1DV701
Computer Networks – introduction

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Topic and Scope

- **Computer networks and internets:**
  an overview of concepts, terminology, and technologies that form the basis for digital communication in private corporate networks and the global Internet.

You Will Learn

- Terminology
- Communication basics
  - Media and signals
  - Asynchronous and synchronous communication
  - Relationships among bandwidth, throughput, and noise
  - Frequency-division and time-division multiplexing

You Will Learn (continued)

- Networking and network technologies
  - Packet switching
  - Framing, parity, and error detection
  - Local and wide area technologies
  - Network addressing
  - Connection and extension (repeaters, bridges, hubs, switches)
  - Topologies and wiring (star, ring, bus)
  - Next-hop forwarding
  - Shortest path computation
  - Measures of delay and throughput
  - Protocol layers

You Will Learn (continued)

- Internets and Internetworking
  - Motivation and concept
  - Internet Protocol (IP) datagram format and addressing
  - Internet routers and routing
  - Address binding (ARP)
  - Internet control messages (ICMP)
  - User Datagram Protocol (UDP)
  - Transmission Control Protocol (TCP)
  - Protocol ports and demultiplexing

You Will Learn (continued)

- Network applications
  - Client-server paradigm
  - Domain name system (DNS)
  - File transfer (FTP)
  - Remote login (TELNET)
  - Email transfer (SMTP)

What You Will NOT Learn

- Commercial aspects
  - Products
  - Vendors
  - Prices
  - Network operating systems
- How to purchase/configure/operate

Staff

- Ola Flygt, lectures
- Hemant Ghayvat, lectures
- Four teaching assistants

- Contact information found in MyMoodle

MyMoodle

Starting point. From here you find links to the Time table, lecture notes etc.

- Slides will be posted for convenience, but no substitute for attending lecture and reading the textbook
- Lecture recordings will be posted (when the technology works)
- Assignments distributed and submitted in MyMoodle
- Examples of old exams
- Check often for announcements and changes in the schedule, the Moodle room and on Slack

Course Communication

- Lectures on campus and streamed
- TA sessions on both campuses
- Other communication mainly through the course Slack channel

Textbook

- **We will primarily use one textbook:**
  - Computer Networks and Internets, Global Edition, 6th Edition by Douglas Comer

- **Buy it!**

Other readings

- Will be linked from MyMoodle
- Material from these readings is fair game for the exams, even if not covered in class
- Please suggest other readings or relevant news articles!

