Internet of Things: Trends

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Session Outline

1. Internet is Today's World
2. Overview of Internet
3. Course Outline

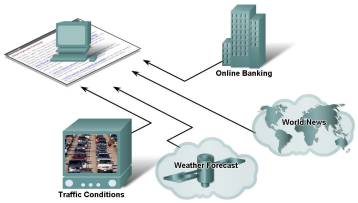
Important Note

- These lecture slides are **not meant to be comprehensive lecture notes!**
  - ✓ They are only **remarks and pointers.**
  - ✓ The material **presented here is not sufficient** for studying for the course
- Your **main sources for studying** are:
  - ✓ **Research papers**
  - ✓ **Your own lecture notes**

Internet is Today's World

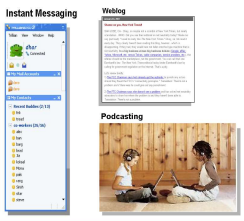
How Internet Impact Daily Life

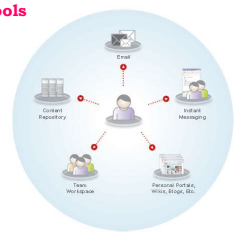
- Benefits of instantaneous communication and how it supports and improves our lives.



How Internet Impact Daily Life....

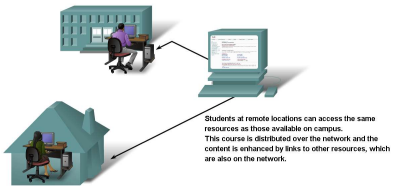
- Characteristics and **purpose of popular communication** media such as, **IM, Blogs, Podcasting, and Collaboration Tools**





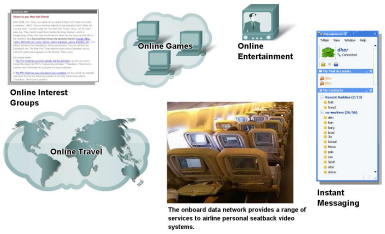
How Network/Internet Impact Daily Life....

- Using information networks to share and collaborate improves **teaching and learning**



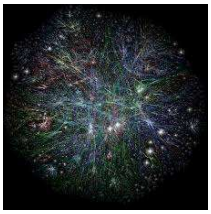
How Internet Impact Daily Life....

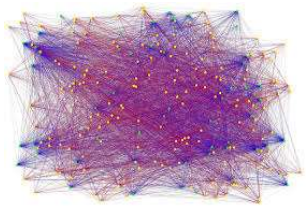
- Ways communication over a network supports the way we play



Overview of Internet

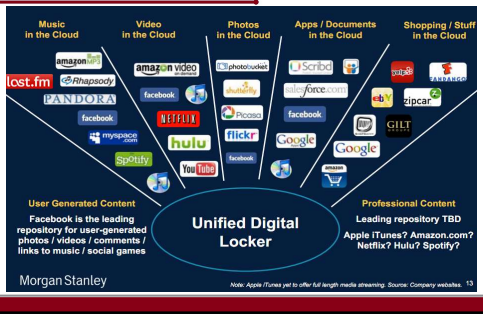
How does the Internet Look Like?



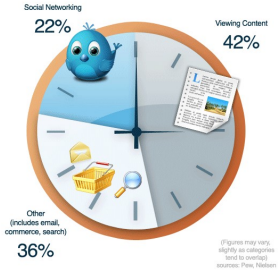


What Happens in an Internet Minute

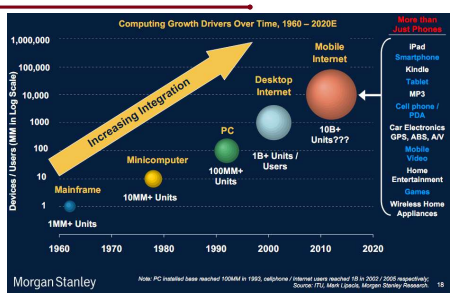
What Do Users Expect?



How is Time Spent?



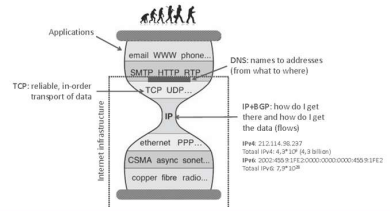
Where are we headed?



What is Internet?

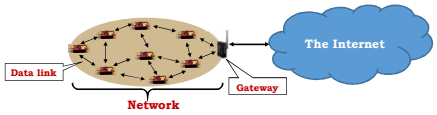
Basic Protocol Architecture ("Internet Hourglass")

- The global system of **interconnected computer networks** that use the Internet protocol suite (TCP/IP) to link devices worldwide.



