合肥學院
HEFEI UNIVERSITY

Distributed Computing
Lesson 1: History

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经济技术开发区 锦绣大道99号

Outline

website

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- Learn a bit about the history of computing

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- We look at the historical transition from single computer systems to distributed systems [1]

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- As side-dish, we consider the historical division between application and operating system

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  - world's first fully functional digital computer
  - electro-magnetic relais
  - binary floating point arithmetic
  - Turing complete [4]
  - programmable and micro-programmable
  - pipelining of instructions
  - parallelization of instructions
  - *not electronic*

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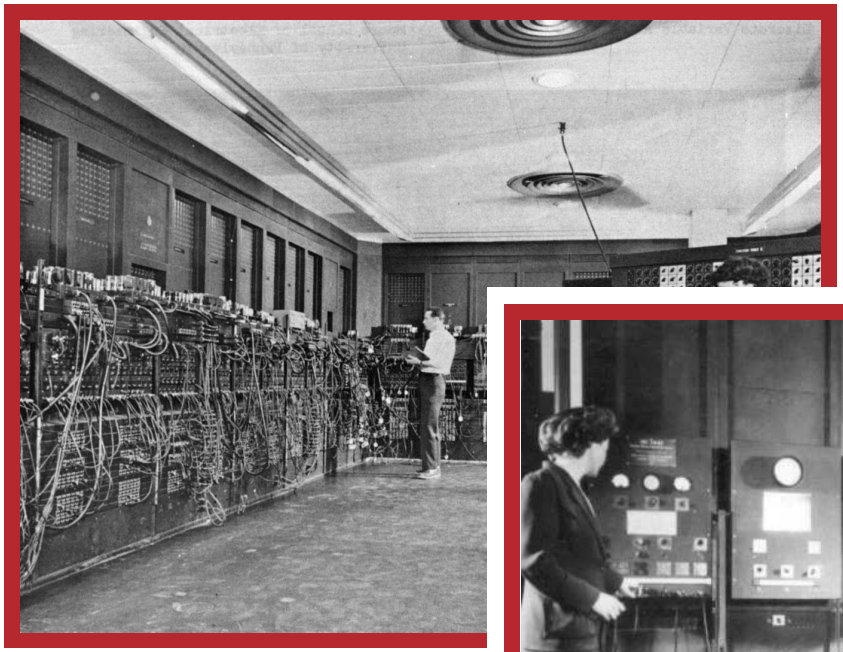
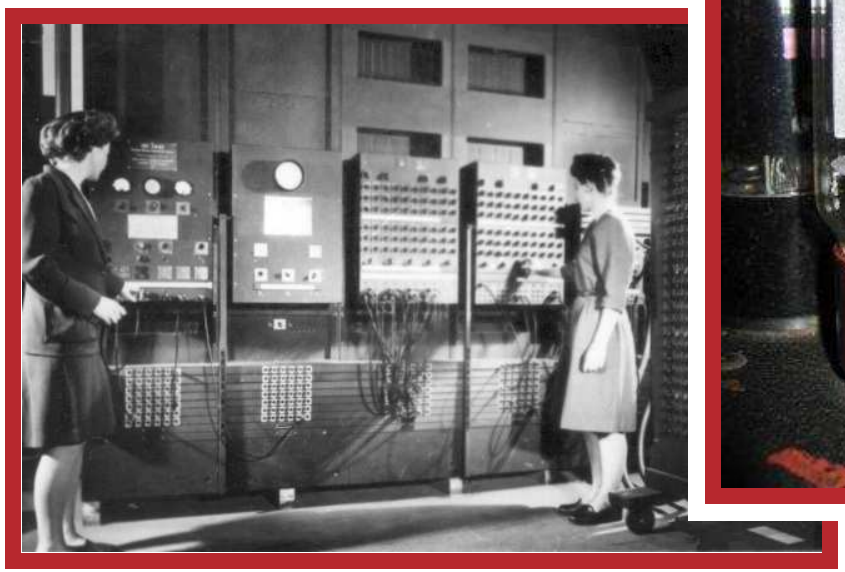
- Giant electronic computers like ENIAC based on vacuum tubes





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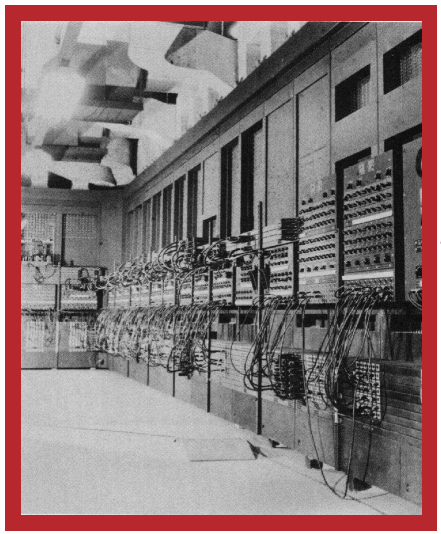

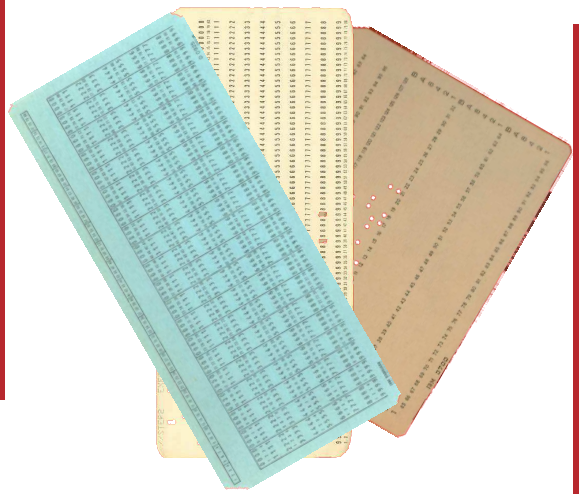

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- SABRE, a commercial airline reservation system started with two connected mainframes [7]