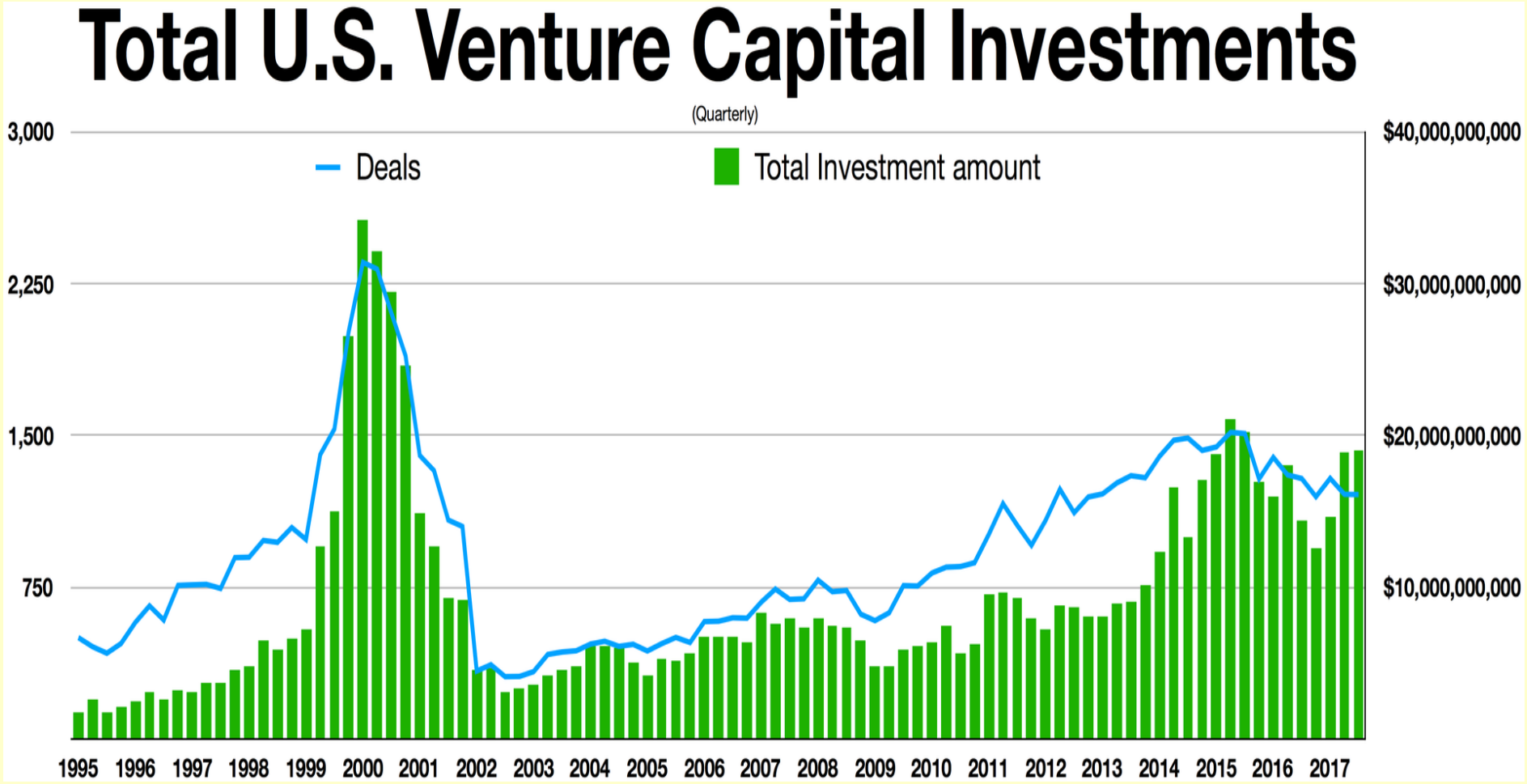
Background Required

- Basic information about operating systems, data structures and algorithms
- Ability to program (in Java)
- Familiarity with basic tools
  - Programming environment
  - Using different web services

