

**Global Focus on Knowledge
Lecture Series
Information Changes
the World**

**Why Information Technology Now ?
Day 2**

Hiroshi Harashima

The figures, photos and moving images with ʒ marks attached belong to their copyright holders. Reusing or reproducing them is prohibited unless permission is obtained directly from such copyright holders.

Information Changes the World — the Global View —

Hiroshi Komiyama
“The University and Information”
— Information Changes Learning —

Information Culture

Ikuo Takeuchi
“Information and Art Interfaces”

Tomomasa Sato
“Robots, Information Art and Life”

Information Society

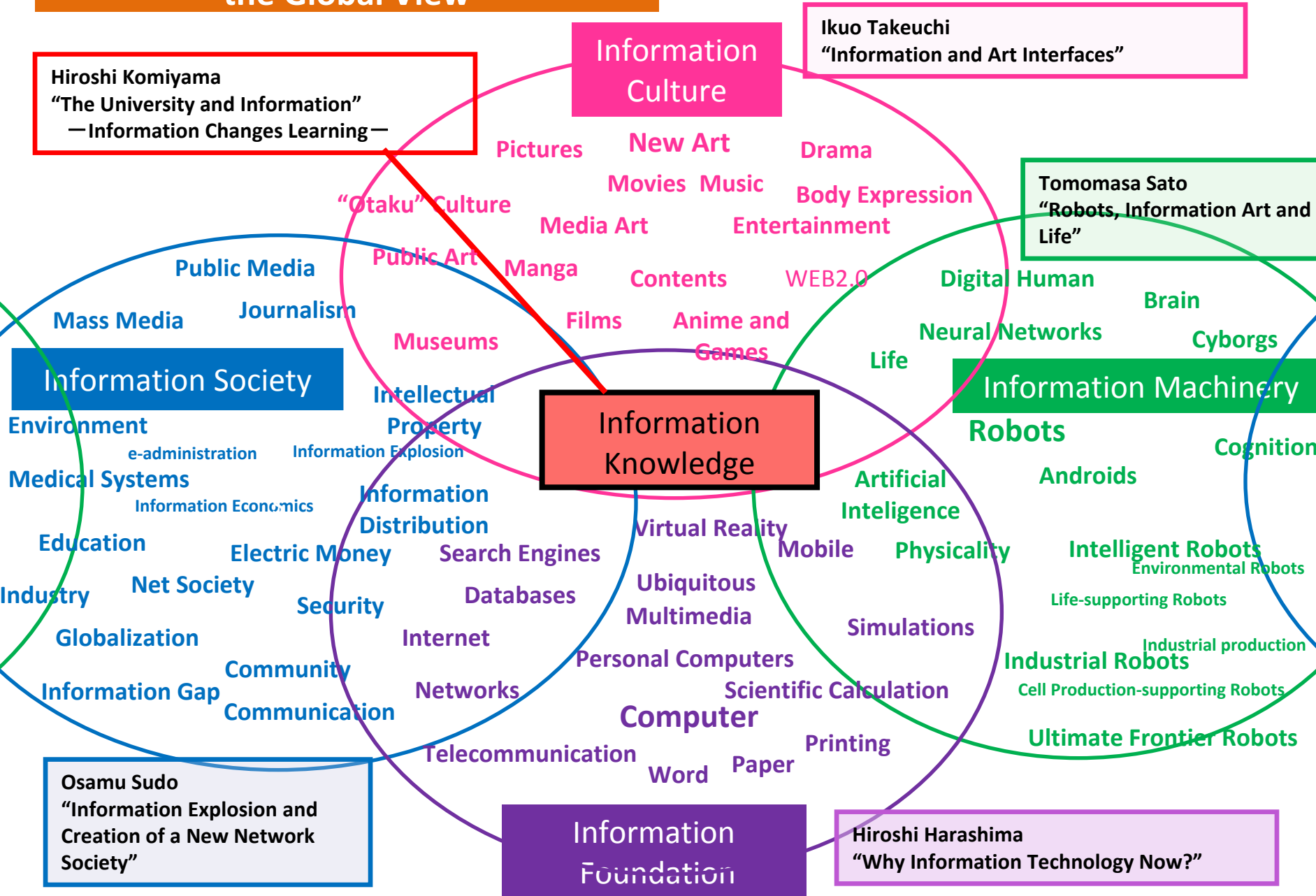
Information Knowledge

Information Machinery

Information Foundation

Osamu Sudo
“Information Explosion and Creation of a New Network Society”

Hiroshi Harashima
“Why Information Technology Now?”



Basic Theme

Now, information technology is in a drastic developmental phase.

Why is this ?

Let us view this over 10 years, 100 years and 1000 years.

Agenda

October 18th

60th Birthday of the Computer

(Reviewing the history of information in 10 year increments.)

