

Think like a Designer, Design like a Thinker

Barry Katz
June 19, 2025





Stanford University

40 years



**California College
of the Arts**

30 years



Berkeley
UNIVERSITY OF CALIFORNIA

3 months



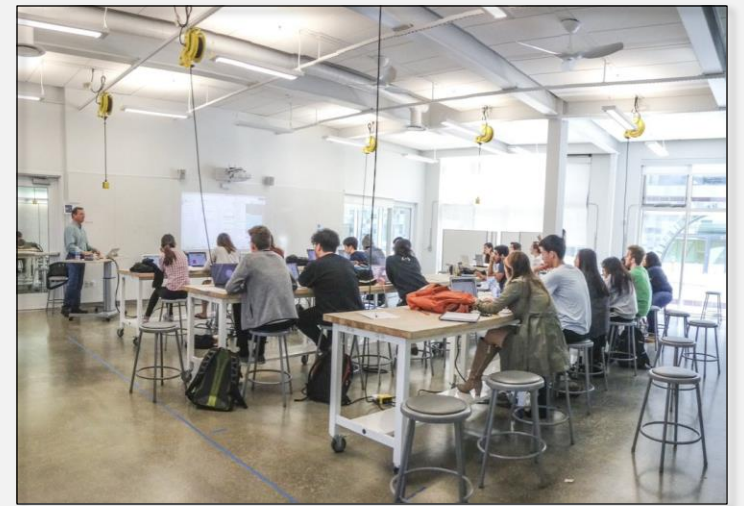
Stanford University

40 years



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Berkeley
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Stanford

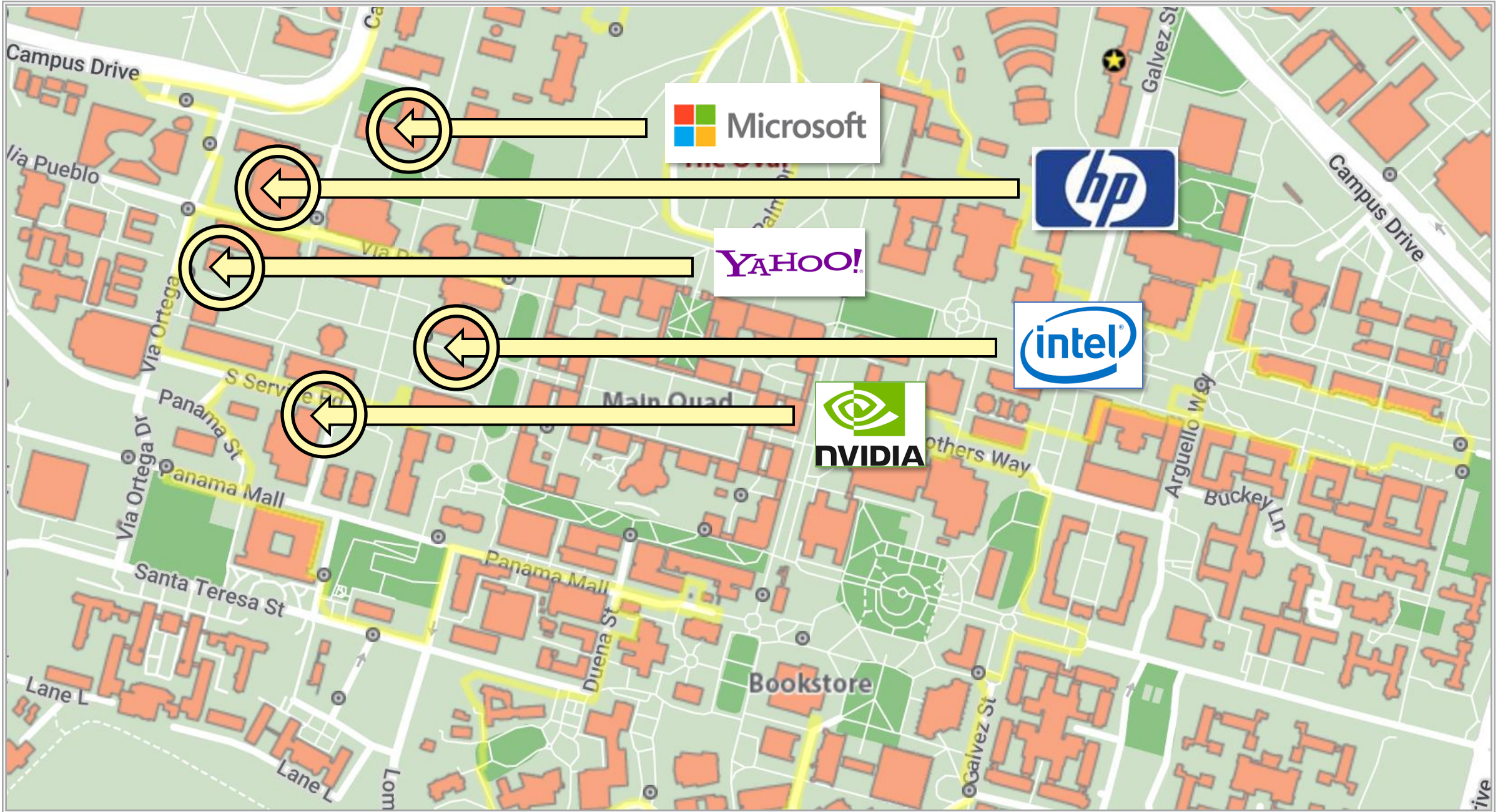




Frederick Terman, "Steeples of Excellence"



Stanford Research Park

















Silicon
Valley

\$ 1,000,000,000,000 +

Market capitalization (June 18, 2025)

¥ 7,084,500,000,000 +

Company	Country	\$1 trillion	\$2 trillion	\$3 trillion	Valuation (in trillions)
 Microsoft		30 May 2023	23 February 2024	5 June 2024	\$3.569
 Nvidia		7 June 2019	22 June 2021	24 January 2024	\$3.547
 Apple		2 August 2018	19 August 2020	3 January 2022	\$2.936
 Amazon		4 September 2018	5 July 2024	---	\$2.256
 Alphabet		16 January 2020	8 November 2021	---	\$2.106
 Meta		28 June 2021	---	---	\$1.749
 Saudi Aramco		11 December 2019	12 December 2019	---	\$1.610
 Broadcom		13 December 2024	---	---	\$1.181
 Tesla		29 August 2021	---	---	\$1.037

OpenAI

Genentech
IN BUSINESS FOR LIFE

X

AUTODESK

software

Alibaba.com

VISA

Ford

Microsoft

Baidu 百度

WhatsApp

salesforce

facebook

BMW

oppo

FUJITSU

intel

LinkedIn

Pinterest

Palantir
Technologies

XEROX

Google

ebay

NVIDIA

Adobe

nest

TESLA

Tencent 腾讯

Apple

hardware

ARM

ARMED MARTIN

RENAULT NISSAN

hp

amazon
Lab126

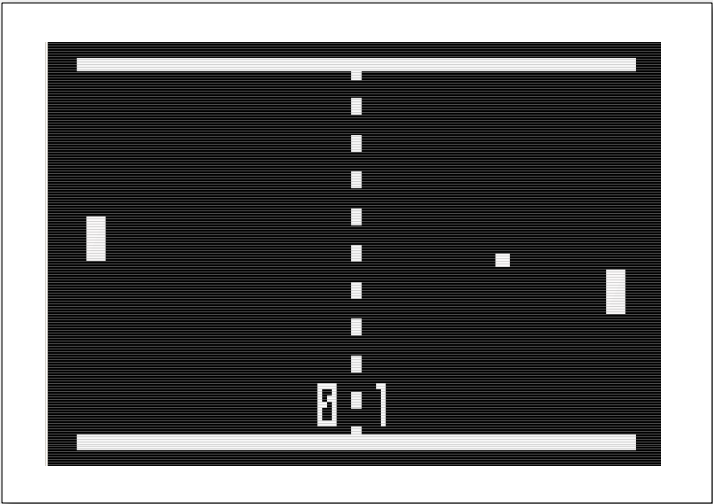
HUAWEI

IBM

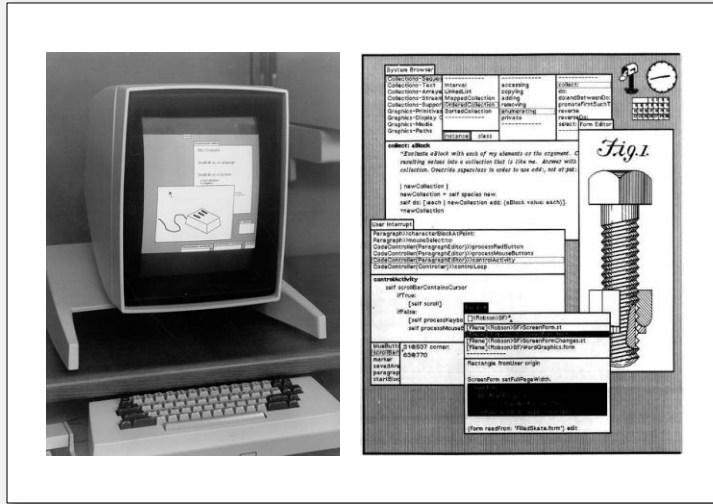
NETFLIX

Deutsche Bank

Y Combinator



video games



personal computing



social networks



smartphone



autonomous vehicles



surgical robotics



Twitter: 2006



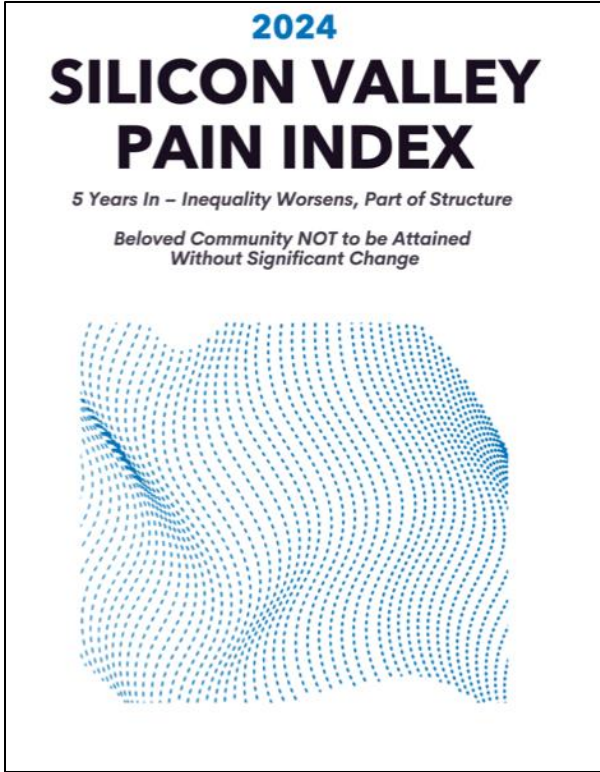
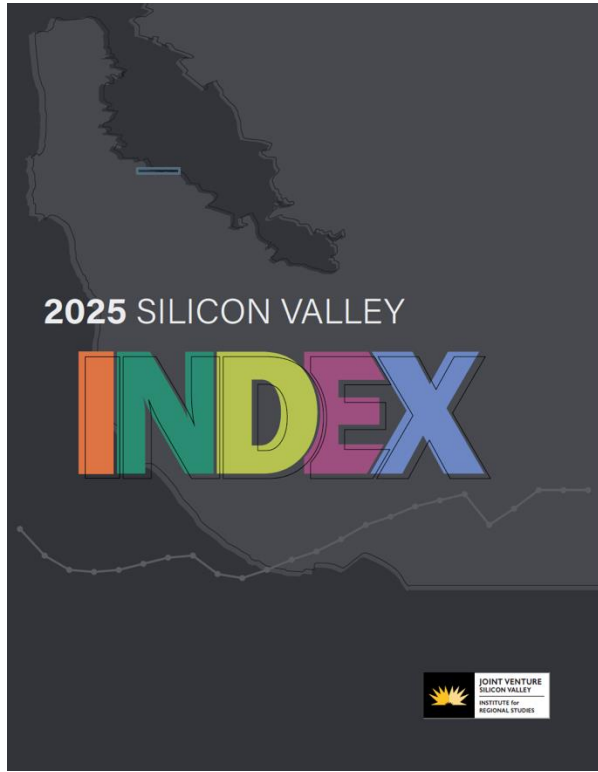
U B E R

