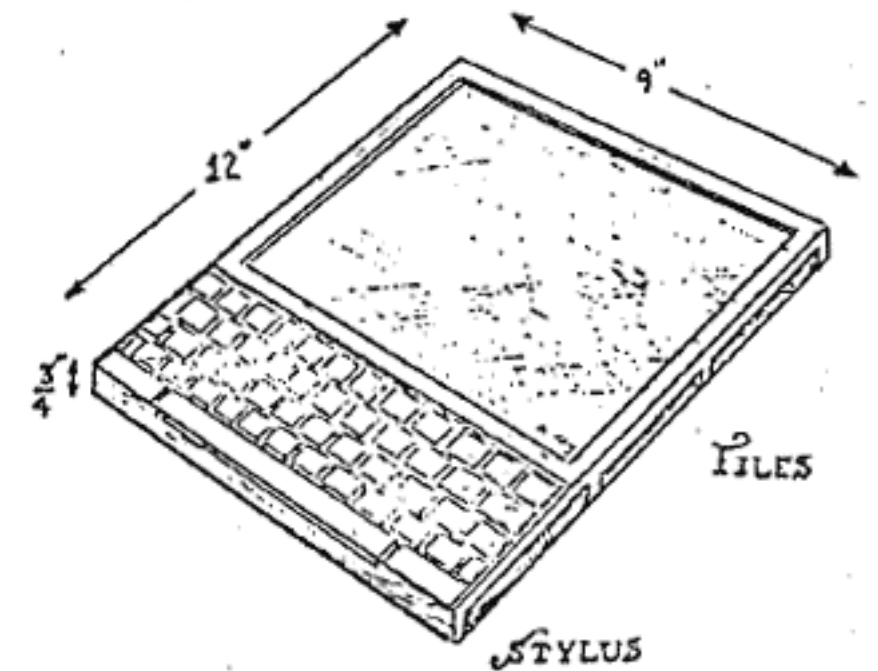
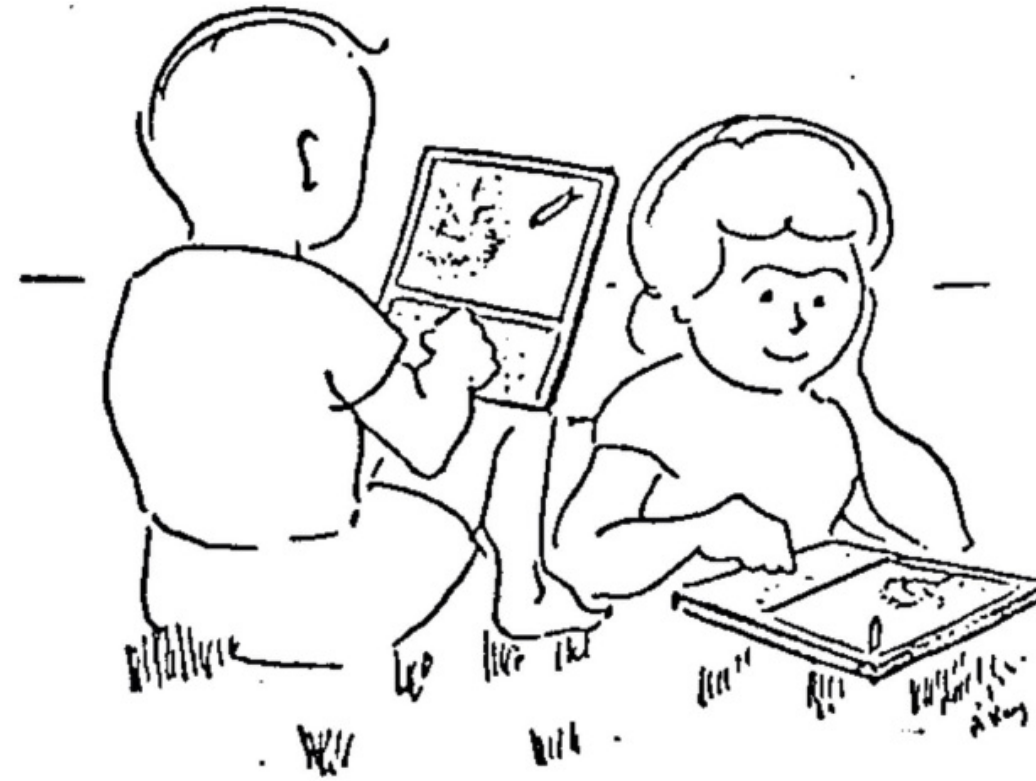
- NSF-Net was the backbone.
- Telnet access to BBSs was standard, typically with a 1200-baud, dial-up modem.
- The Well was only 2 years old.
- AOL didn't exist yet.
- Fetch, Gopher, Archie, and Veronica were a couple of years away.
- The web was several years in the future.
- A video conference required a special set-up.
- Emails between organizations required writing out the full routing path.