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- Time sharing: multiple users, one computer

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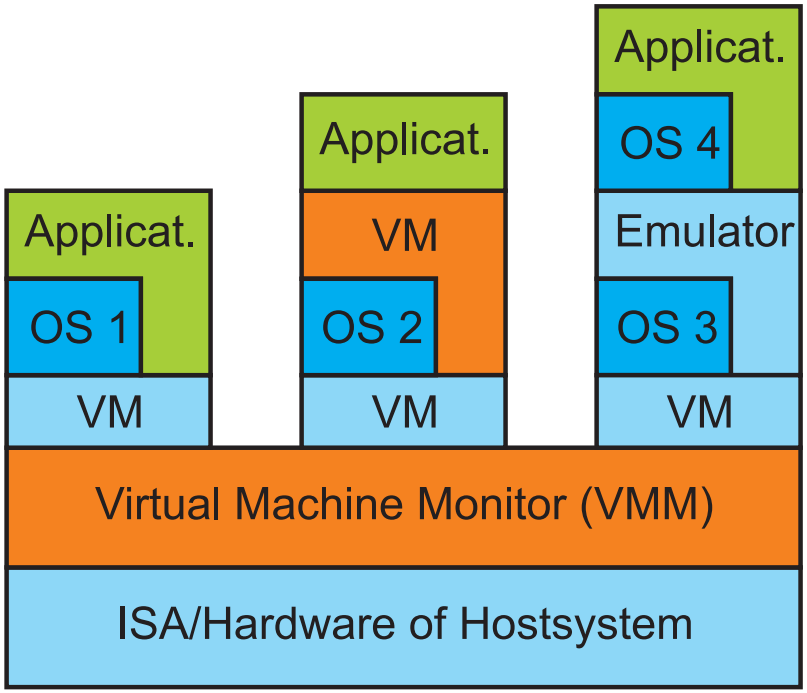

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- All "modern" operating systems features already present!

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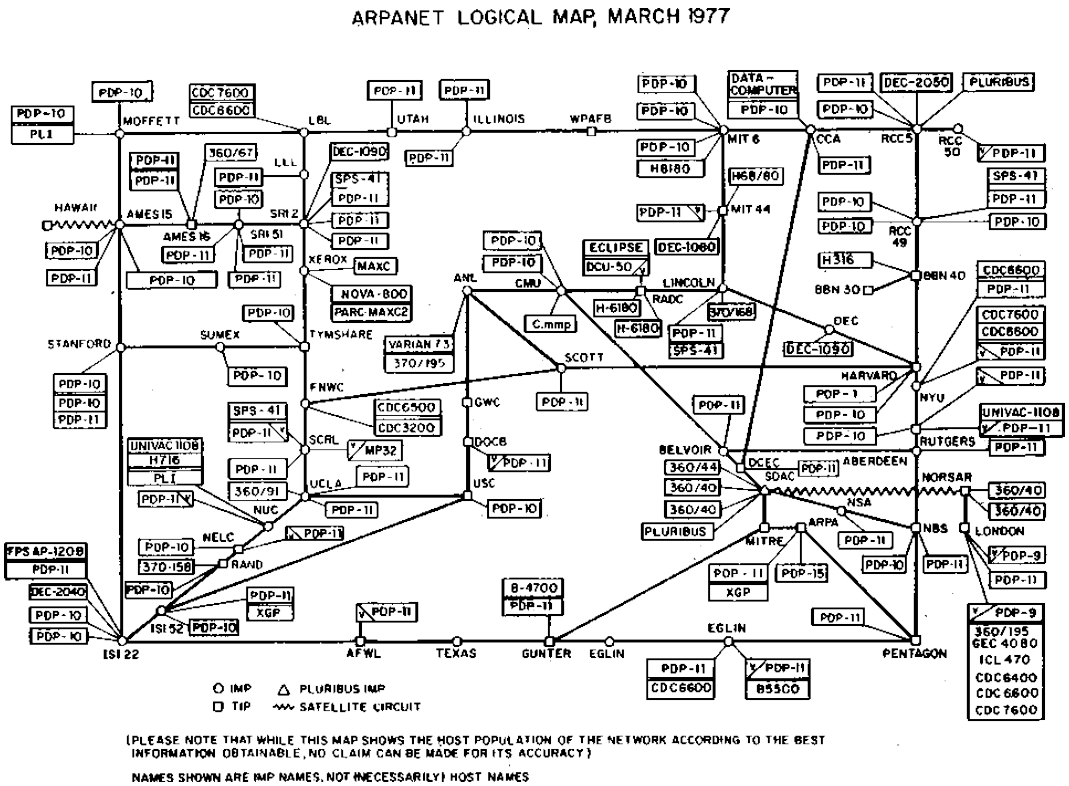