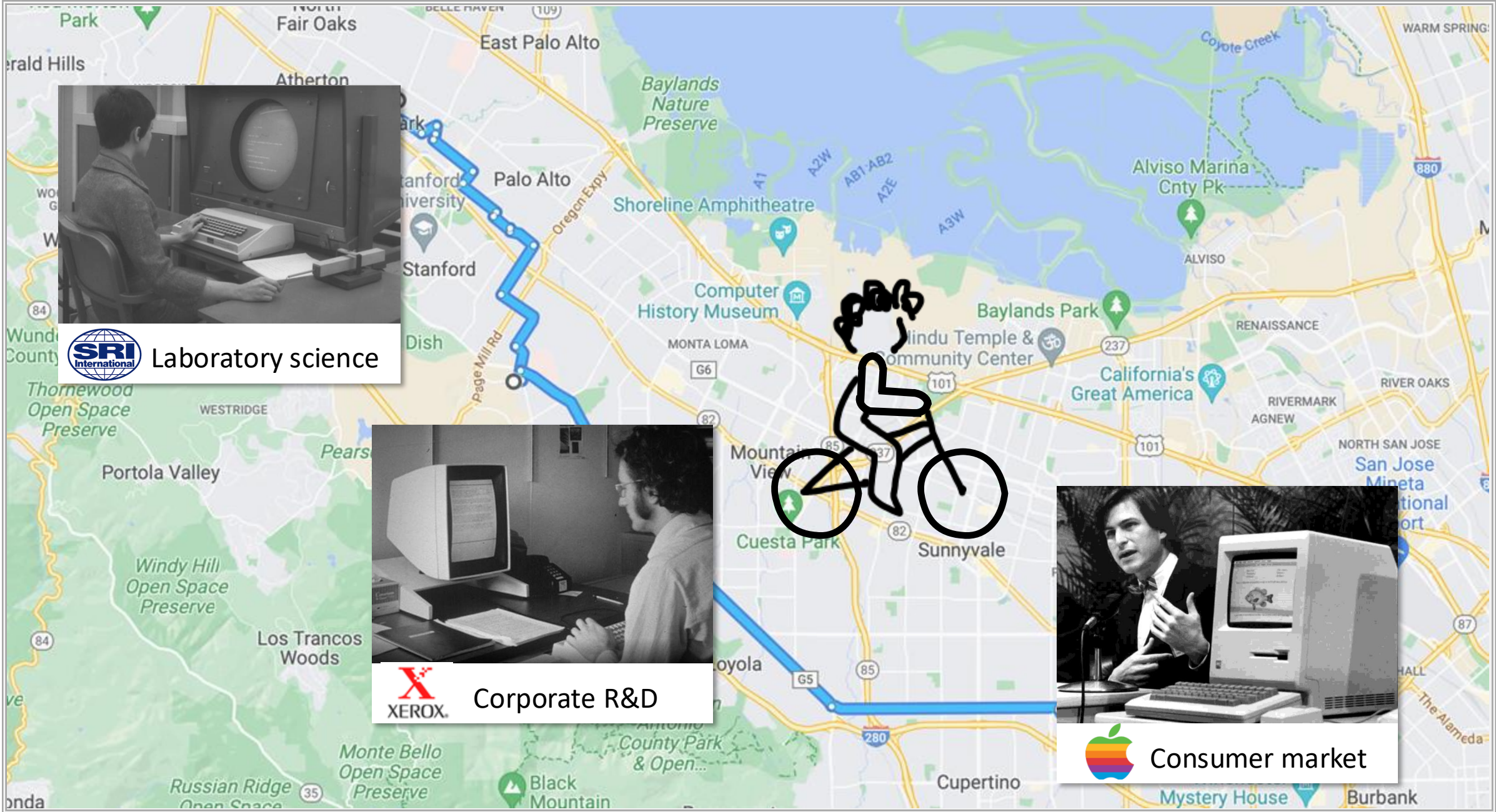
Uber: 2009



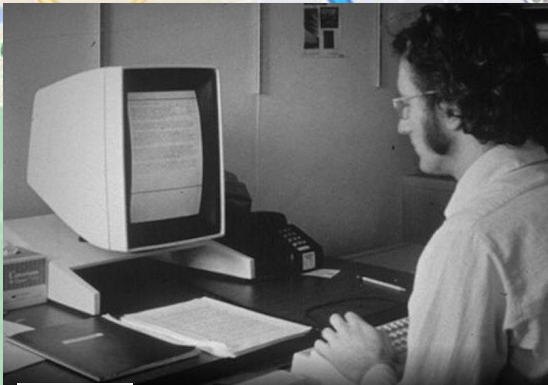
OpenAI

ChatGPT: 2020

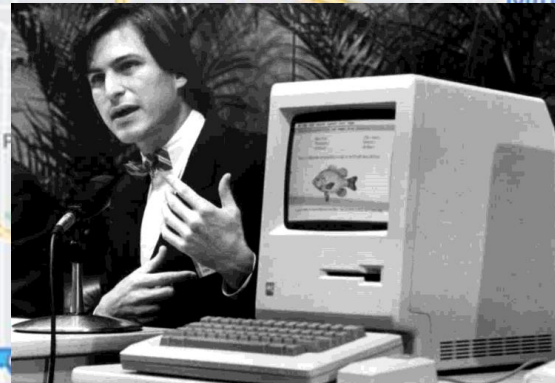




Laboratory science



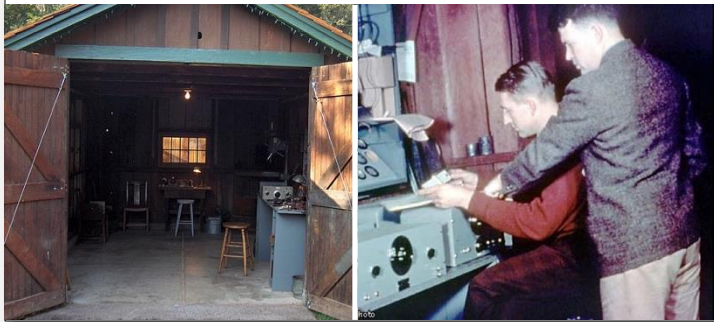
Corporate R&D



Consumer market

Bill & Dave

367 Addison Avenue, Palo Alto



Steve & Steve

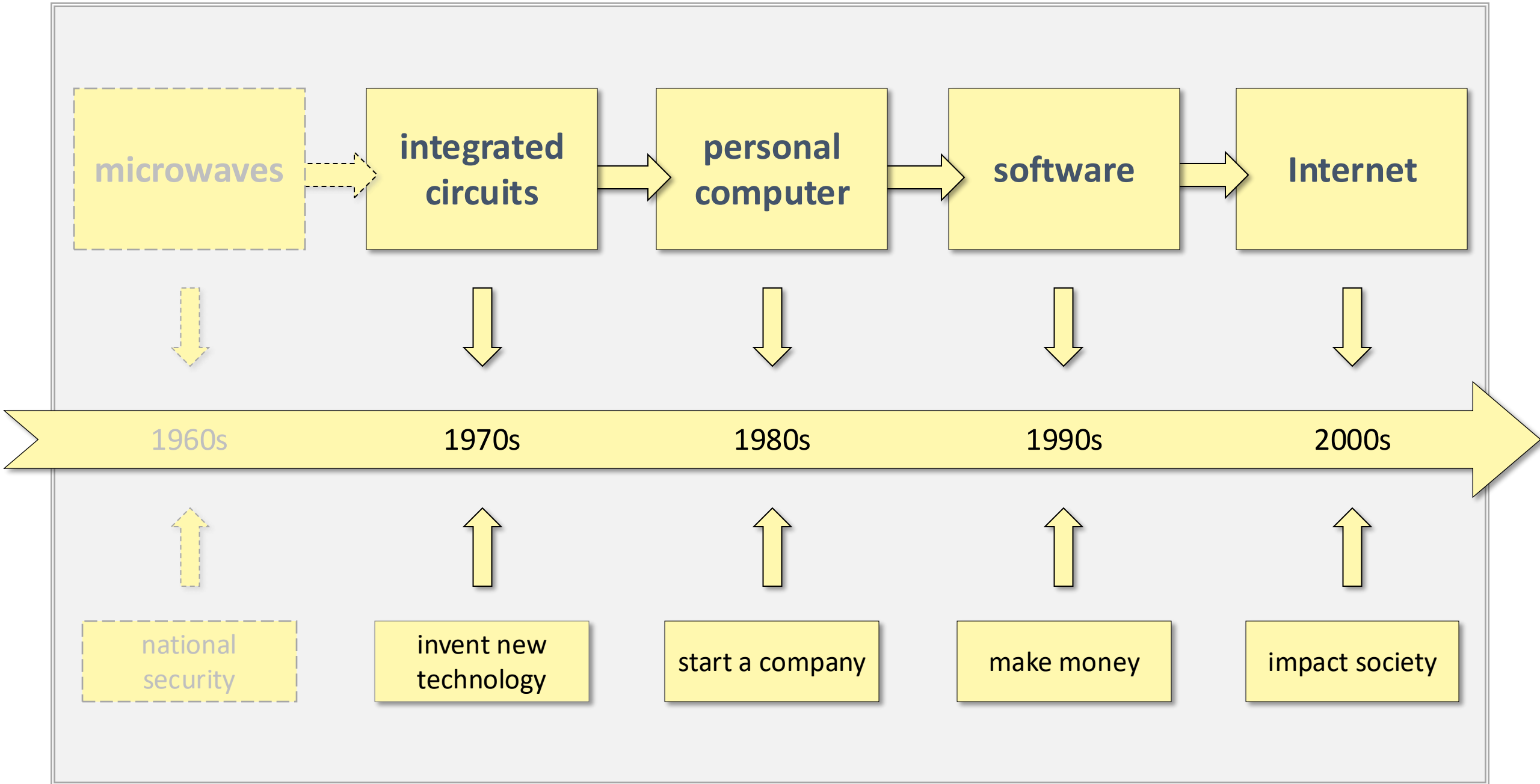
2066 Crist Drive, Los Altos



Larry & Sergei

232 Santa Margarita, Menlo Park





microwaves

integrated