**But the ideas were “in the air,” as Alan Kay once said.**

And researchers were publishing, for example:

- Paul Otlet, “Monde” (1935) – the Mundaneum
- HG Wells, “World Brain: The Idea of a Permanent World Encyclopaedia” (1937)
- Vannevar Bush, “As We May Think” (1945) – Memex  
a nod to John Dewey, “How We Think” (1933)
- JCR Licklider, “Man-Computer Symbiosis” (1960)
- Licklider + Taylor, “The Computer as a Communication Device” (1968)
- Nicholas Negroponte, “The Architecture Machine” (1970)
- Alan Kay, “A Personal Computer for Children of All Ages” (1972) – Dynabook
- Ted Nelson, “Dream Machines/Computer Lib” (1974) – Xanadu
- Stewart Brand, “Media Lab” (1987)



**Also, sci-fi books and movies were an inspiration.  
Such as:**

- Hanna-Barbera, "The Jetsons" (1962)
- Gene Roddenberry, "Star Trek" (1966)
- Stanley Kubrick, "2001: A Space Odyssey" (1968)
- Vernor Vinge, "True Names" (1981) – avatars
- Ridley Scott, "Blade Runner" (1982)
- William Gibson, "Neuromancer" (1984) – cyberspace

Cf. Nathan Shedroff, "Make It So: Interaction Design Lessons from Science Fiction" (2012)

Also, Laurie Vertelney collected examples of computers depicted in sci-fi movies.