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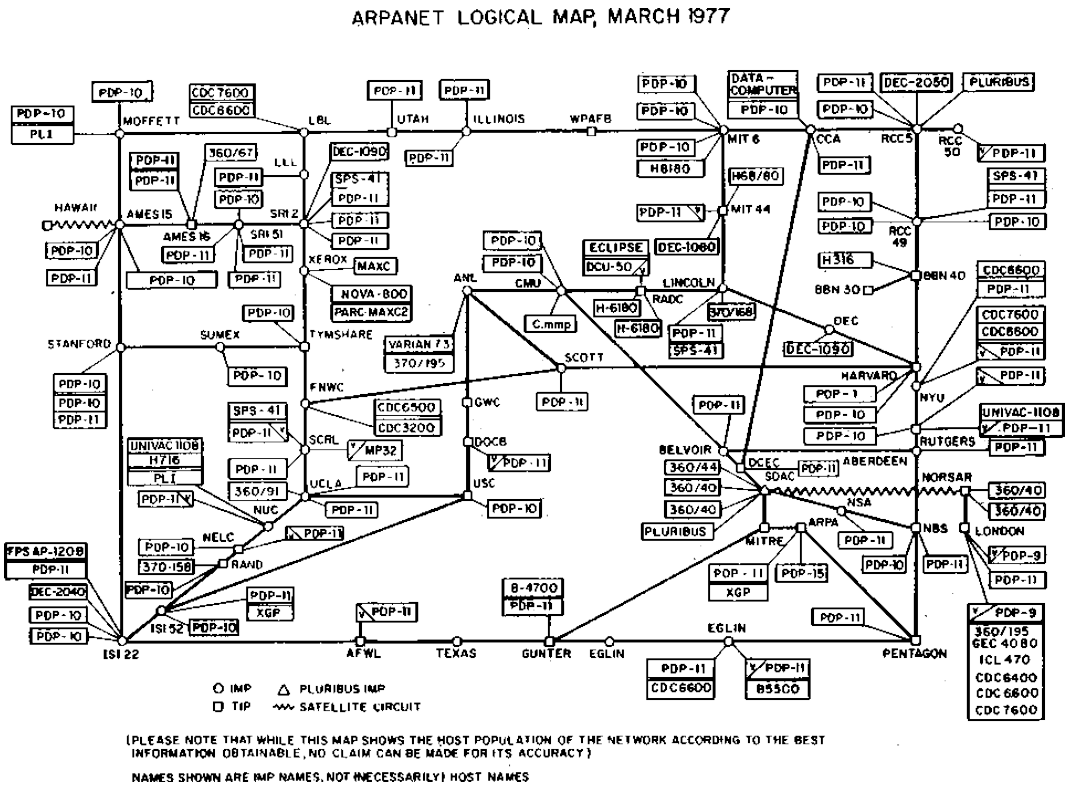

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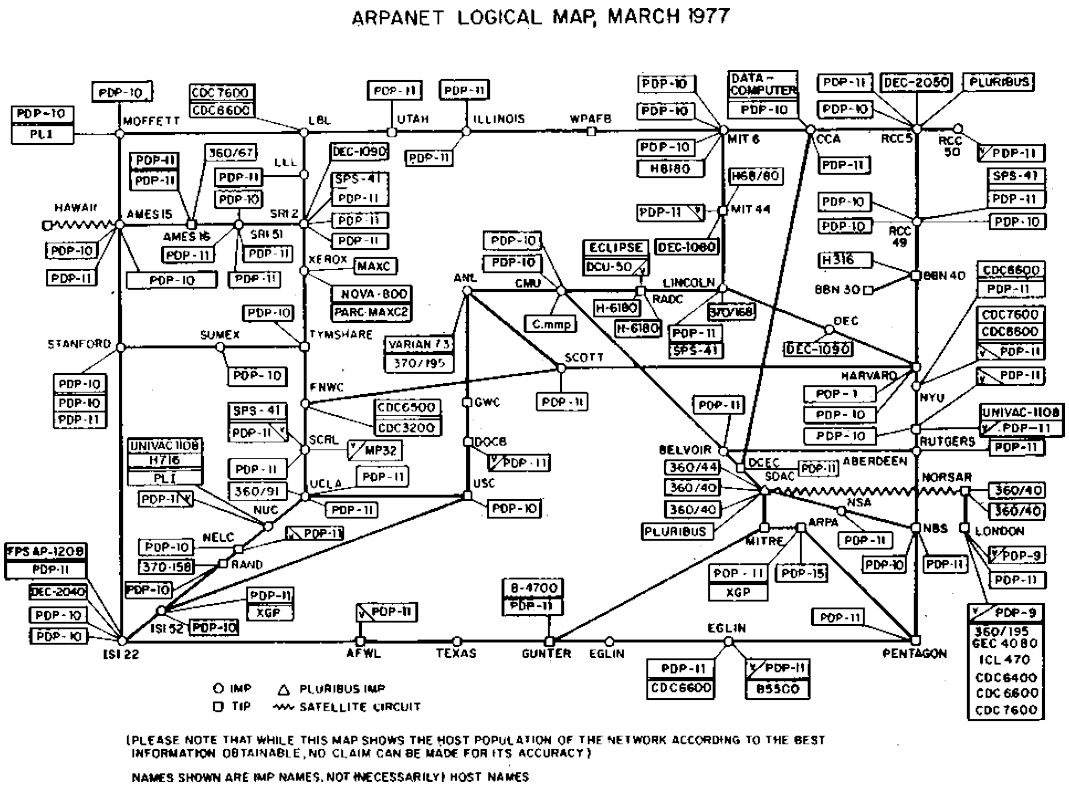