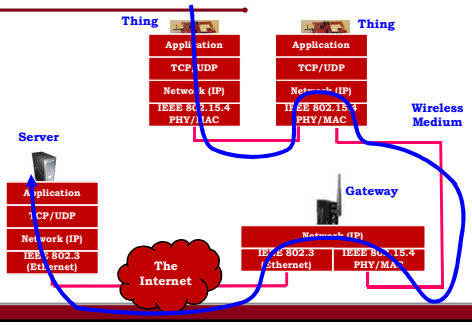
The Internet

- The Internet serves as a **Wide Area Networking** for a Local Network.
- The Internet uses **TCP/IP.** This implies that **things** must also support **TCP/IP.**



- For a practical deployment, a **gateway** is often needed in a network.
  - ✓ **Gateway** offers relaying **packets** between the **network and the Internet.**

Protocol Stack of Internet

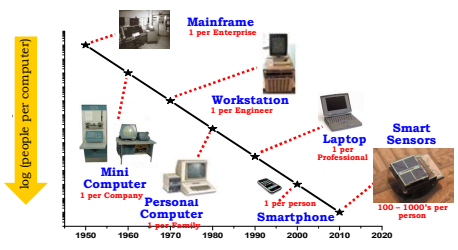


We Came A Long Way...

Bell's Law of Computer Classes

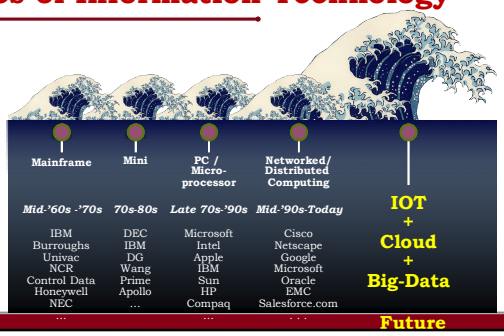
- Smaller size
- More Powerful
- More memory and more storage

A New Computer Class Emerges Roughly Every Decade



Roughly every decade a new, lower priced computer class forms based on a new programming platform, network, and interface resulting in new usage and the establishment of a new industry."

Waves of Information Technology



Course Outline

Course Description

❖ Internet of Things (IoT) is an **emerging area** of **information and communications technology (ICT)** involving many disciplines of **computer science and engineering** including

- ✓ **Sensors/Actuators**
- ✓ **Communications Networking**
- ✓ **Server Platforms**
- ✓ **Data Analytics**
- ✓ **Smart Applications.**

Course Description

- IoT is considered to be an **essential part of the 4th Industrial Revolution** along with **AI and Big Data.**
- This course will be **very useful** to **senior graduate, post graduate students** as well as **engineers** who are working in the industry.
- This course aims at introducing the **general concepts and architecture of IoT applications, networking technologies** involved, IoT development **kits including Raspberry Pi, Arduino** etc.. and how to program them.

Course Outcomes (CO)

Course Outcomes (CO)

- Students will able to

1. **CO1 : Analyse the protocol Stack for Internet of Things to address the heterogeneity in devices and networks**
2. **CO2 : Develop smart IoT Applications using smart sensor devices and cloud systems**
3. **CO3 : Development of smart mobile apps for societal applications**
4. **CO4 : Design secure protocols for IoT systems**

Course Logistics

Course Logistics

1. A course on **computer networking is strongly recommended.**
2. There are **some textbook** for this course. Mostly **Lecture slides and various materials (videos, papers, software, presentations, etc.)** found from the Internet will be used for the course.

Where to find me

Where to find me

Instructor : **Dr. E.SURESH BABU**

E-Mail : **esbabu@nitw.ac.in**

Website : **www.nitw.ac.in**

Office Hours : **9.00 A.M – 5:30 P.M**

My Office : **E-ICT Block, Ground Floor, Room No : 104**

Attendance

Attendance

- Online Class Attendance, while it is Mandatory , and required if you want to Succeed in this course.
- While most of the Material Covered by the Lectures could be found in Reference Books, Research Paper, for most of the lectures the order of presentation does not match any book/paper exactly.

Attendance

- Finally, If you have missed the lecture, make sure you have a covered that lecture class.
- There will be a number of **Assignments/Programming Assignments/Case Study** throughout the course

Expectation…

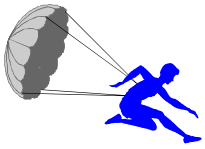
- All I tell you in the lectures you can also **read somewhere**
- The idea is that ***you learn*** and *we support this* by organizing the information…
- so, that **you work more than** we do
- Deadlines are **strict and will not change**
- Read the **exercises and requirements well!**
- Do this in **time, and start in time**

Course Work

Course Work

1. Minor Tests/ Assisgnments (Two Tests) -- 30 Marks
2. Mid Semester Examination – 30 Marks
3. End Semester Examination – 40 Marks

Road is Difficult, but Future is Bright



- Any TIME
- Any PLACE
- Any THING

All the Best

Thank U