circuits

personal
computer

software

Internet

1960s

1970s

1980s

1990s

2000s

national
security

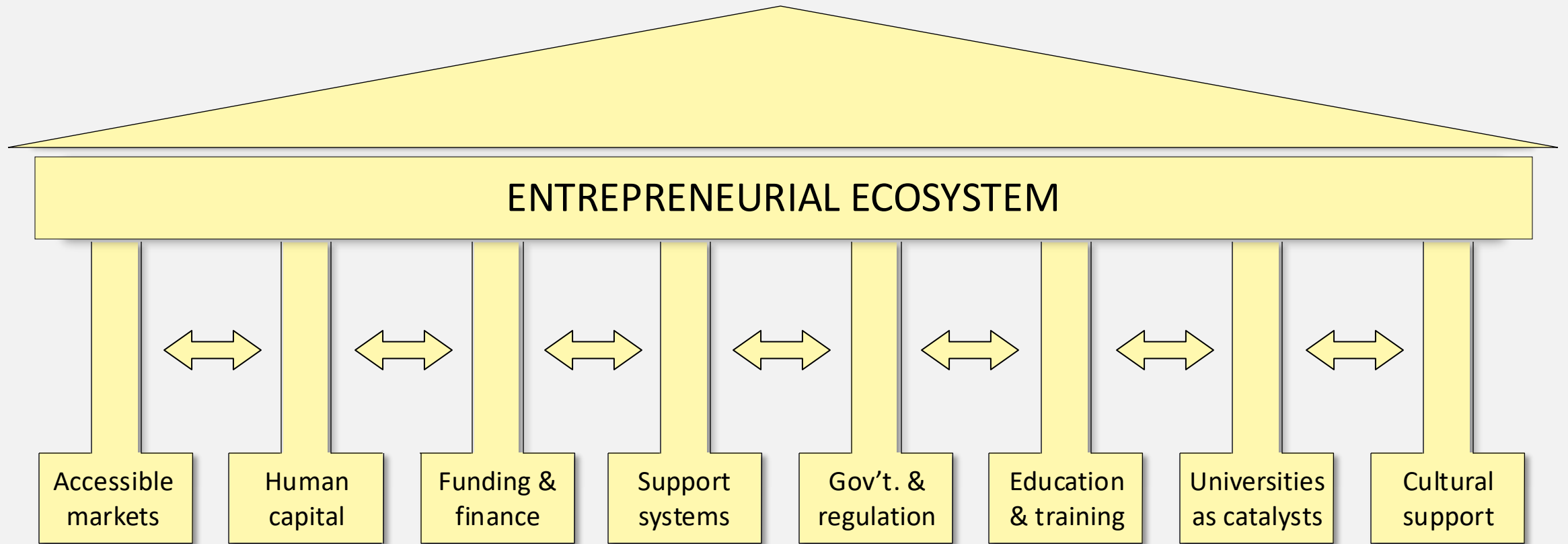
invent new
technology

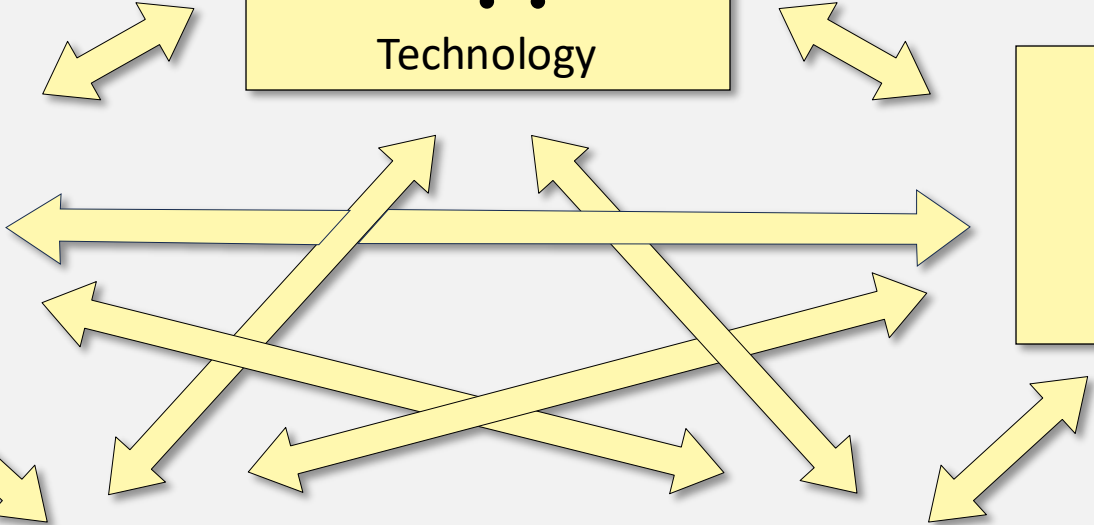
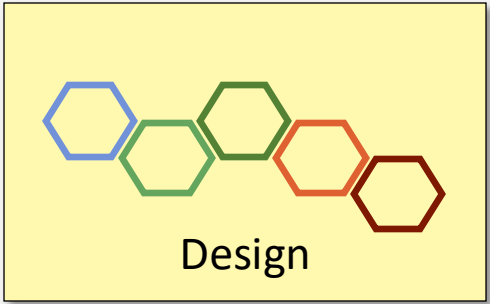
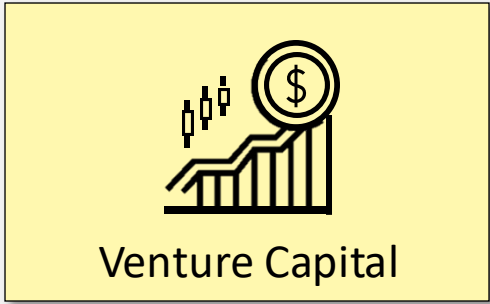
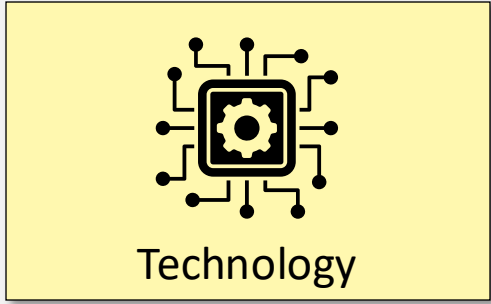
start a company

make money

impact society

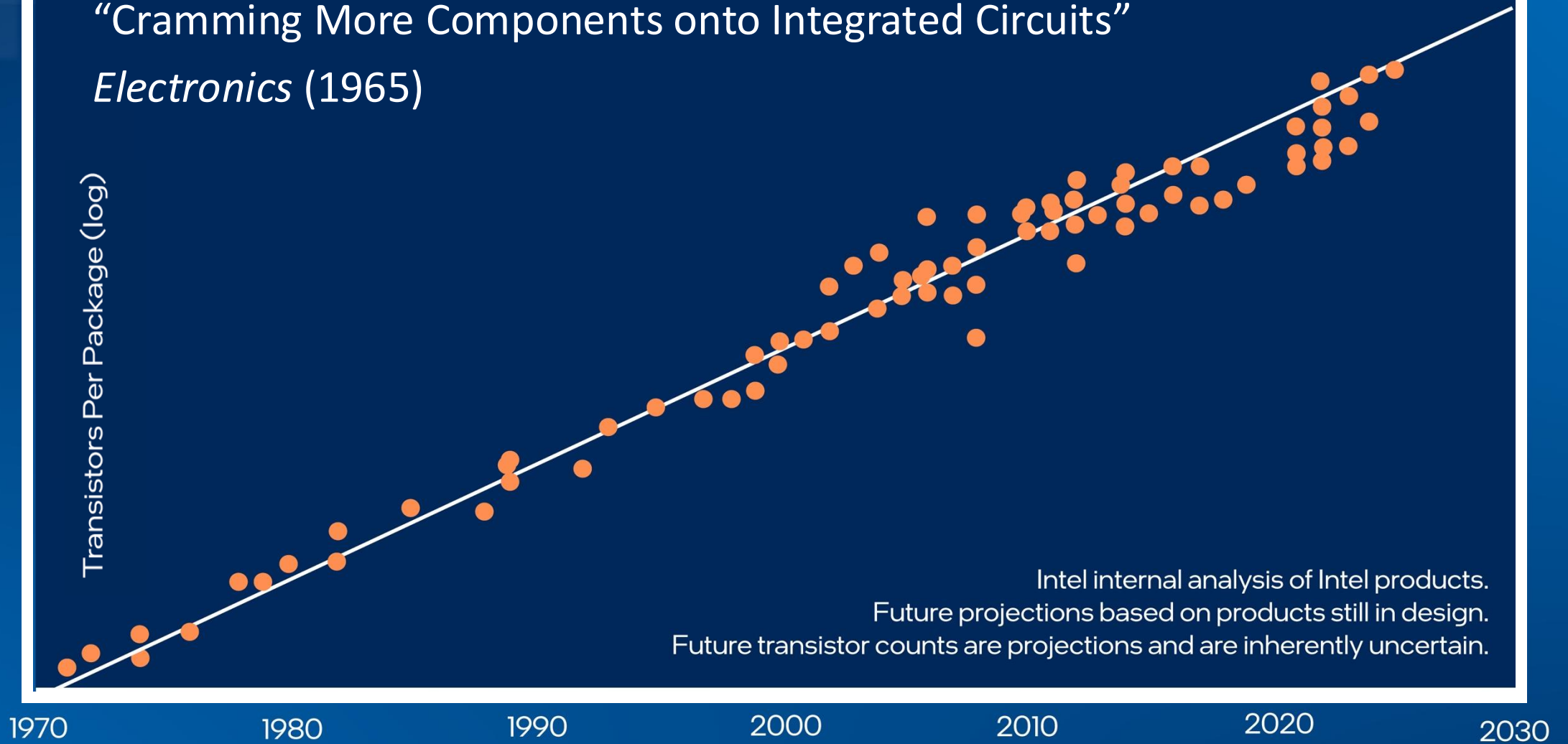
“Eight Pillars of entrepreneurial ecosystems”