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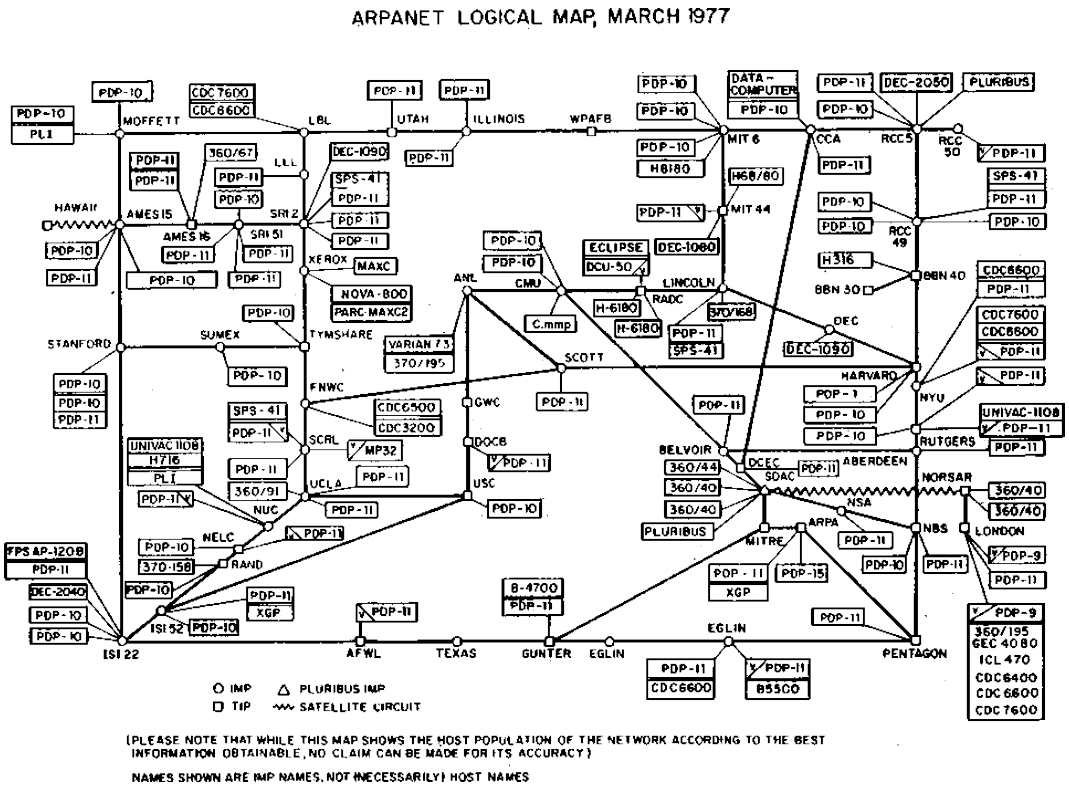

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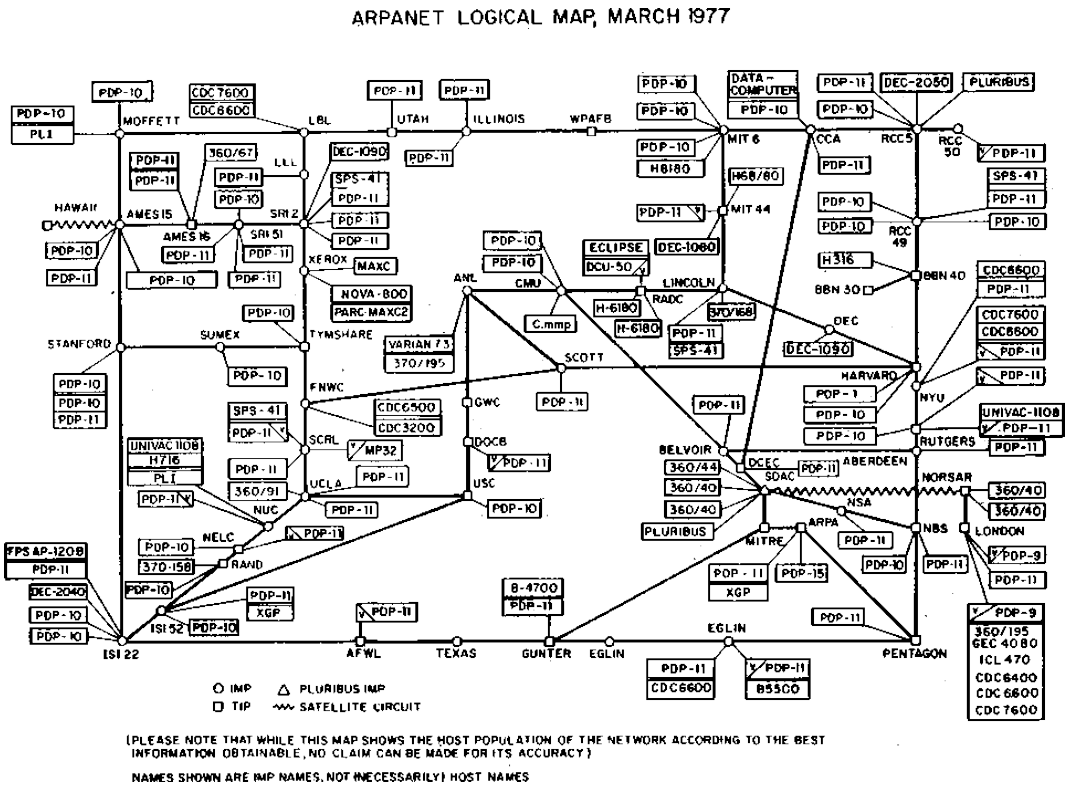

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- A step back: modern features such as virtualization and virtual memory simply not required in personal computers

