50 years of Digitalization: What is new?
Dennis Tsichritzis

MAINFRAMES

- Mainframes, cards, batch processing, Computer Centers
- IBM 360 series, OS 360
- IBM and the seven dwarfs, CDC, UNIVAC
- National champions, ICL, BULL, Siemens, Olivetti, Fujitsu
- Time sharing systems, teletypes, modems, Multics
- On Line applications, Airline reservation, banking

MINICOMPUTERS AND NETWORKS

➢ Minicomputers, DEC, Data General, Wang, Nixdorf
➢ Integrated circuits/chips, Texas Instruments
➢ Unix and proprietary systems, Data Base Systems
➢ Xerox and non impact printers
➢ Digital telephone switching, real time systems
➢ Arpanet and long distance nets uucp

PC's

➢ Xerox PARC, PC's and Apple
➢ Ethernet and packet switching
➢ IBM PC's and Microsoft, office systems
➢ PBX and Personal printers, ROLM, Cannon, HP
➢ Multifunction chips, CPU chips, Intel
➢ Digital telephone switching, telecom providers, Western Electric, Alcatel, Siemens, Nortel

INTERNET

- Internet and WWW, AOL and telephone operators
- Broadband and Cable providers, Qualcomm, Rogers,
- Internet equipment, Cisco, Erickson
- Browsers, Netscape, Mozilla
- First mobile phones, Motorola, Siemens
- Wintel Windows/intel
- Unix workstations, SUN

MOBILE SERVICES

- Asian Cos , Sony, NEC, Samsung
- Asian manufacturing, Japan, Taiwan, Korea, China
- Mobile phones, Nokia, RIM Blackberries, Wi Fi
- First "disruptive" technology, Amazon
- MPEG 3 and I-pods, Apple ecosystem
- ARM licensed design, open software Linux

SMARTPHONES

- I-phones and ATT deal, Android Samsung
- Google and free services, search, google earth and maps
- I-pad and e-books Kindle
- Cloud computing
- Cyber security
- Facebook and social networks
- Chinese giants, Alibaba, Hua Wei, Tencent
- New aggressive and disruptive players, Uber, AirBnB

The Role of Government

- Government as enabler, massive and focused, MITI, Korea
- The role of the Defense Agencies, DAPRA,NSA
- Government tax policies critical for High Tech
- Government subsidies, long term ineffective
- Government R+D programs, not focused and out of date
- Fraunhofer model successful, mirroring the market

The Role of Personalized Leadership

➢ Bill Gates, Steve Jobs, Mark Zuckerberg, Elon Musk
➢ Charismatic, absolute and ruthless, like Genghis Khan
➢ Great to make deals, raise capital and decide fast
➢ Taxation and Penalization drive away top talent

The Role of Financial Engineering

➢ Banks are excluded from the game
➢ Venture Capital as Investment Banking
➢ Diminishing role of Stock and Bond markets in High Tech
➢ The role of investment funds as exit strategy and valuation
➢ Crowdsourcing and Bitcoin

The Role of Artificial Intelligence

- ➤ Peaks and Valleys
- ➤ Impossible targets as drivers
- ➤ Riding Technology, huge computer resources
- ➤ Volume training successful
- ➤ Big Data as a gold mine

The Role of Data Science

➢ From Data processing to Data bases to Data Science
➢ Analytics and the role of Math
➢ New paradigm for Models and Scientific progress
➢ Decisive resource for strategy
➢ Enabling technology for new applications

Concluding Remarks

➢ Concentrate on the problem not the existing solution
➢ Hype mainly on opportunities not on consequences
➢ Digitalization past changing Economy and changes Society

The future is not what it used to be

Paul Valèry