***Knowledge Navigator owes a debt to NASA's  
'artist's concept renderings.'***

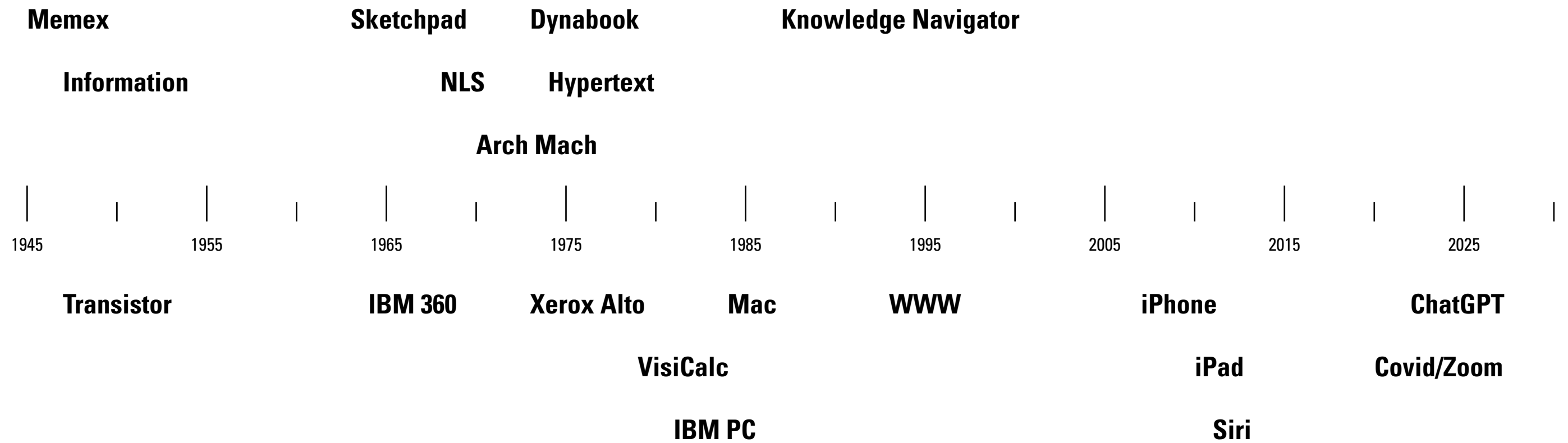


**Perhaps most important were the early working demos.  
Such as:**

- Ivan Sutherland, "Sketchpad" demo, (1963)
- Douglas Engelbart, "NLS" demo (1968)
- Nicholas Negroponte, "Arch Mach" (1968) – various demos, e.g., the Aspen Movie Map and the Jeep Repair Manual
- Muriel Cooper, "VLW" (1974) – various demos e.g., the billboard-size inkjet printer
- Bill Atkinson, "WildCard" (1985) – hypertext on the Mac

Pictured: Englebart's "NLS" demo

# Milestones: Visions + Products



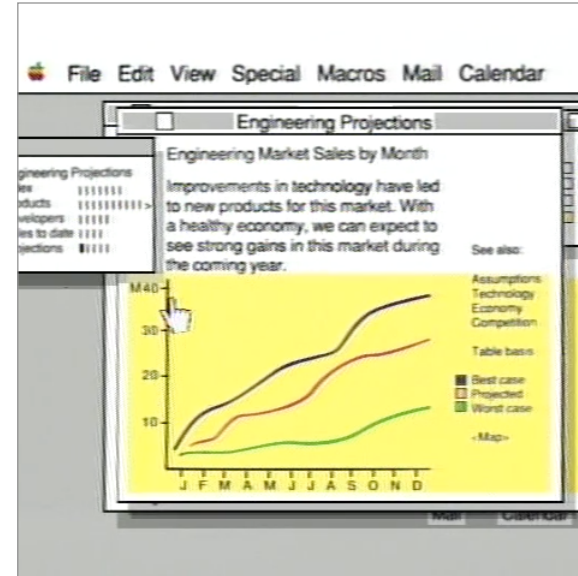
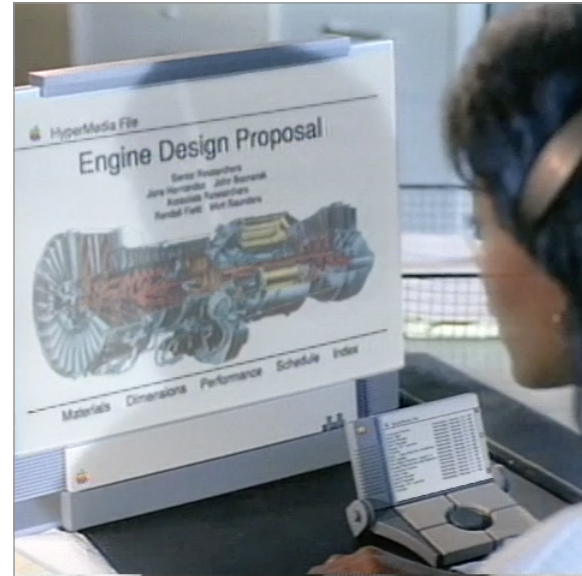
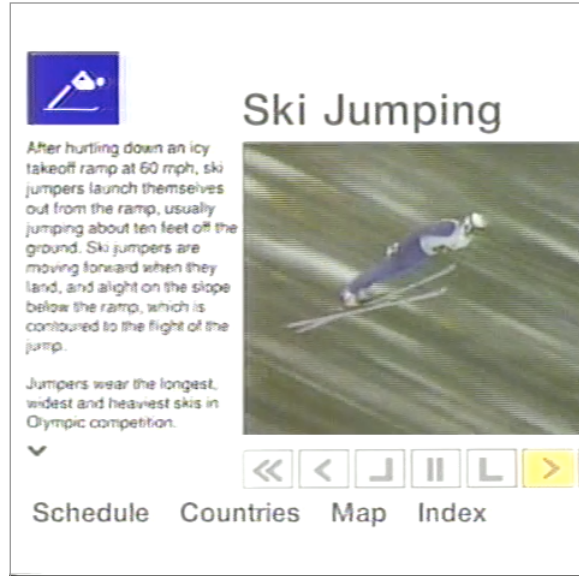
**KN may have been the first vision video from a computer company, but it was not the first corporate vision video.**

AT&T and its Bell Laboratories put out a slew of amazing (and amusing) films.