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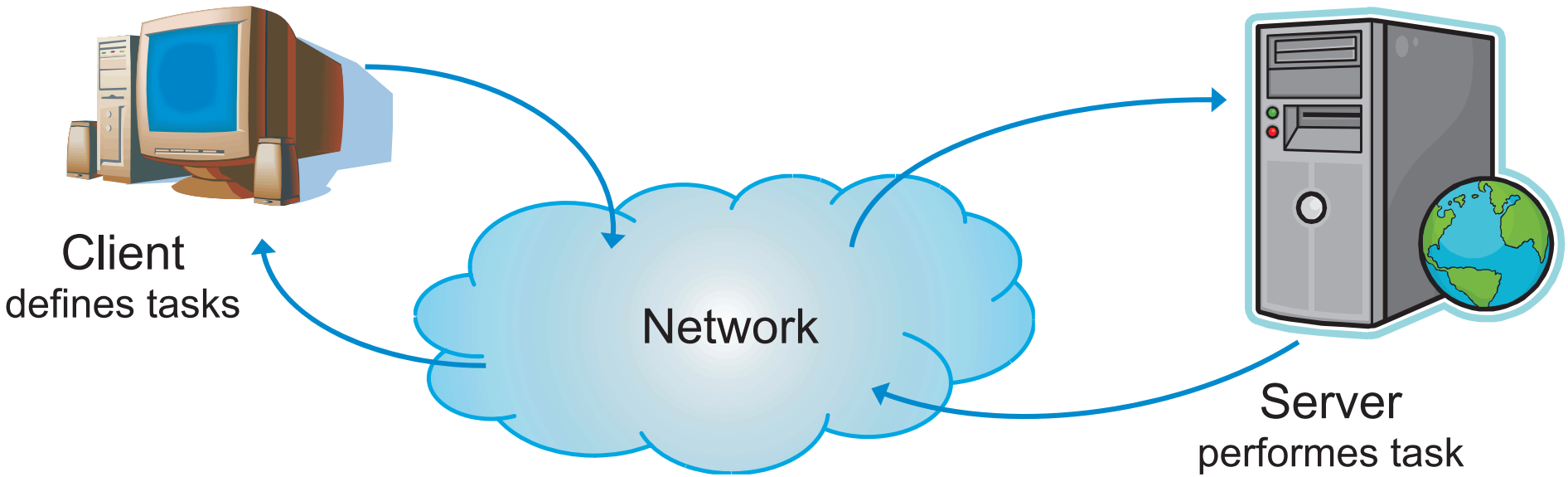

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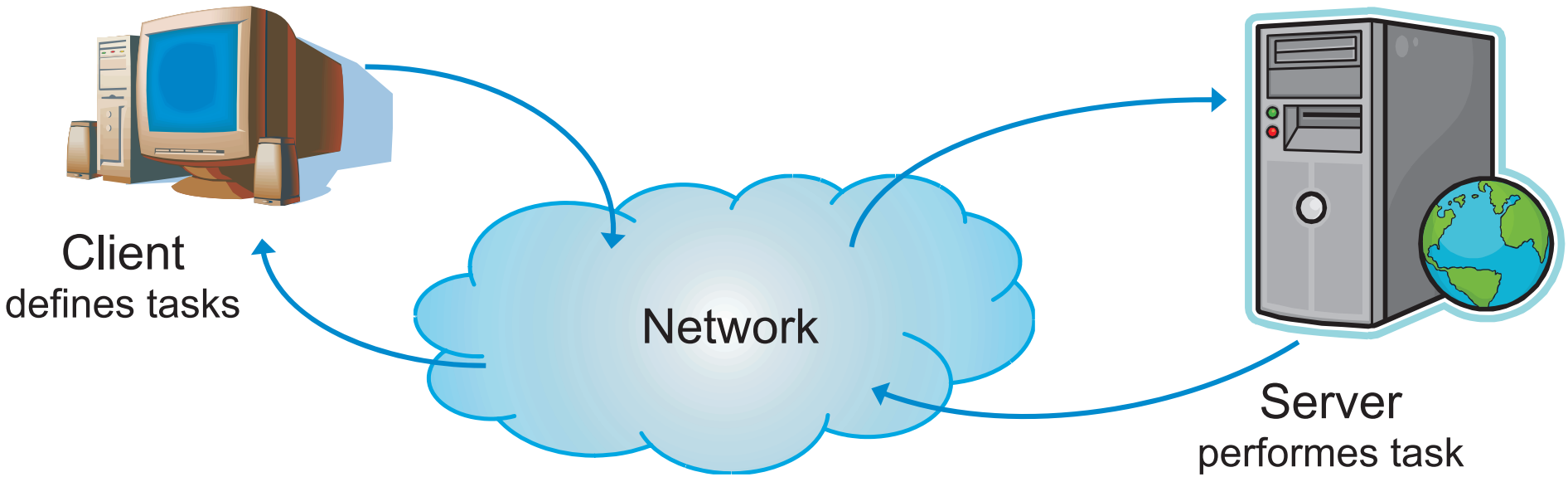

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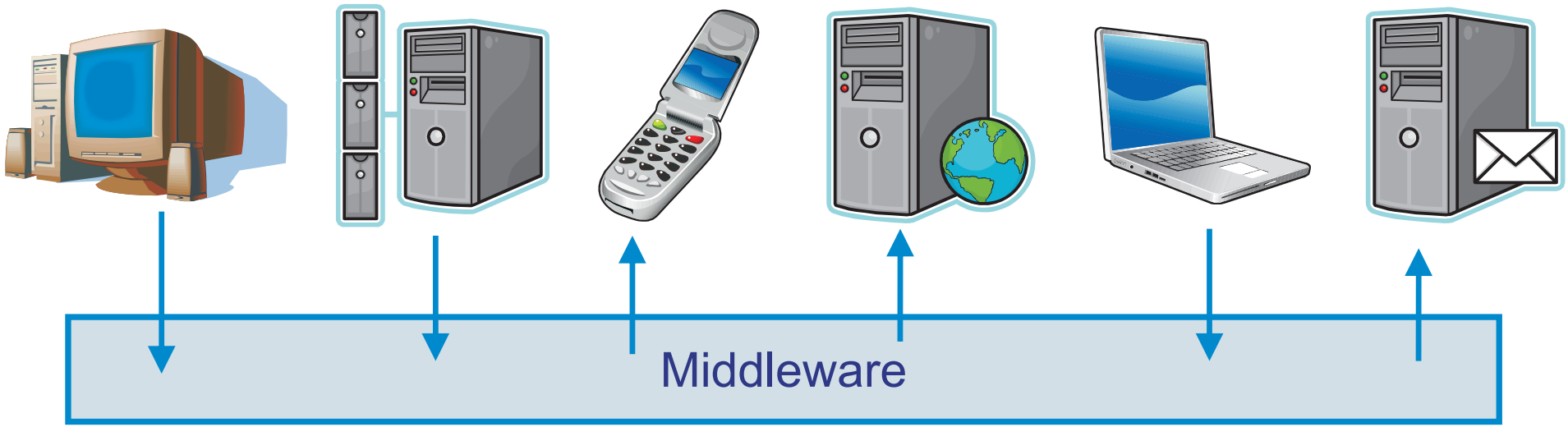