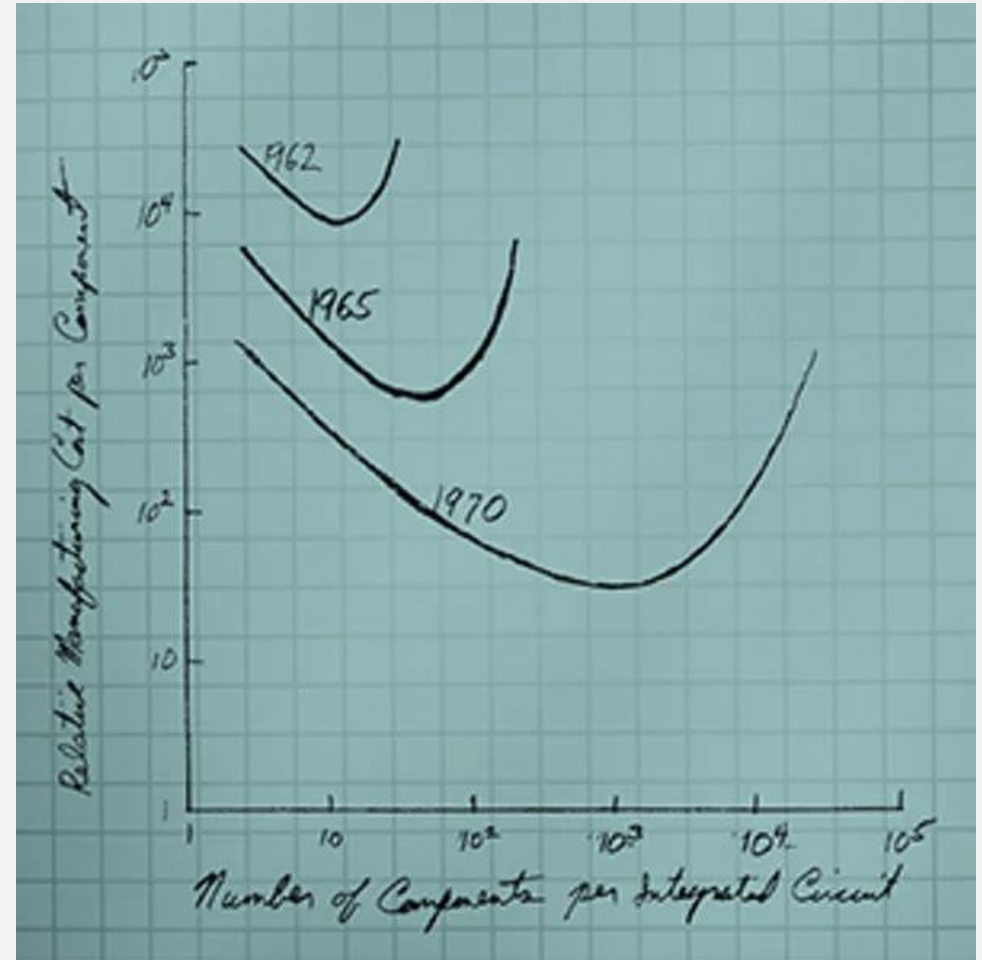
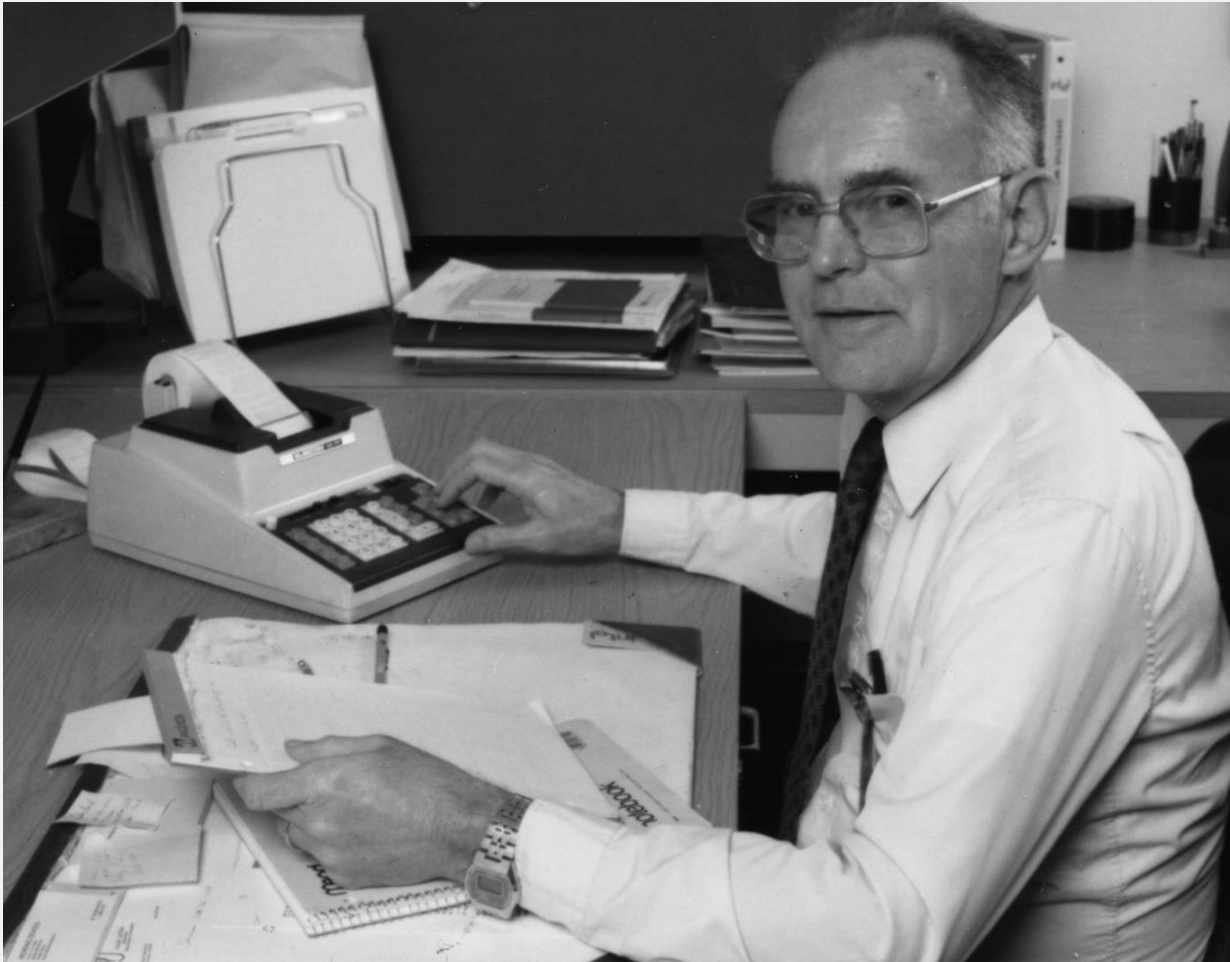
Gordon Moore,
“Cramming More Components onto Integrated Circuits”
Electronics (1965)

Transistors Per Package (log)



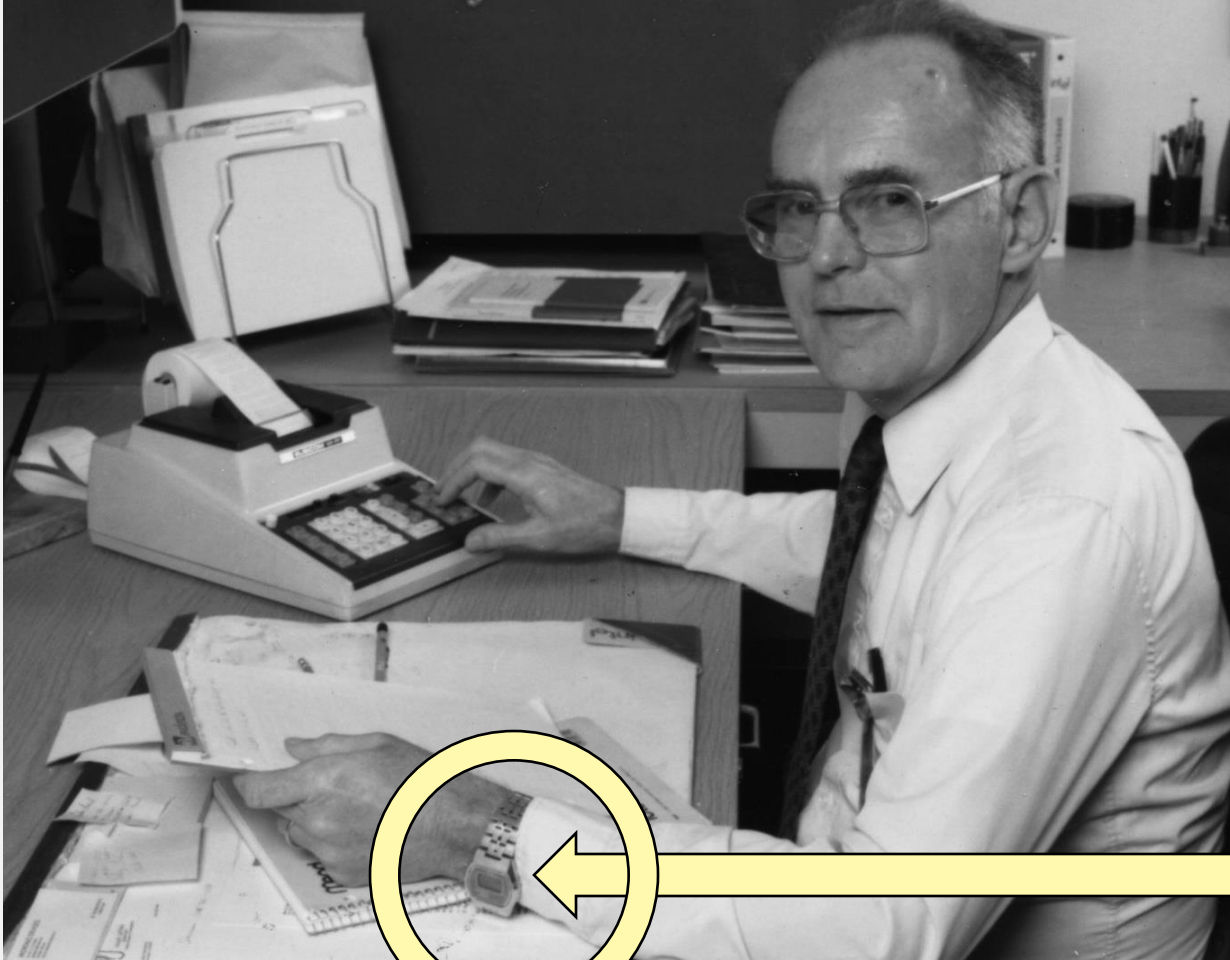
Intel internal analysis of Intel products.
Future projections based on products still in design.
Future transistor counts are projections and are inherently uncertain.

Moore's Law (1965): processing power will double every 12-18 months.



