

Data Communications

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- ◆ Course Book:
 - DATA AND COMPUTER COMMUNICATIONS
 - William Stallings, Prentice Hall International Edition

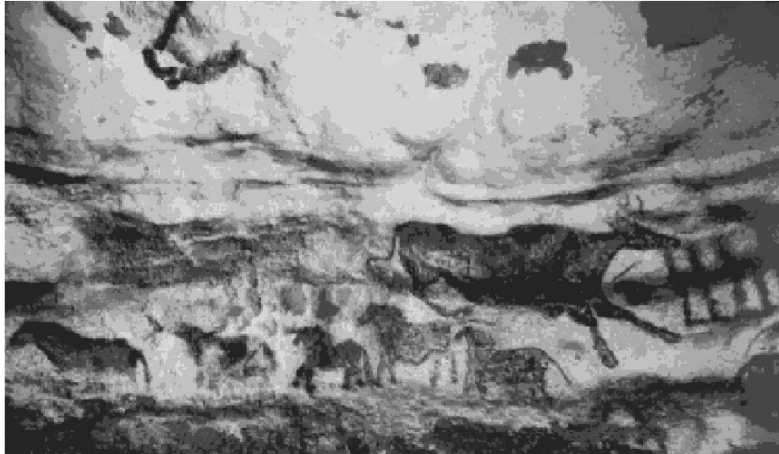
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Introduction

- ◆ This course is concerned with the *communications problem*:
“How can two remote entities communicate with each other effectively and efficiently”

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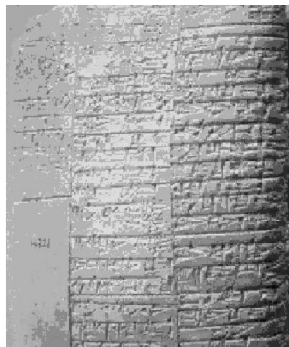
Cave Painting - 40,000 to 10,000 BC



Lascaux, France

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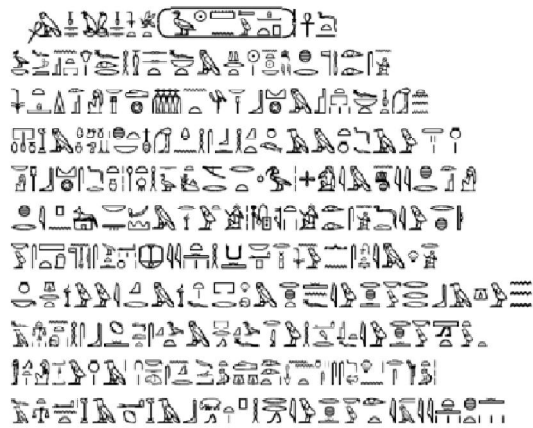
Sumerian Cuneiform - 3000 BC



Inscriptions from the Behistun Rock (Western Iran)

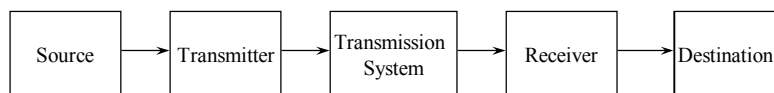
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Hieroglyphic Text



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Model of Communications System



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Communications model components

- ◆ Source: Device that generates data
- ◆ Transmitter: Transforms and encodes data
- ◆ Transmission System: The physical system connecting the source and destination devices
- ◆ Receiver: Performs reverse function of Transmitter
- ◆ Destination: Receives the incoming data

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Course Topics

- | | |
|---|--|
| ◆ Introduction <ul style="list-style-type: none">» Communications Model/Tasks | ◆ Channel capacity |
| ◆ Signal Analysis <ul style="list-style-type: none">» Signalling concepts» Bandwidth concepts» Relationship between Data Rate and Bandwidth | ◆ Transmission Media <ul style="list-style-type: none">» Wired/Wireless |
| ◆ Data Transmission concepts <ul style="list-style-type: none">» Digital versus analogue data/signals/systems | ◆ Data Encoding <ul style="list-style-type: none">» Digital/Analogue Data onto Digital/Analogue signals etc. |
| ◆ Transmission Impairments <ul style="list-style-type: none">» Attenuation/Distortion/Noise | ◆ Synchronous /Asynchronous |
| | ◆ Transmission Interfacing |

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Course Topics

- ◆ Flow Control techniques
- ◆ Error detection techniques
- ◆ Error Control techniques
- ◆ Sample Link Protocol
- ◆ Multiplexing
 - » Digital/Analogue Techniques
- ◆ Switching Networks
- ◆ Circuit/Packet Switching
- ◆ Local Area Networks
 - » Applications
 - » Topologies and operation
 - » Protocols
 - » Access Control techniques
- ◆ Internetworks
-and much more