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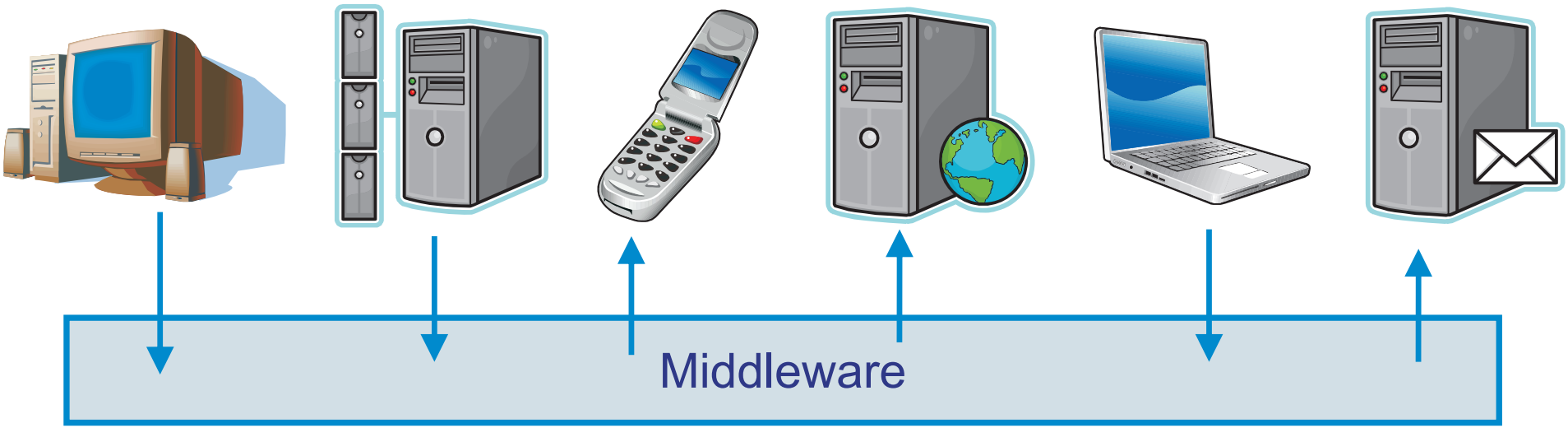

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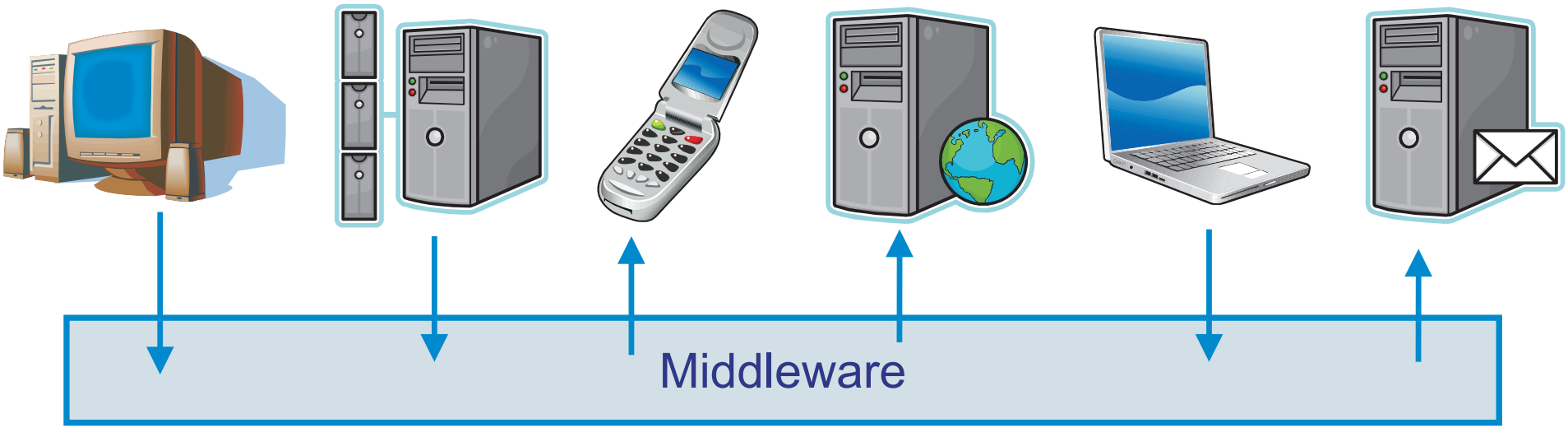