Gordon Moore (1929-2023)

Moore's *other* law (1972)

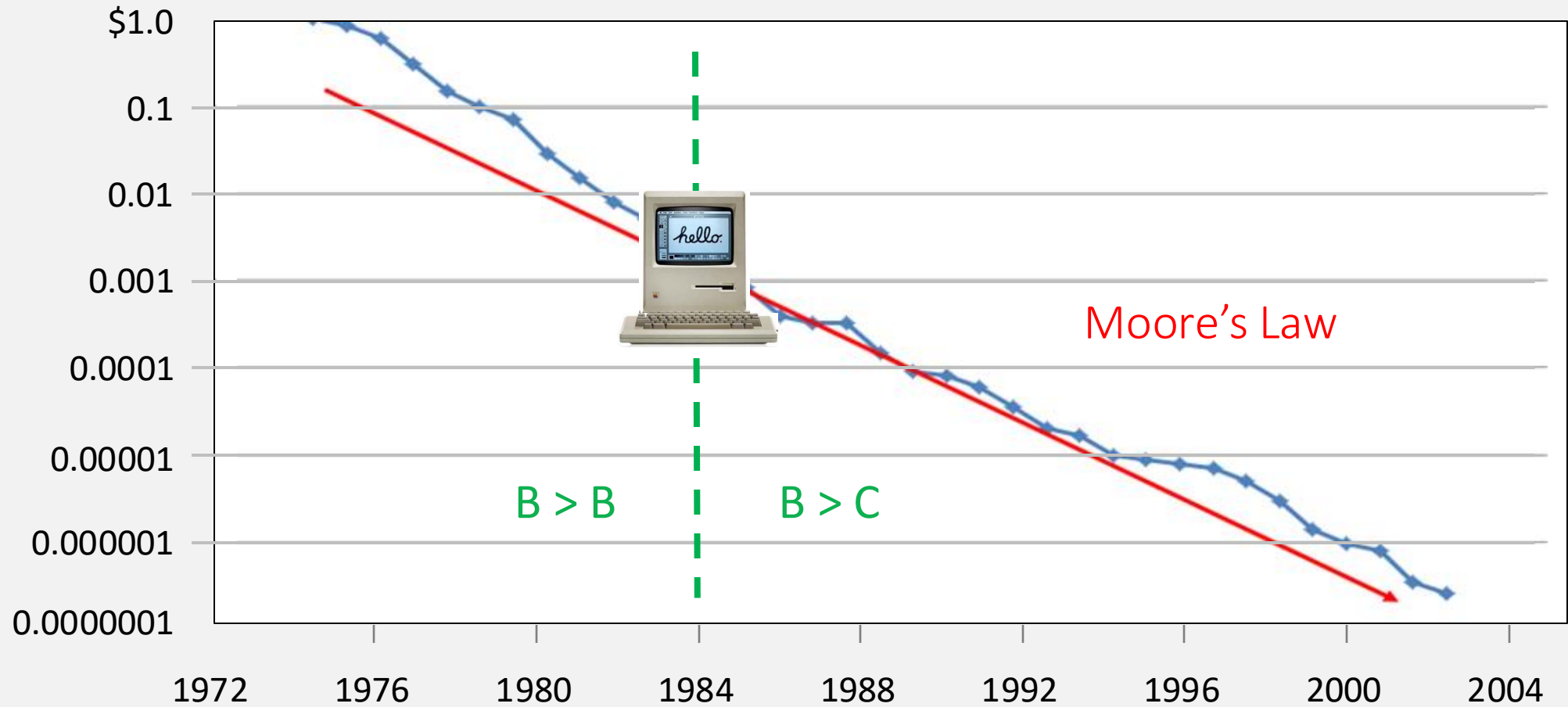


“Stay away from
the consumer market!”

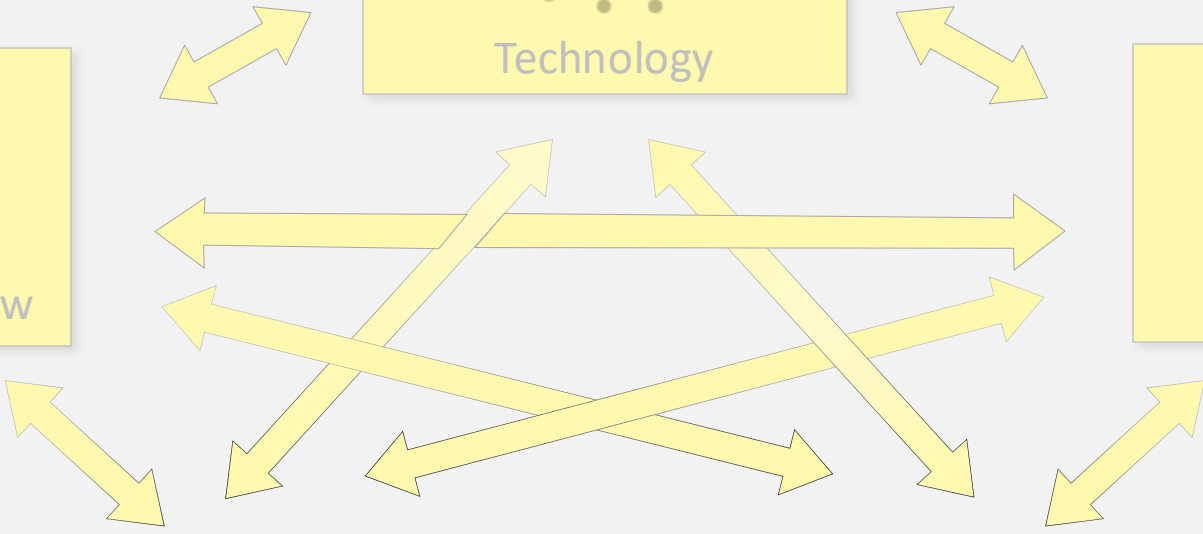
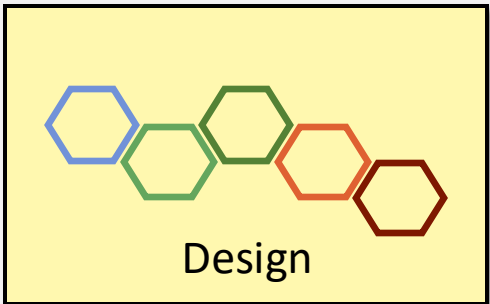
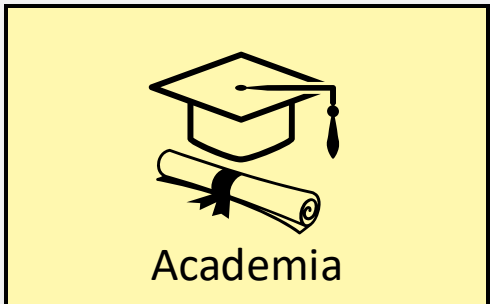


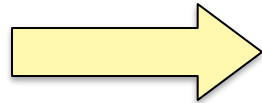
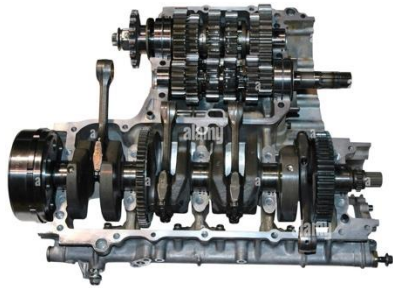
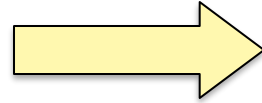
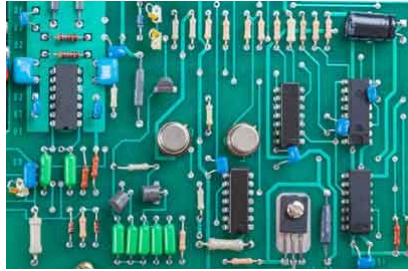
Microma digital watch - \$15,000,000

Average price of a transistor

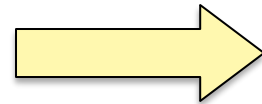


Source: Intel/WSTS (2005)



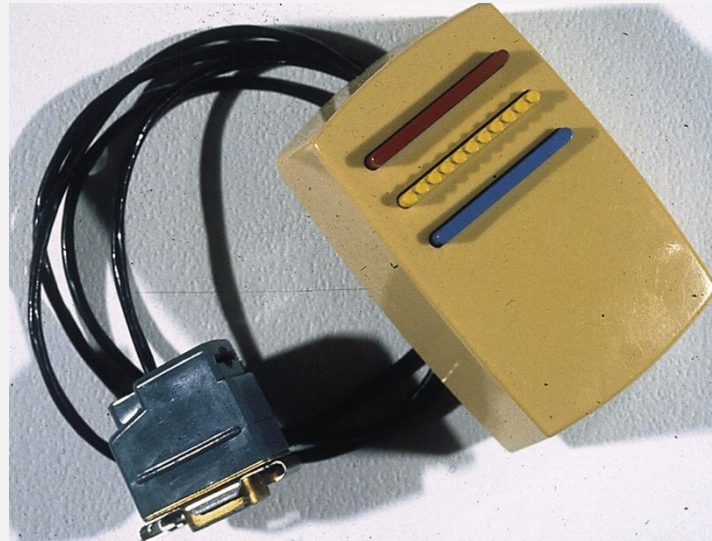


```
Line wrap   
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7 <meta name="apple-mobile-web-app-status-bar  
8 <meta name="theme-color" content="#fffff" /  
9 <meta http-equiv="origin-trial" content="Api  
10 <html<-ms-text-size-adjust:100%;-webkit-text  
11 body{margin:0;}  
12 button::-moz-focus-inner,input::-moz-focus-i  
13 input::-webkit-inner-spin-button,input::-web
```





Stanford Research Institute



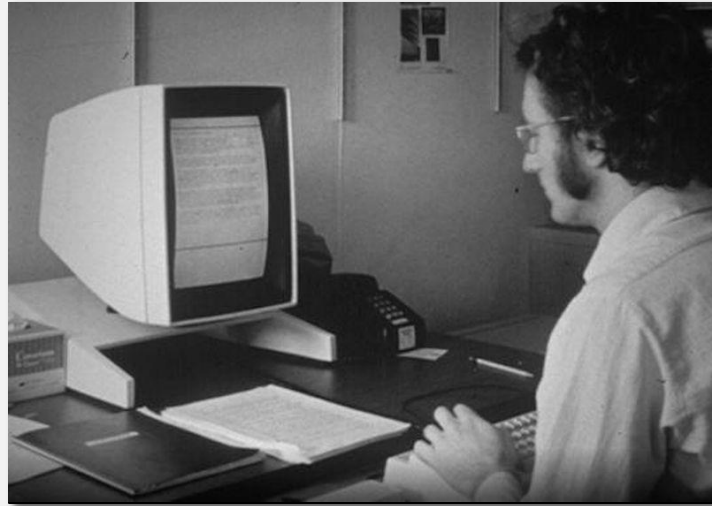
Xerox PARC



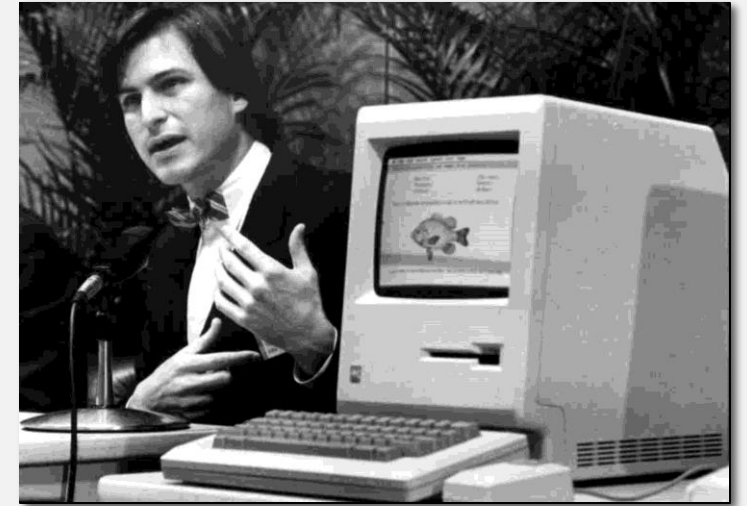
Apple Computer



1964: laboratory science



1974: corporate R&D



1984: consumer market



Technical factors



Human factors

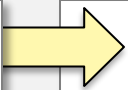


Social factors

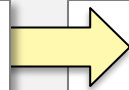
2000



Dedicated workstation (\$35k)



Machine shop (\$50k)



Trade fair (\$4k) + marketing

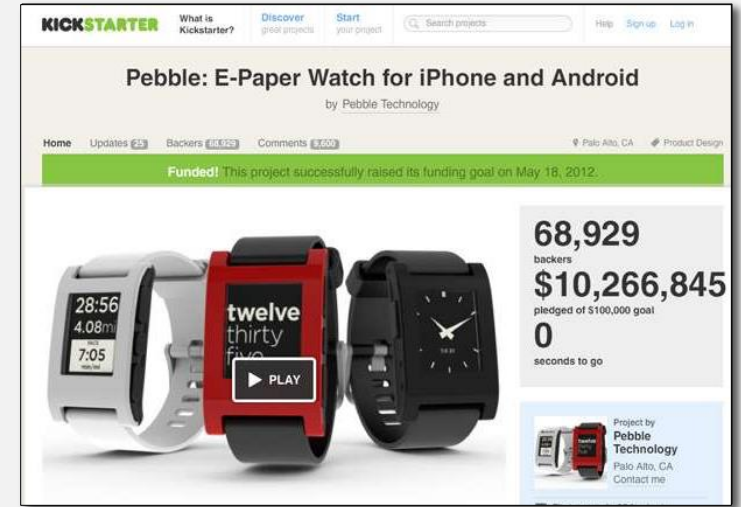
2025



Tablet + free software



MakerBot (\$140)



Crowdsource + e-comm.