October 25th

What Is Going on with Information Technology?

(Consider the present age in the context of 100 years.)

Guest : Masaru Kitsuregawa Institute of Industrial Science

November 1st

How Would a Historian Locate Information Technology ?

(Look toward the future - the next 1000 years.)

Let's review the last lecture.

**Observing the progress of IT
in the past 10 years ...**

The History of Computers in the past 10 Years

1946 ENIAC (the University of Pennsylvania)

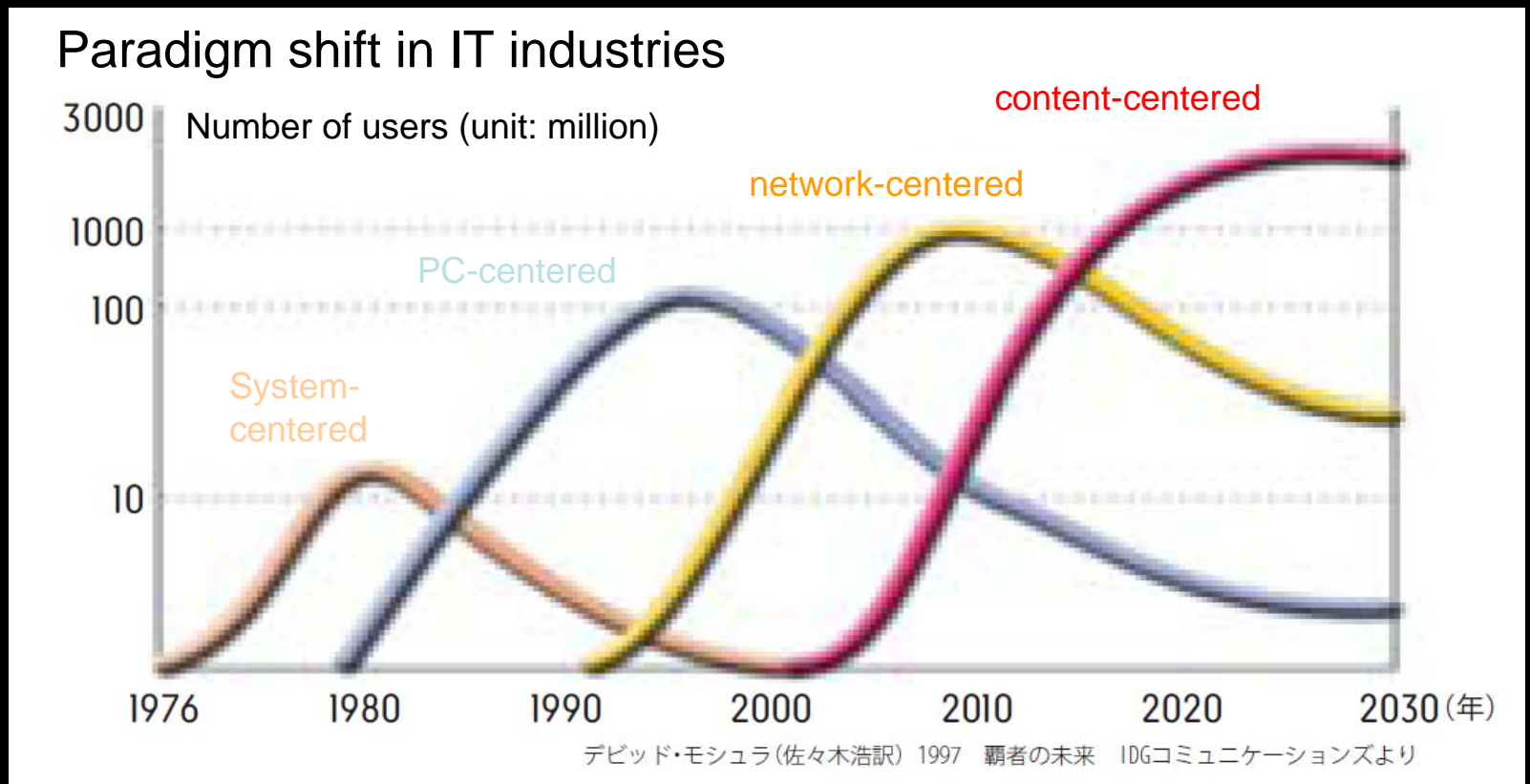
The Age of Scientific Computation (1965-1975)
informatization of science by computing systems

The Age of IBM (1975-1985)
informatization of business by host computers

The Age of Multimedia (1985-1995)
informatization of people by personal computers

The Age of Network (1995-2005)
informatization of society by internet,
broadband

Content is the new leader of IT



IBM Microsoft Google, Yahoo!
Information technology aims for culture.