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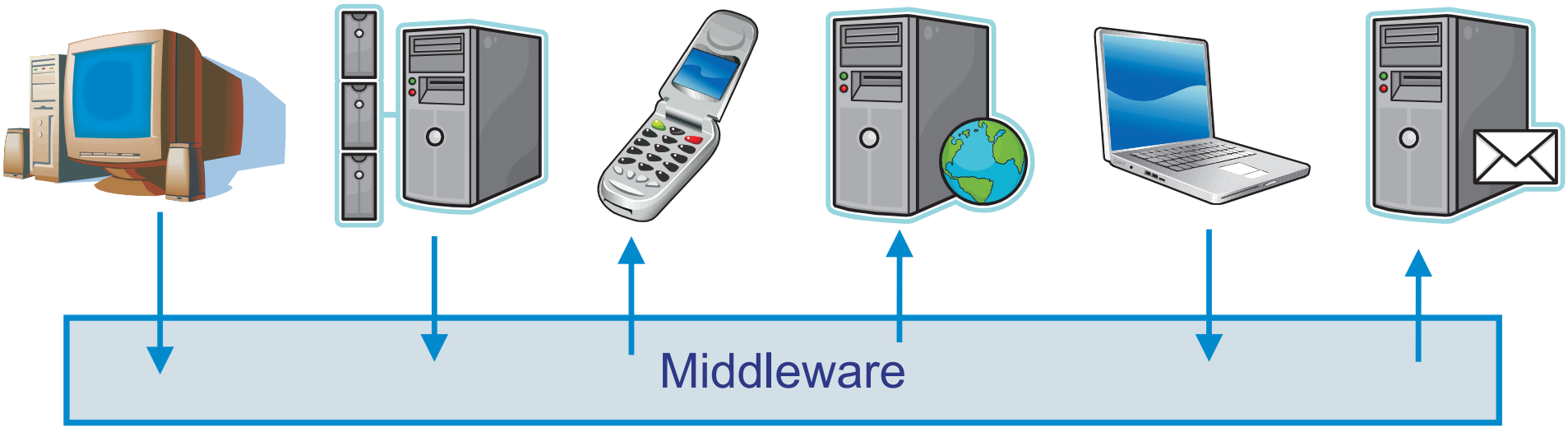

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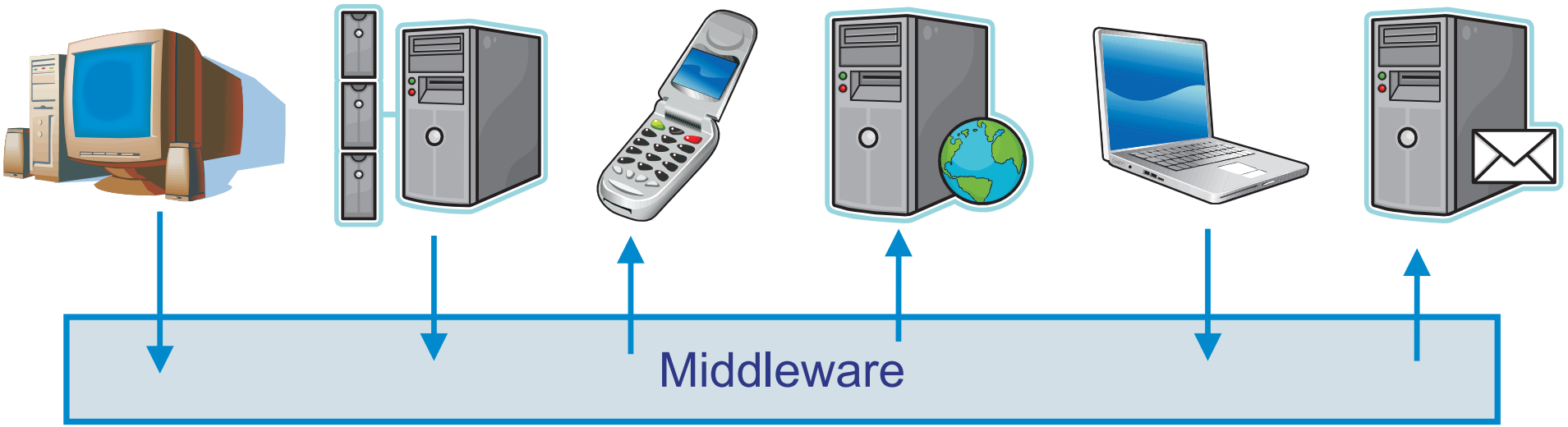

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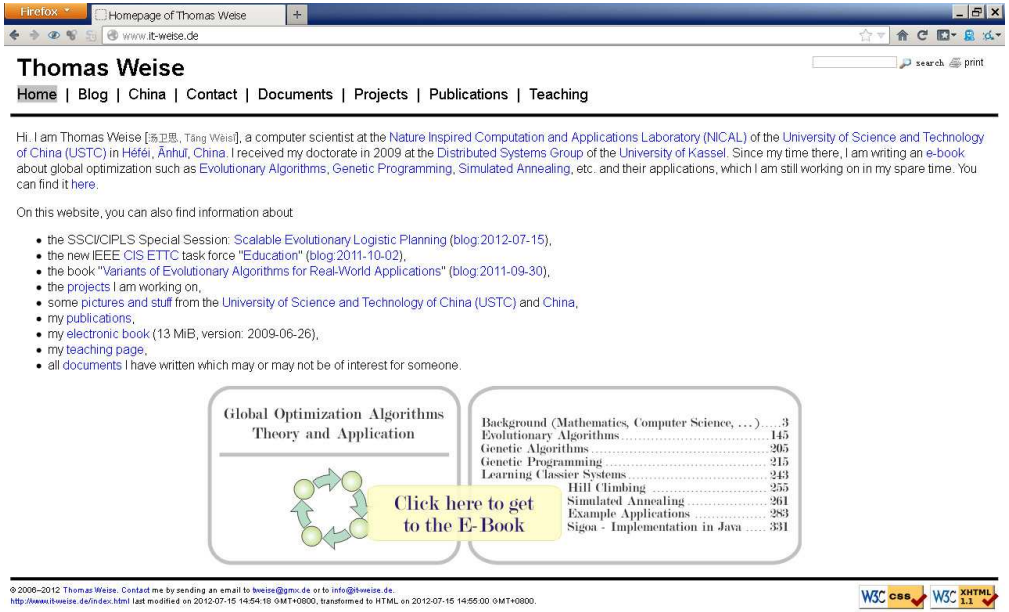