Among the earliest corporate vision videos is The Tom Thomas Organization's 1967 video for Philco-Ford Corp, "Year 1999 AD" (The kitchen of the future has also been a persistent theme.)



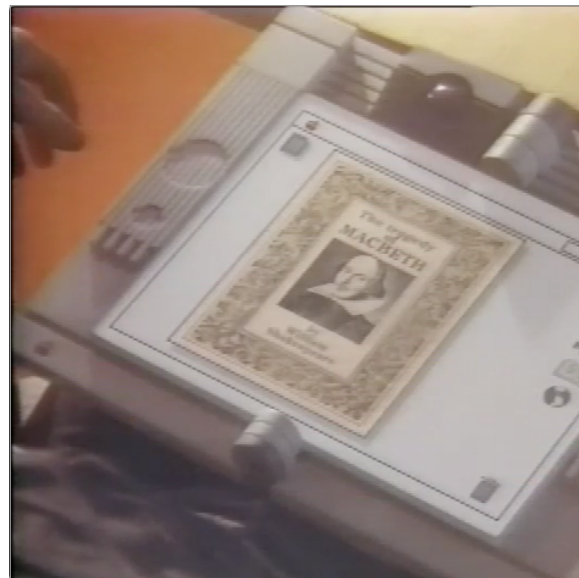
# Knowledge Navigator spawned several sequels within Apple.



*HyperCard: 1992*  
1987

*Project 2000*  
1988

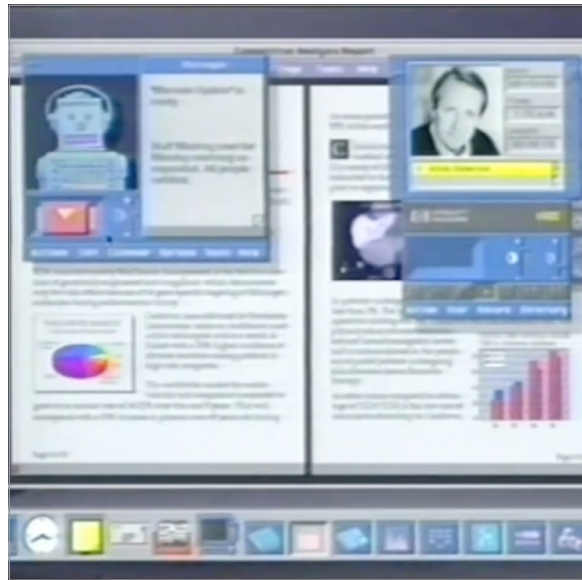
*Grey Flannel Navigator*  
1988



*High School 2000*  
1988

*Healthcare 2008*  
1988

# Many major tech companies followed with their own vision videos.

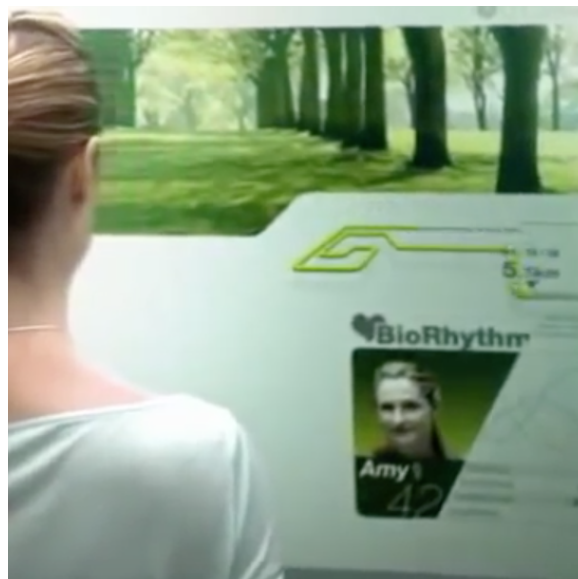


Hewlett-Packard  
*1995, 1989*

Sun Microsystems  
*Starfire, 1992*

AT&T  
*Connections, 1993*

Hewlett-Packard  
*Synergies, 1994*



Intel  
*Step Into Tomorrow, 2007*

Samsung  
*Changing the future, 2010*

Microsoft  
*2019 Vision for the Future, 2010*

Corning  
*A Day Made of Glass, 2011*

More vision videos can be found at <http://www.idemployee.id.tue.nl/g.w.m.rauterberg/videos.html>