Samsung Galaxy S21



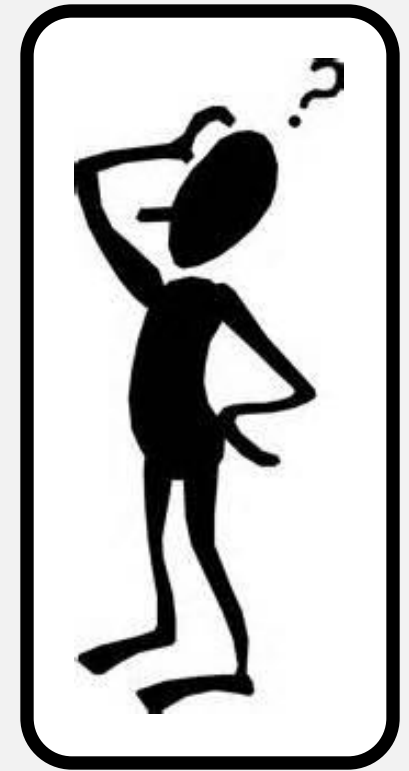
Apple iPhone 15

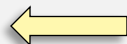
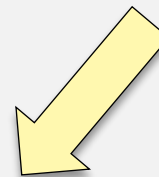


Oppo OnePlus 8



Huawei Mate 50



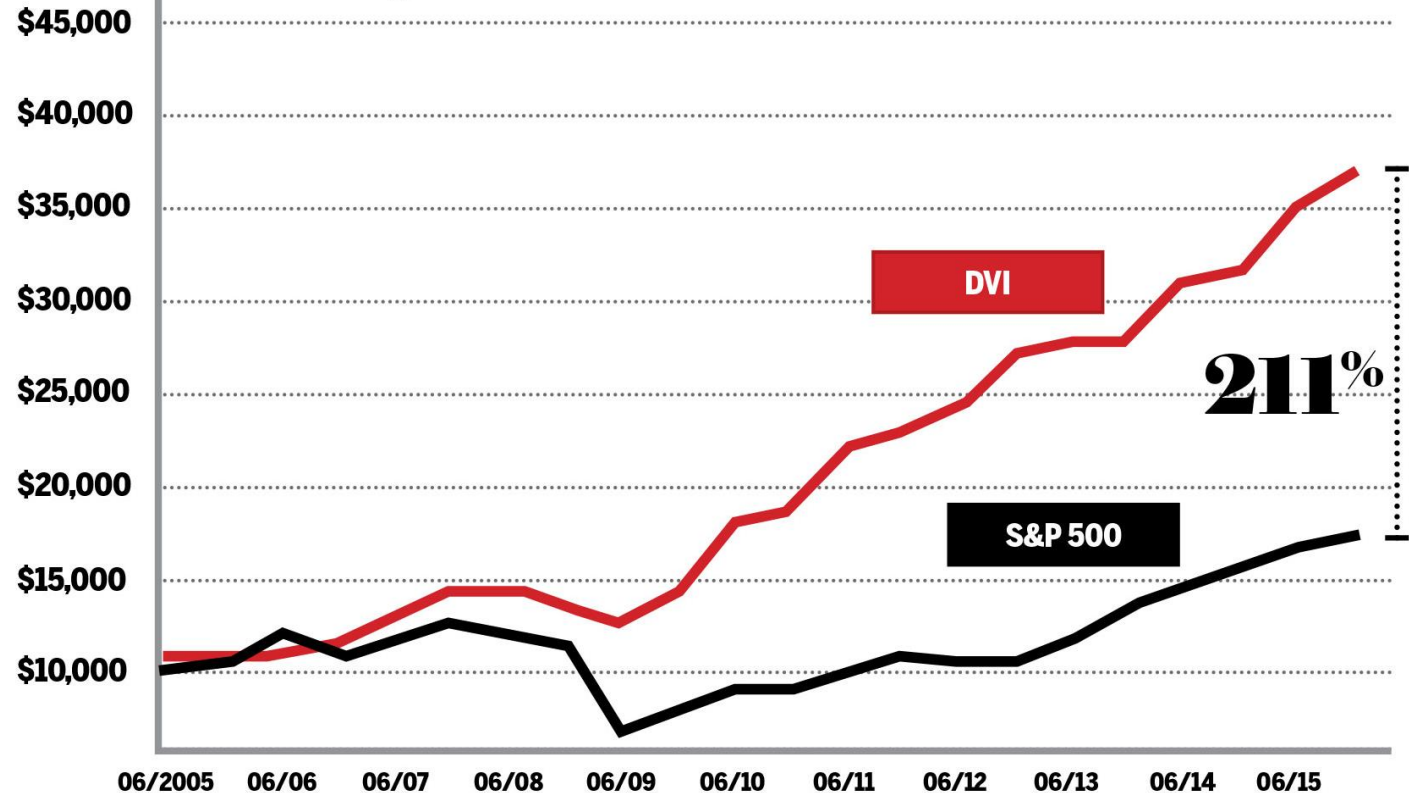





DESIGN-CENTRIC COMPANIES:

APPLE
COCA-COLA
FORD
HERMAN-MILLER
IBM
INTUIT
NIKE
PROCTER & GAMBLE
SAP
STARBUCKS
STARWOOD
STANLEY BLACK & DECKER
STEELCASE
TARGET
WALT DISNEY
WHIRLPOOL

dmi:Design Value Index 2005-2015



© 2016 The Design Management Institute



**case
studies**



“Design is not how it looks...
It’s how it works.”







Google



Google!

Search the web using Google!

10 results Google Search I'm feeling lucky

Index contains ~25 million pages (soon to be much bigger)

About Google!

Stanford Search Linux Search

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your e-mail Subscribe Archive

Copyright ©1997-8 Stanford University

Google Search: 1997

Gmail

Compose Mail Archive Report Spam Delete More Actions Refresh 1 - 9 of 9

Inbox (4) Select: All, None, Read, Unread, Starred, Unstarred

Anthony Vespa	FW: XIHA Life: A Social Network For Multilingualists - From: Karen	11:35 am
avespa	r2063 - branches/webapp/ibercelona/www - Author: avespa	10:01 am
Twitter	myfavoritestuff is now following you on Twitter! - Hi, Jason	9:53 am
russ - maxdesign	[WSG Announce] Some links for light reading (26/8/08) - This is a o	8:58 am
Newegg.com	End-of-Summer Clearance - Up to 65% Off + Free Shipping on f	8:44 am
me, Barbara (2)	Collections are live! - Morning Jason, Thank you for getting the c	7:10 am
JetBlue Airways	Seven days of super low fares... - If you are unable to see the mess	6:39 am
Elizabeth, Jason (9)	(no subject) - Hey Jas, We didn't have to go to the movies! hooray!	Aug 25
shane, me (3)	Re: Still blocked :-ys I can talk about the server what about it? in	Aug 25

See whether the messages you receive were sent to a mailing list or sent only to you. Learn more

You are currently using 247 MB (3%) of your 7063 MB.

Last account activity: 1 minute ago at this IP: 154.154.154.154 Details

MyHappyPlanet Mail view: standard | am on dial | basic HTML Learn more

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Powered by Google

G-Mail : 2004

Google Maps

Maps Local Search Directions Search Help Sand Feedback

Print Email Link to this page

Example searches

Go to a location:

kansas city Search

10 market st, san francisco Search

Find a business:

hotels near lax Search

pizza Search

Get directions:

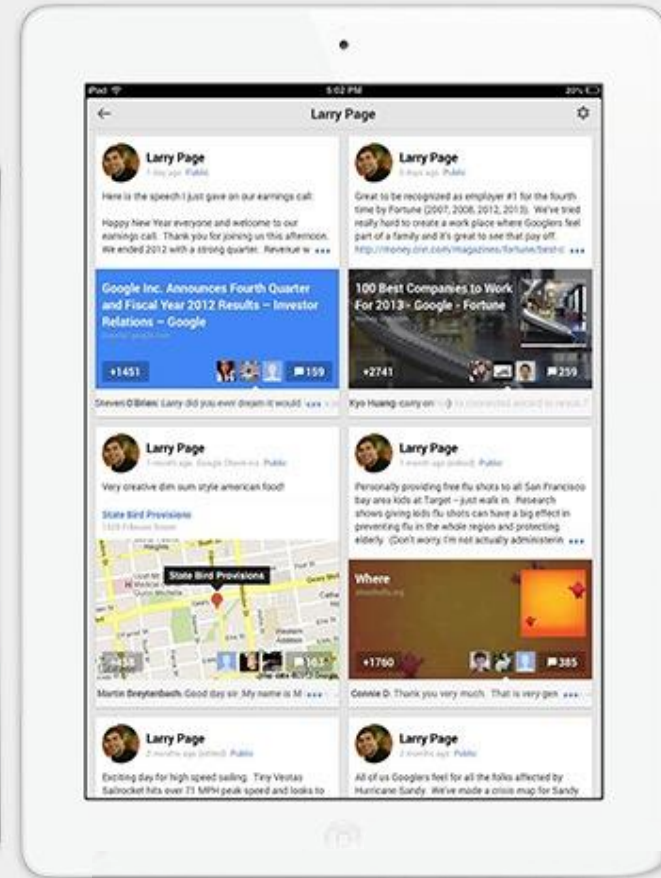
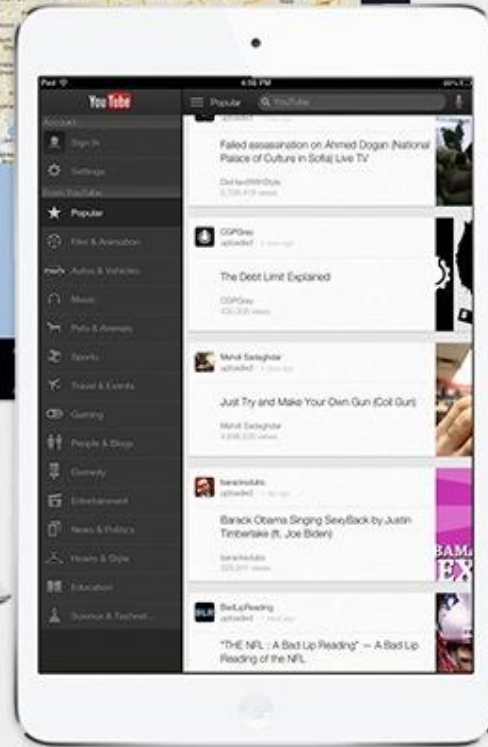
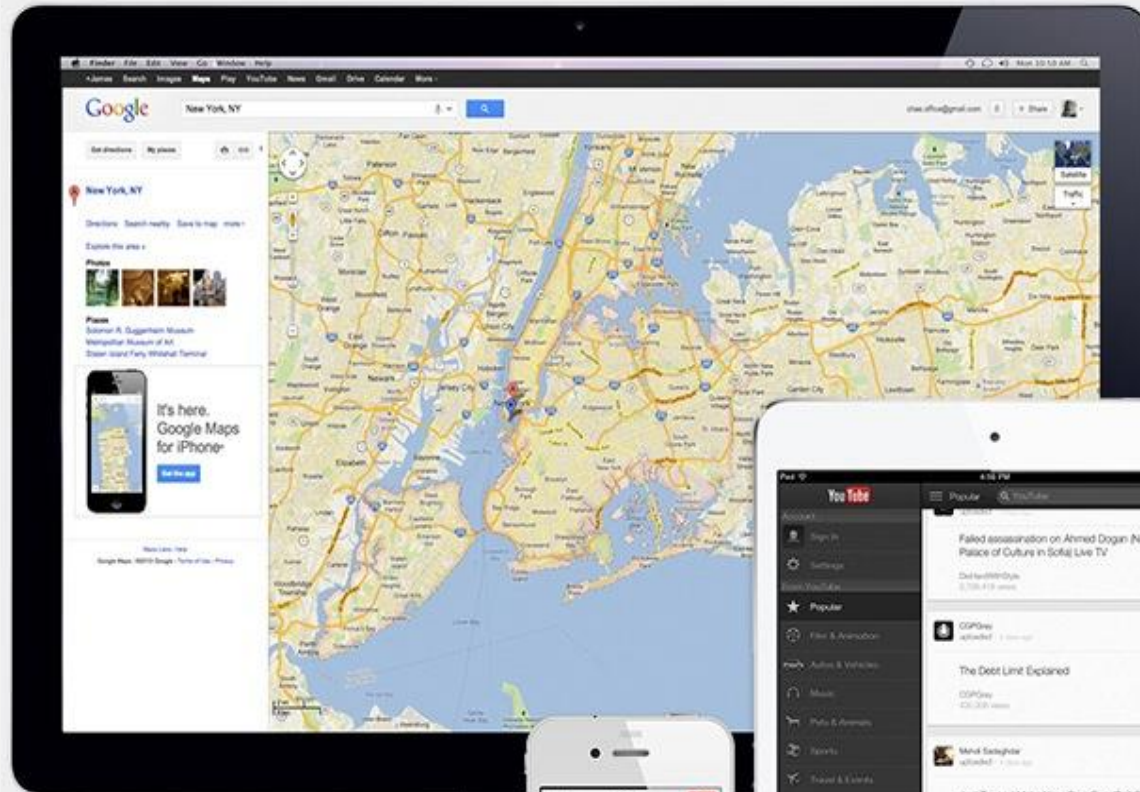
jfk to 350 5th, new york, Search

seattle to 98109 Search

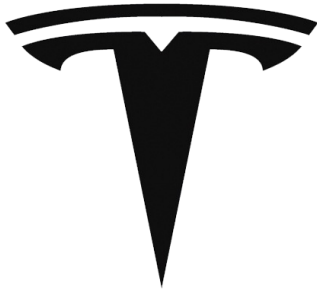
Drag the map with your mouse, or double-click to center. Take a tour

©2005 Google

Google Maps: 2005







TESLA



billionaire

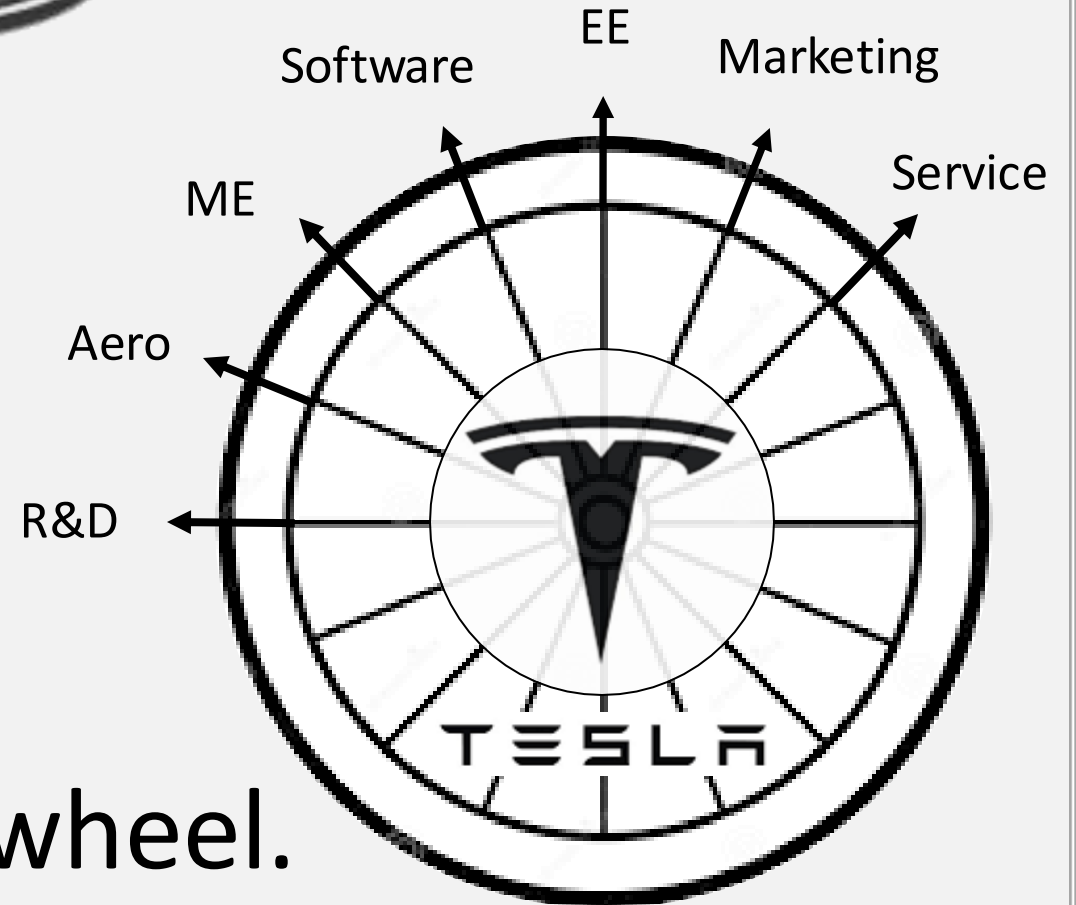
designer

centibillionaire

designer

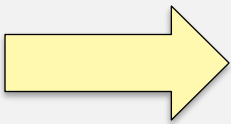
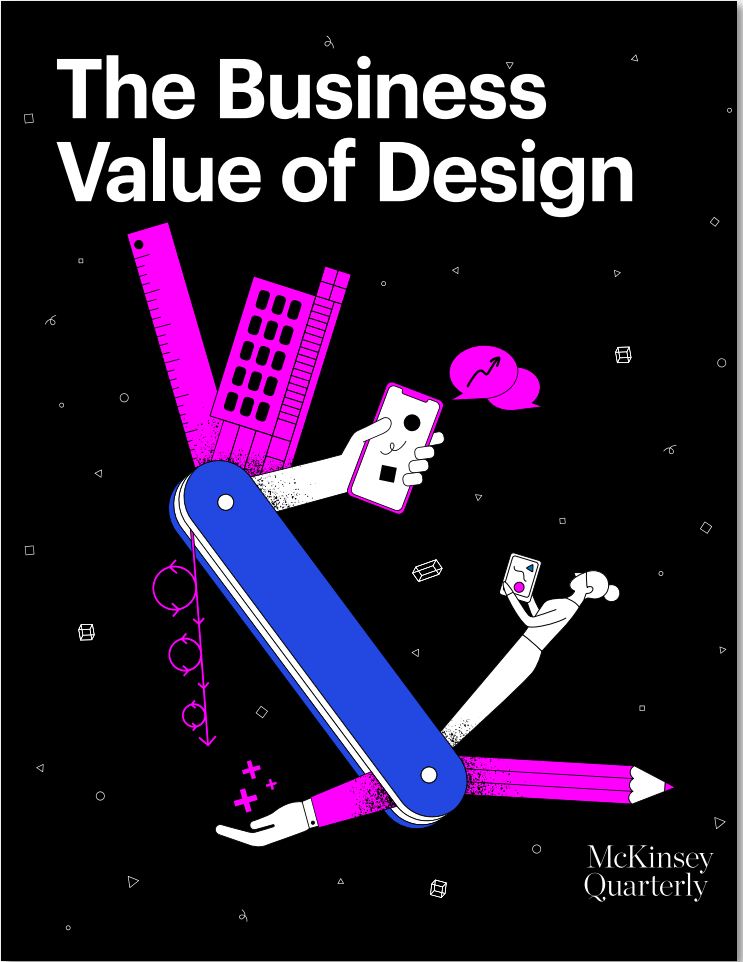


From a link in a chain...



... to the hub of a wheel.