**Let us see how technology
has developed in the past
100 years.**

**Can we predict technology in
the next 100 years?**

**Could anyone predict today's
technology 100 years ago?**

宗屋

刊初日一月

二十世紀の豫言(二)

▲鐵道の速力 十九世紀末に發明せられ

し葉巻煙草形の機關車は大成せられ列車は

小家屋大にてあらゆる便利を備へ乗客をし

て旅中にあるの感無からしむべく管に冬期

室内を暖むるのみならず暑中には之に冷氣

を備すの装置あるべく而して速力は通常一

分時に二哩急行ならば一時間百五十哩以上

と進行し東京神戸間は二時間半を要しまた

今日四日半を要する紐育桑港間は二

連夜にて通すべしまた動力は勿論石炭を使

用せざるを以て煤煙の汚水無くまた給水の

爲に停車すること無かるべし

▲市街鐵道 馬車鐵道及鋼索鐵道の存在

發

發行所

▲幼稚園に發達せしむるに幼稚用は一人一電氣米國を起し以上のを以て俵に低

甲、乙、丙、

Sports Hochi “Predictions for the 20th Century” (1901.1.2-3)

- 2.5 hours by train between Tokyo and Kobe
- No more horse-and-buggies, a new world of automobiles
- Photographs of distant places
- A new machine to relieve cold and heat

⋮

- Free conversation between humans and animals
- Rainstorms stopped by cannon

What Came True

transportation, communication (railway, car)

1825

1885

What Didn't

conversation with animals, control of nature

What Wasn't Predicted

aircraft 1903

computer 1946

man's first landing on the moon 1969

railway

1814 steam locomotive



1825 railroads opened



(to everywhere in Europe)



1879 electric locomotive



1964 Shinkansen

Development of Transport Technology

aviation

1903 Wright brothers



1927 Lindberg



1949 jet plane



1969 Concorde

space

1944 V1.V2 rocket



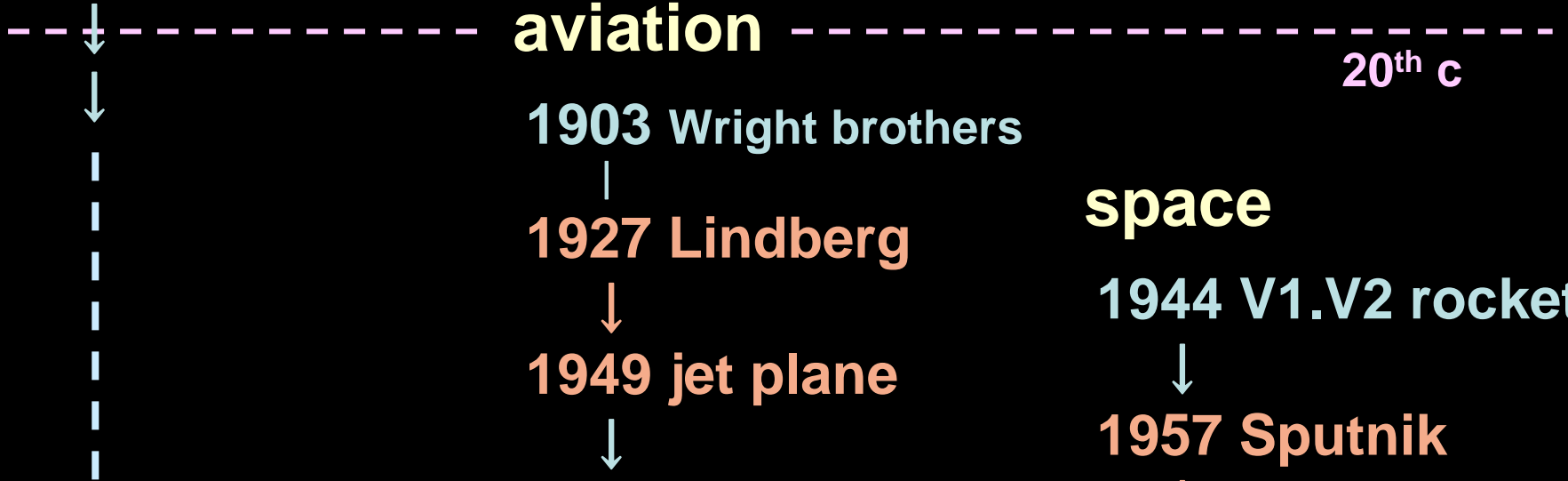
1957 Sputnik



1969 Apollo 11

19th c

20th c



**In each age, there
was a technology
in-season.**

Technology in Its Season

railway

1814 steam locomotive



1825 railway opened



(everywhere in Europe)