**The significance of *Knowledge Navigator* is not its technology forecast. What is new is the method — video prototyping.**

By releasing *KN* Apple gave permission to others to make videos about software that did not yet exist.

As video technology has become less expensive, it's become a standard part of design education.

Today, most students arrive at college knowing how to make videos.

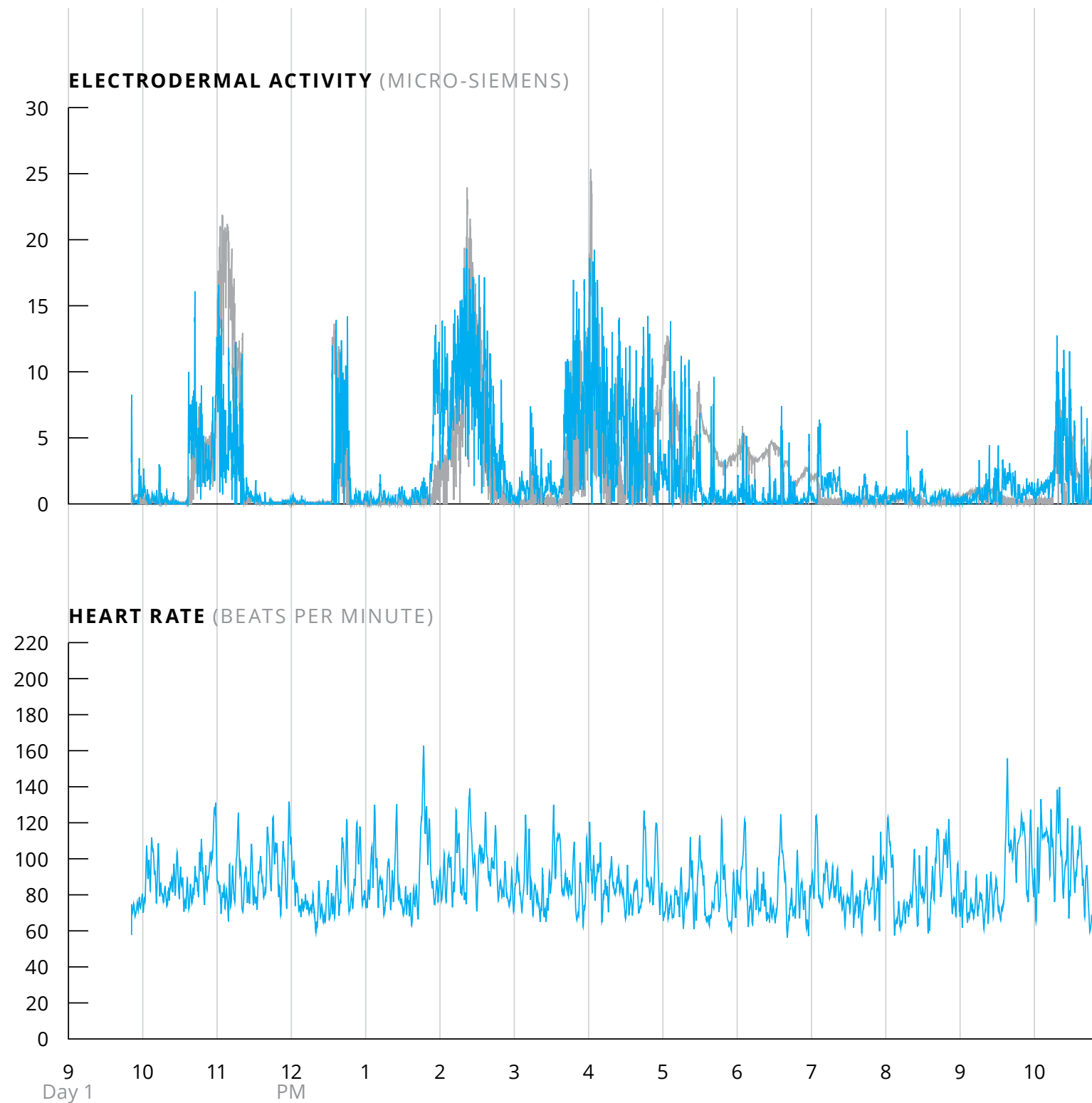
And “speculative design” has become a robust branch of design discourse.