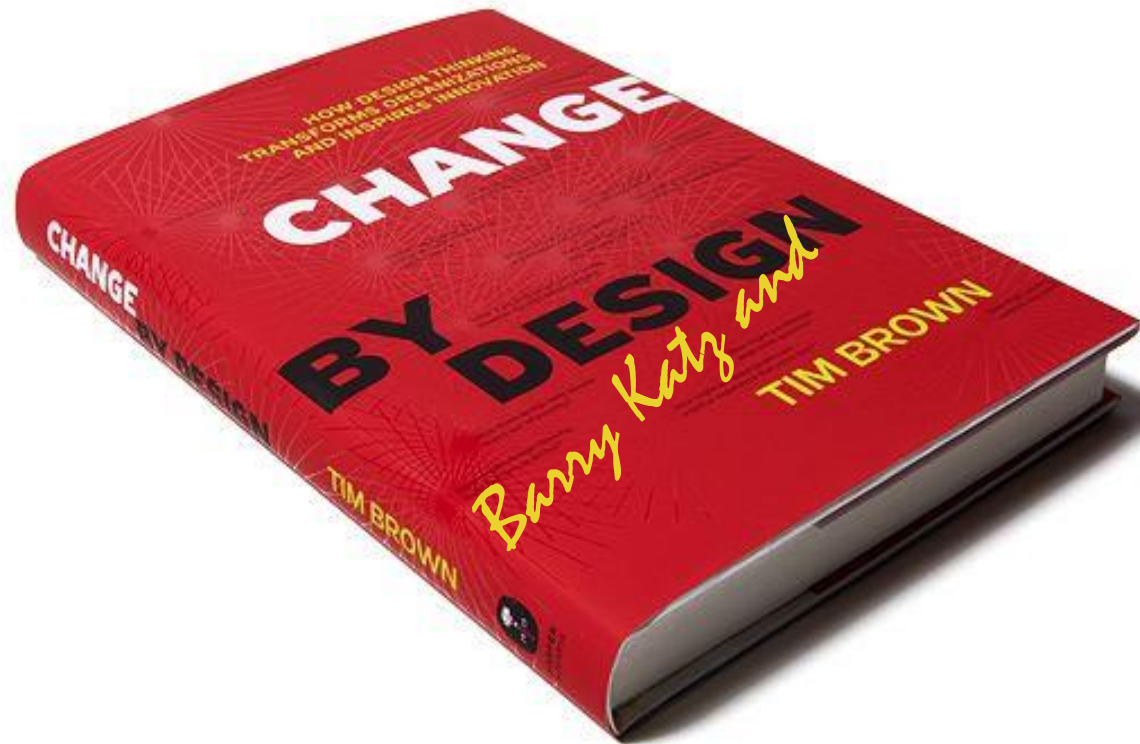




DESIGN

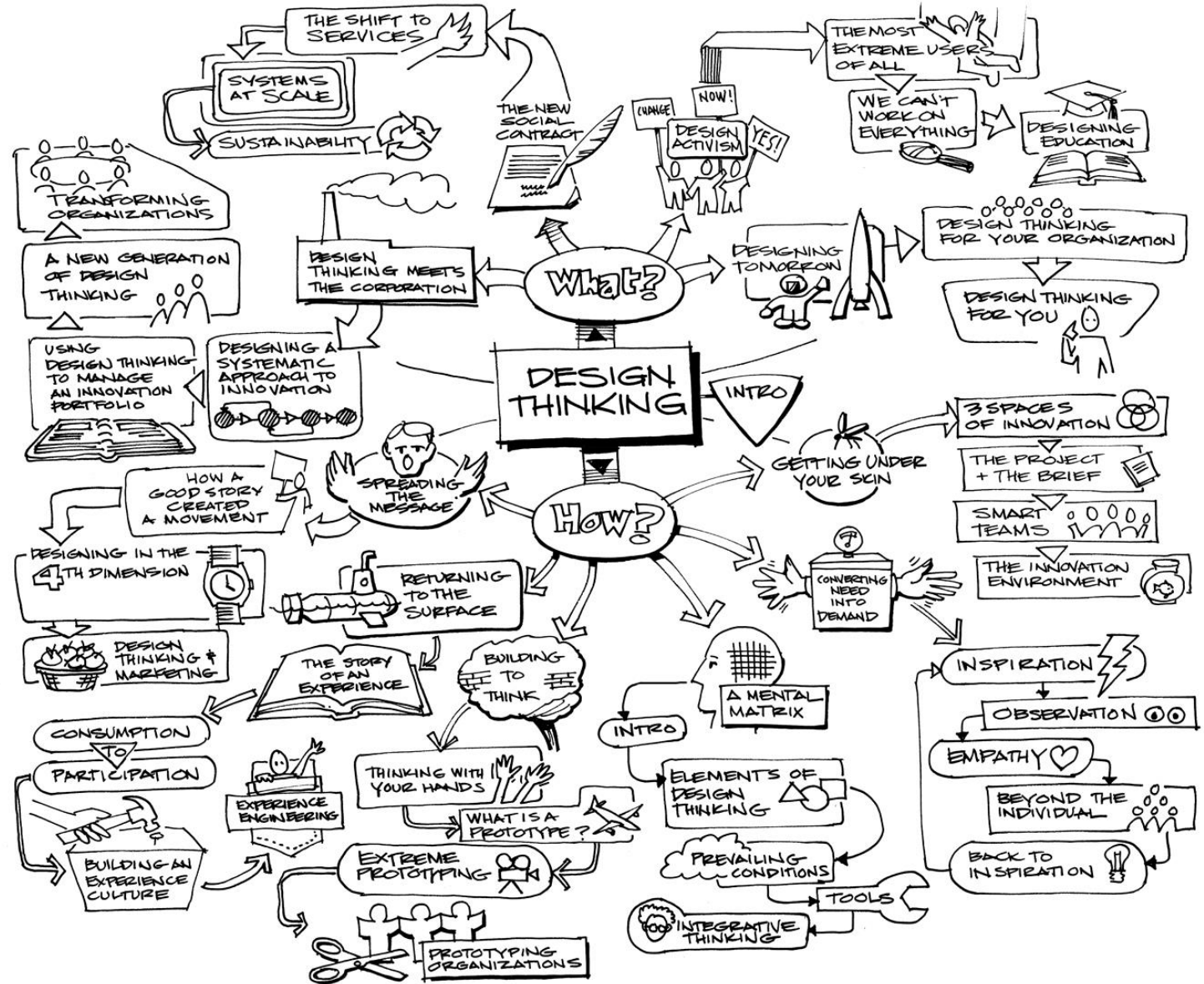


**design
thinking**



“Design thinking is neither art nor science nor religion. It is the capacity, ultimately, for integrative thinking.”

– Tim Brown (2009)



research

ideation

visualization



prototyping

storytelling

user testing

from **nouns**

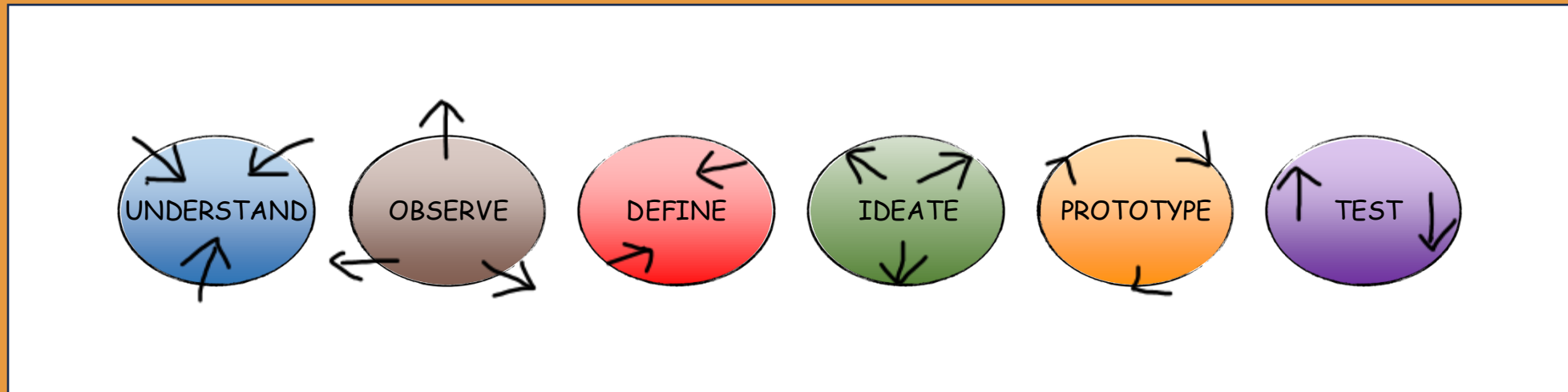
(“How might we build a better thing?”)

to **verbs**

(“What would be a better way to...?”)

The Challenge

Each year, 20m premature and low-birth-weight babies are born. 4m die in the first 28 days.



The question is not, “*How can we build a cheaper incubator?*” (a *noun*).
It’s “*How might we keep a baby warm without electricity?*” (a *verb*).

Understand & Observe



Prototype & Test



“GE Healthcare and Embrace team up to address infant mortality.”

-- December 16, 2010



embrace



GE Healthcare

<http://embraceglobal.org>

700,000 babies in 22 countries

Ukraine, 2024



Design

Thinking

You decide

Bullsh*t

Natasha Jen



There is *no* problem that cannot be addressed as a *design* problem.

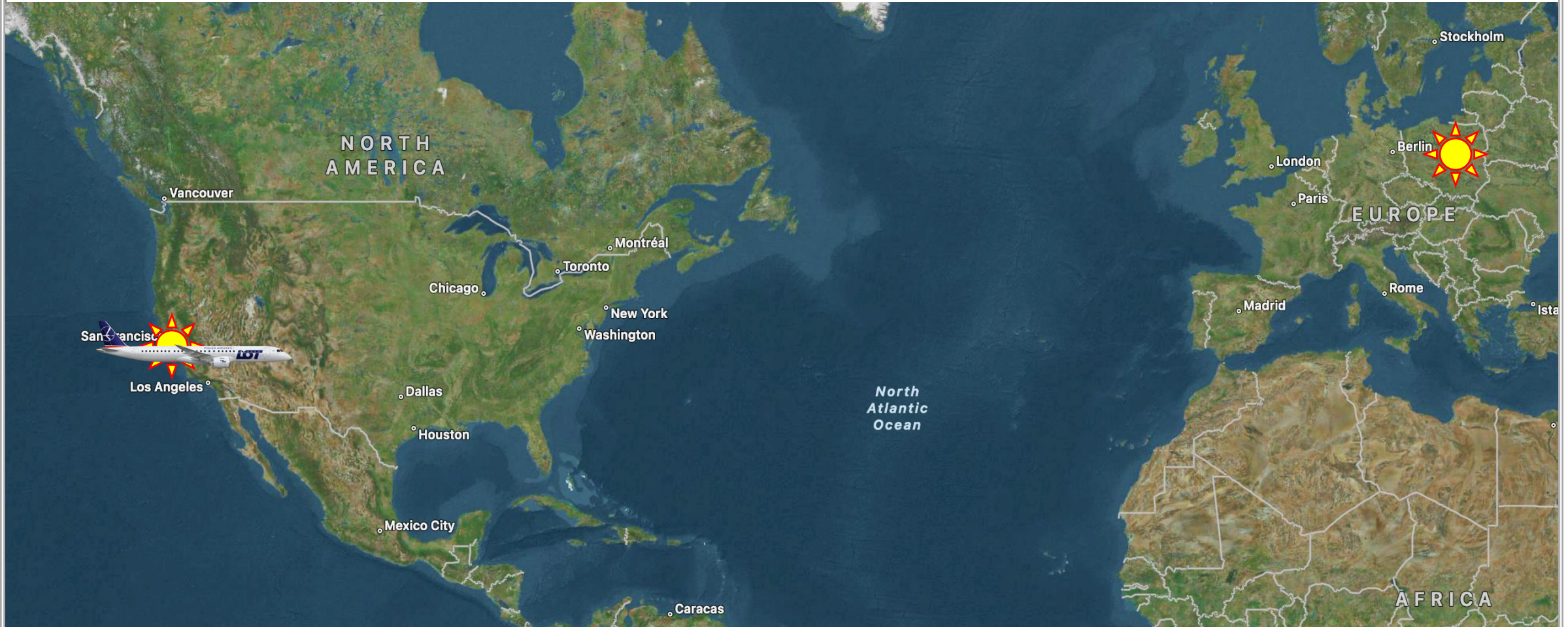
You don't need to *be* a designer to *think* like one.

**“We are here to put a
dent in the universe.”**

-- Steve Jobs
(1955-2011)



Thank you very much / Dziękuję bardzo



Prof. Barry Katz

bkatz@cca.edu