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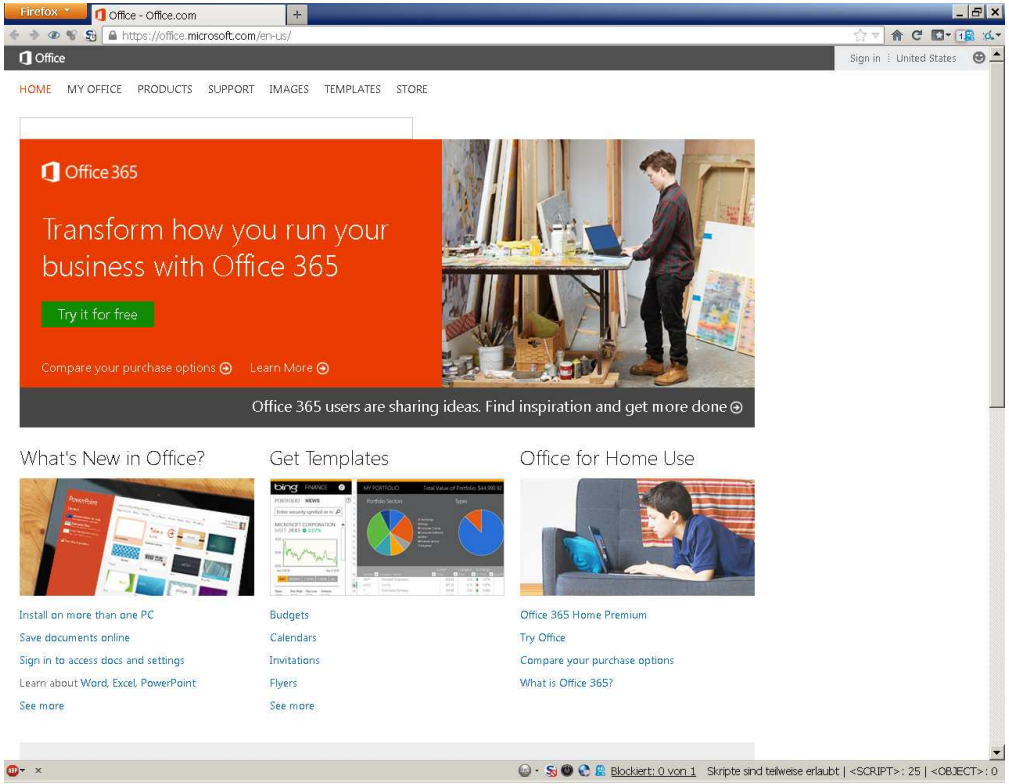
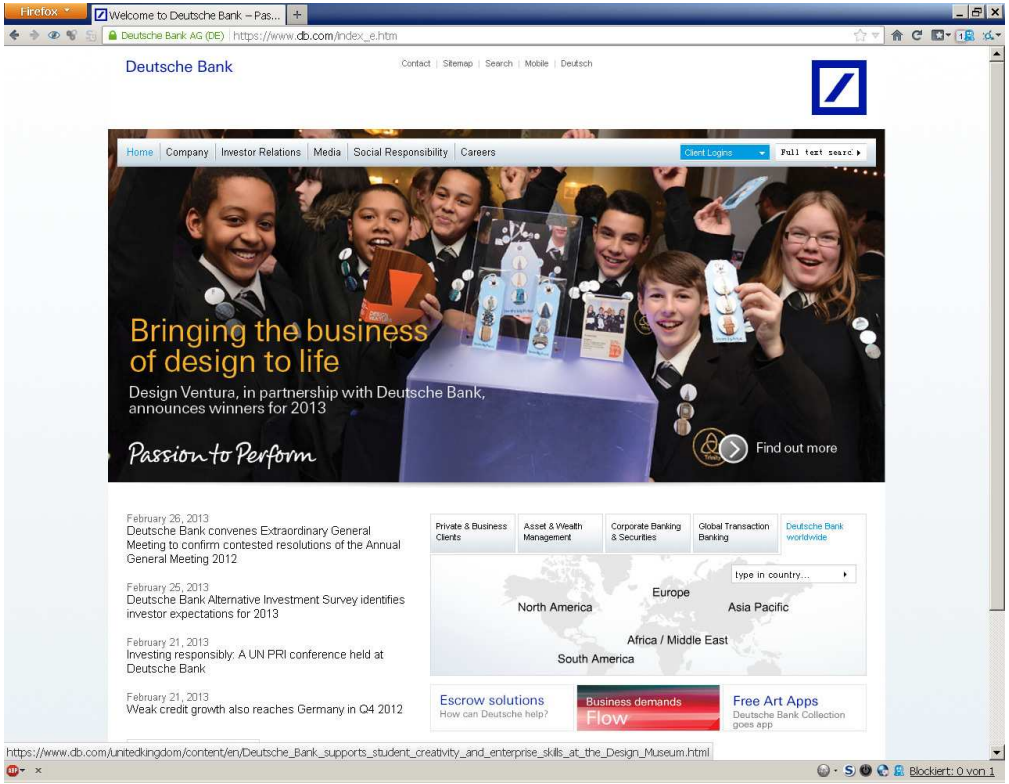
- Dynamic Websites

Private-User View



- Static Websites
- Dynamic Websites
- Information/Data in the Cloud

Private-User View



- Static Websites
- Dynamic Websites
- Information/Data in the Cloud
- Transactions with Companies, Banks, etc.

Enterprise Information Systems View

- Presentation to the outside world (e.g., to private users)

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- Management of resources, customers, support, finances, etc.

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- Shift to the cloud

Mobile Point of View

- Many mobile phones are internet-enabled

Mobile Point of View

- Many mobile phones are internet-enabled
- Many services and apps developed particularly for this environment

Mobile Point of View

- Many mobile phones are internet-enabled
- Many services and apps developed particularly for this environment
- Data in cloud enables sharing over many devices

Summary

- Development in IT took place in multiple steps / phases
- The way computers are connected develops as well
- The public, commerical internet is just 30 years old...
- ...but has already become a commodity (like electricity, water, gas, ...)
- We should definitly study how "it works".

谢谢

Thank you

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Caspar David Friedrich, “Der Wanderer über dem Nebelmeer”, 1818
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