# The next generation of vision prototyping will need more than video.

Data has become a new *material* of design.  
And we need to invent methods of prototyping with data.

Data-typing?!





**The most exciting recent vision of the future is Bret Victor's communal computing environment DynamicLand.**



## The Brief:

Make something for Educom to show the future.

We had six weeks from the first meeting to the event.  
The budget was \$60,000.

We proposed two ideas:

- an interactive installation (which I was pushing)
- a video (which John picked)

We shot on film, transferred to 1" video tape.  
And used PaintBox to make the graphics.  
The process was pre-digital.

A calendar for September 1987. The title "SEPTEMBER 1987" is prominently displayed in the center. To the left, a small calendar for August 1987 is visible, and to the right, a small calendar for October 1987 is visible. The main calendar grid shows the days of the week (SUNDAY to SATURDAY) and the dates. The dates from 13 to 30 are highlighted in a solid yellow color. A small watermark "september-calendar.com" is visible near the 16th.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

A calendar for October 1987. The title "OCTOBER 1987" is prominently displayed in the center. To the left, a small calendar for September 1987 is visible, and to the right, a small calendar for November 1987 is visible. The main calendar grid shows the days of the week (SUNDAY to SATURDAY) and the dates. The dates from 1 to 31 are highlighted in a solid yellow color. A small watermark "october-calendar.com" is visible near the 17th.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

## Acknowledgements:

Mike Liebhold provided the technical expertise.  
Doris Mitsch wrote the first script and created graphics.  
Hugh Dubberly was creative director and PM.  
Bud Colligan was our sponsor and executive producer.  
John Sculley was our client.

The Kenwood Group handled production.  
Randy Field was the director.  
Bill Zarchy was DP.  
Jane Hernandez was Kenwood's producer.  
Christina Crowley was Kenwood's executive producer.

Gavin Ivester and Adam Grosser designed the device  
and had the model made in a week.

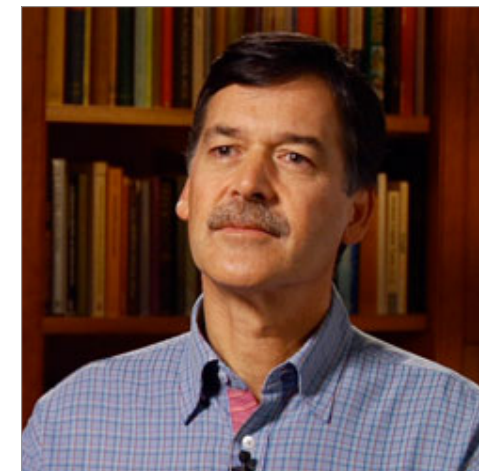
As part of our research, we interviewed  
Paul Saffo, Bob Johansen, and Aaron Marcus.



Mike Liebhold



Doris Mitsch



Bud Colligan

## **A few misconceptions need to be cleared up.**

- George Lucas was not involved in making the video. He would have done a much better job.
- Alan Kay was involved later, but not directly on the first video. However, Kay's ideas are at the core of *KN*.
- John Sculley proposed the name "Knowledge Navigator," after the video was complete.

**Special thanks to**  
**Audrey Crane**  
**Greg Baker**  
**Chris Hoover**  
**Gavin Miller**

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Presentation posted at  
[presentations.dubberly.com/making\\_knowledge\\_navigator.pdf](http://presentations.dubberly.com/making_knowledge_navigator.pdf)