The Season of Railway Technology

1879 electric locomotive



1964 Shinkansen

aviation

1903 Wright Brothers



1927 Lindberg



1949 jet plane

The Season of Aviation



1969 Concorde

space

1944 V1.V2 rocket



1957 Sputnik



1969 Apollo 11

The Season of Space Technology

railway

1814 steam locomotive



1825 railway opened



(everywhere in

Europe)



1879 electric locomotive



Development
of railways
in France

Development of Railway Technology

Railway technology had its season in
the early 19th Century

1825 The first commercial railway in England

1832 The first commercial railway in France

1830 The first railway in America

1835 The first railway in Germany

1850

1880

Figure removed due to copyright restrictions

1964 Shinkansen

Development of Transport Technology

railway

1814 steam locomotive



1825 railroads opened



(to everywhere in Europe)



1879 electric locomotive



1964 Shinkansen

aviation

1903 Wright brothers



1927 Lindberg



1949 jet plane



1969 Concorde

space

1944 V1.V2 rocket



1957 Sputnik



1969 Apollo 11

1969 ARPA net



1969

The Apollo Project

1969 Apollo 11 first landing on the moon

1970 Apollo 13 the accident

1972 Apollo 17 called off (Apollo was planned to 20) 2003 the last flight



Concorde

1969 the first flight

2000 the accident

2003 the last flight



Nuclear Ship “Mutsu”

1969 launched

1974 radiation leakage

1991 completed as a nuclear ship through inspections

1992 Dismantling started.

1995 The ship was handed over to JAMSTEC.

1997 launched as the ocean research vessel “Mirai”



1968-69

1968 Douglas Engelbart

N L S (oN Line System)
demo of an interactive computer



‡

Source: <http://www.bootstrap.org/chronicle/pix/pix.html>

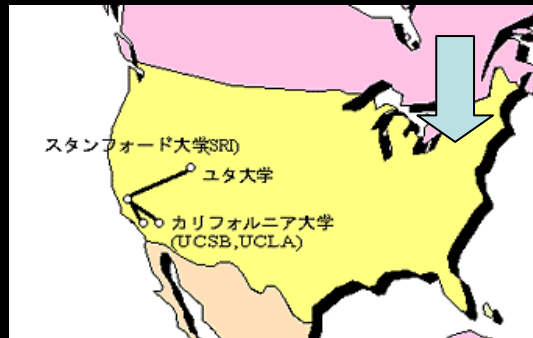
1968 Alan Kay

Dynabook Concept
concept for an ideal PC



‡

Source: <http://ja.wikipedia.org/wiki/Alto>



1969 ARPANET started
(the Pentagon
network)

**Seasons of
technology were the
inevitable currents
of history.**

Modern Age

16-17th C: Age of Geographical Discovery

(from geocentric theory to heliocentric theory)

1543 Copernicus, 1580 Galilei

1609 Kepler, 1637 Descartes, 1687 Newton

18-19th C: Toward Capitalism Through the Industrial Revolution

1769 Watt (steam engine), 1807 Fulton (steam ship)

1814 Stevenson (steam locomotive), 1830 railway opened

20th C: The Age of the Earth by Radio Wave and Aviation

1895 Marconi's wireless communication, 1920 radio broadcast

1903 Wright Brothers flight

1969 man's first landing on the moon

Competition for Dominance of the World

- **Domination of the Land**

Mongol (13-14c), Ottoman Turks(15-16c)

- **Domination of the Sea (sailing)**

Spain · Portugal (16c), Netherlands (17c)

France · England (18c)

—industrial revolution— (railroad

technology)

- **Domination of the Sky (aviation/ space technology)**

the World War England, France, USA vs Germany, Italy, Japan

the Cold War USA vs Soviet Russia

- **Domination of Networks (information technology)**

Now, information technology
is in season.

This is not just a temporary boom.
It is an inevitable historical current.

In the past,
England won out in the age of sea
And experienced the industrial revolution.

Next,
the USA won out in the age of sky
and experienced an information revolution.

The 21st century,
the age of information, began as the age
of the USA.

**What is happening
in this age of information ?**

Information Explosion

**Now, let me introduce
Dr. Kitsuregawa.**



Summary Here

Industrial Revolution

- **Primary Industrial Revolution (late 18C-early 19C)**
 - 1765 Watt's steam engine**
 - mechanization of light industry (spinning, weaving)**
- **Secondary Industrial Revolution (late 19C-early 20C)**
 - 1825 railroad opening**
 - transportation, heavy chemical industry, material industry**
- **Third Industrial Revolution (late 20C-)**
 - **Electronics Revolution**
 - 1946 computer 1948 transistor**
 - development of information/hi-tech industries**
 - **Network Revolution**
 - 1980s multimedia 1990s internet**
 - Social and culture infrastructure is constructed on network.**

You are the next leaders.

That's all for today.



Thank you for listening.