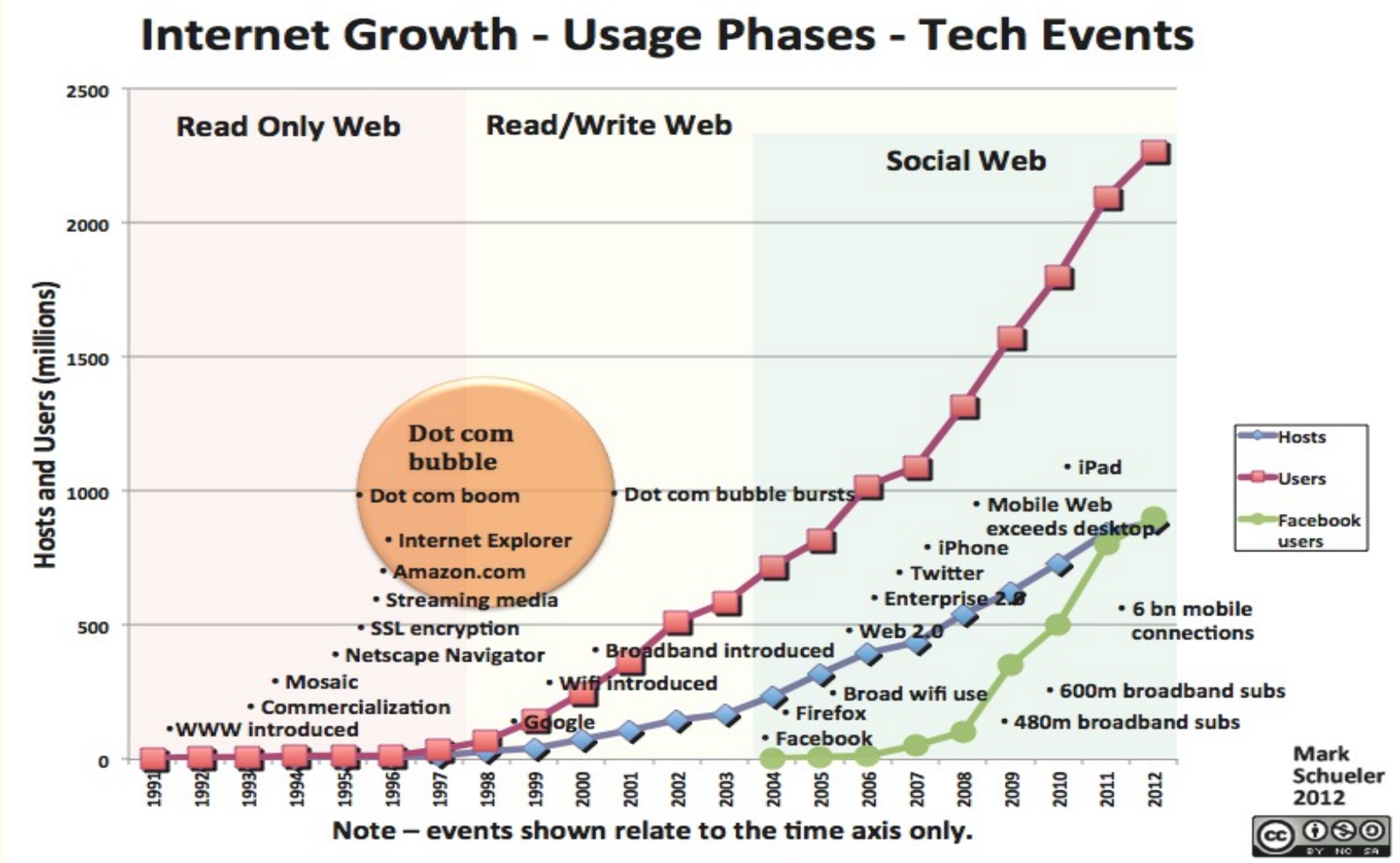
Course requirements

- **Practical work**
  - **4 assignments throughout the course period**
    - Networking basics & Wireshark
    - Programming – HTTP
    - Programming – TFTP
    - Routing
- **At the end of the course there will also be a theory exam**

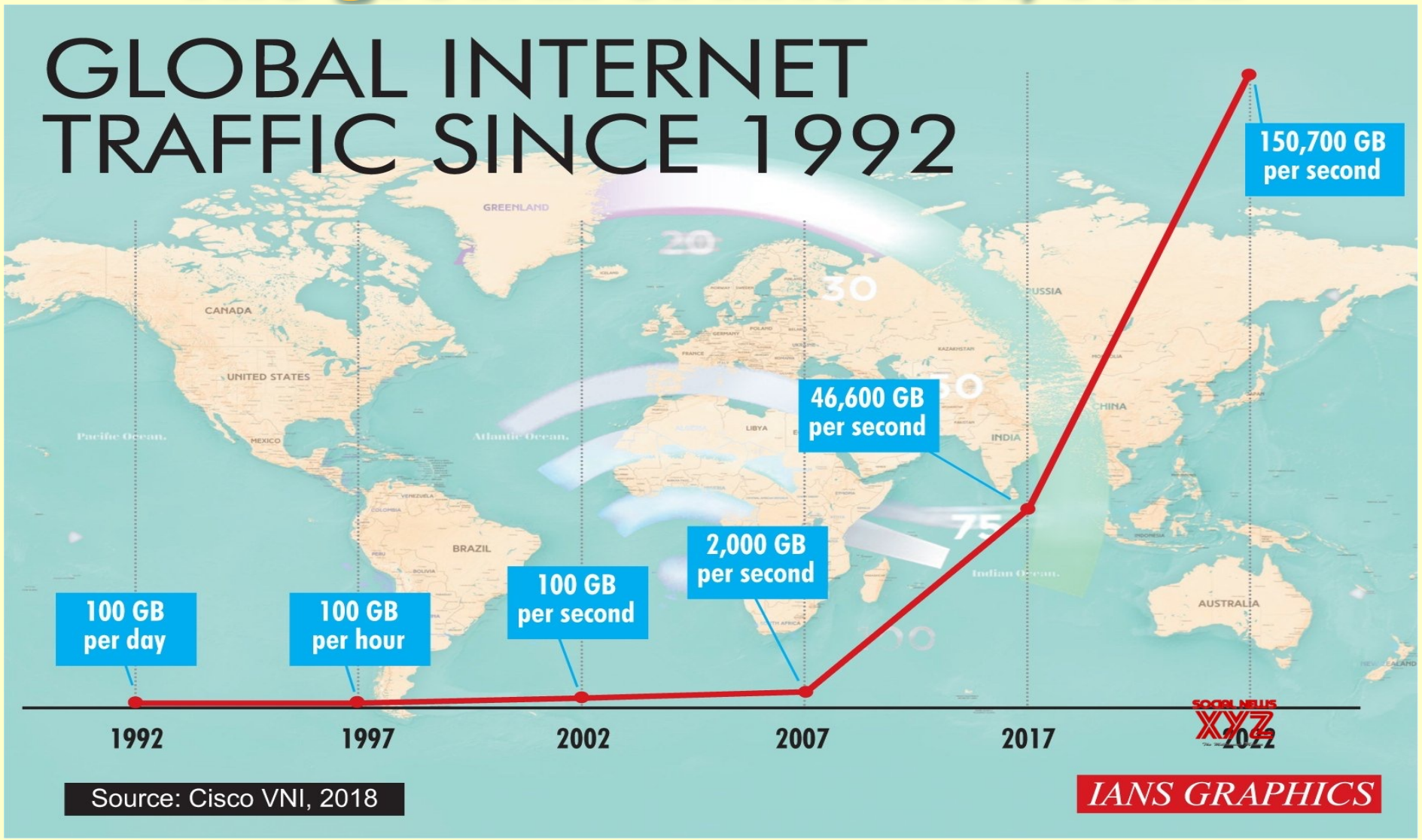
The growth of Internet and the dot com bubble



The growth of Internet, cont.



The growth of Internet, cont.



TCP/IP protocol suite – that makes it all work