# 1 Communication process, its major Element and their characteristics

Communication is transfer of information and understanding from one person to another person. It is a way of reaching others with ideas, facts, thoughts, feelings and values. To a large extent success of extension worker/trainer in promoting changes among the farmers depends on his ability to communicate ideas.

Effective communication requires skill on the part of change agent/trainer. He should therefore be familiar with the process of communication and causes of communication breakdown and barriers in effective communication.

A significant point about communication is that it always involves at least two persons, a sender and a receiver. One person alone cannot communicate.

A manager/trainer may send a hundred bulletins, but there is no communication unless the bulletin is received, read and understood, communication is what the receiver understands, not what the sender says.

**Importance of communication:**

Organization cannot exist without communication. If there is no communication, employees cannot know what their workers are doing, management cannot receive information inputs and supervisors cannot give instructions ordination of work is impossible and the organization will collapse for lack of communication. Cooperation becomes impossible, because people cannot communicate their needs and feeling to others.

When communication is effective, it tends to encourage better performance and job satisfaction, people understand their jobs better and involve more in them. The better, the earlier will be the development of the society.

**Ingredients of communication**

Many researchers have developed many models in the communication process. Of course, these models differ from one another. But all of them agree that there are minimum three ingredients i.e., the speaker, message and the audience.

**Skill to be required by the communicator:**

1. Ability to plan a communication strategy
2. Ability to write
3. Ability to speak
4. Ability to prepare and use simple visuals
5. Ability to treat the message
6. Ability to read
7. Ability to listen
8. Ability to gesture
9. Ability to think or reason
10. Ability to analyze feedback

**Communication phases**

- Expression
- Interpretation
- Response

**Ways to improve interpretation**

- Remove physical destruction
- Attract attention of audience
- Repeat the message
- Use more then one channel
- Create reality in communication
- Put emphasis on learning by doing.

**Feed back**:

- It means receiving information on how other people have reacted to ones' own behavior.

**Importance of feed back:**

1. Communicator can use reaction of receiver as a check on his own effectiveness.
2. As guide to his own future action.
3. Feed back increases confidence of sender.

**Role of feedback:**

1. Removes the barriers.
2. Rectifies transmission errors.
3. Increases accuracy of information.
4. Improves communication.

1. **Communicator:**

*Communicator should have*

- Correct role perception
- Communication skill
- Knowledge of subject
- Favourable attitude towards message and self receivers.
- knowledge of culture
- Knowledge of the local language.
- Ability to treat the message
- Knowledge of selection and use of channels

2. **Message:**

- Clear: understandable by audience.
- Significant : Economically, socially
- Specific : No irrelevant material
- Accurate: Scientifically sound.
- Timely: current
- Applicable.

3. **Channel :**

- Suitable to time, place, subject and audience.
- Should be in working condition
- Should be simple
- Easily manageable.

- Use variety of channels.

4. **Treatment of message:**

While treating the message,following points be kept in mind

- Clarity of the objective
- Fit the channel selected
- Use best presentation skill
- Make message more important and interesting.

5. **Audience :**

Identify audience

- Potential audience
- Available audience
- Active audience

6. **Audience Response:**

**Strategy to improve communication:**

- Be sure what to communicate and why
- Use clear and simple words
- Use accurate symbols
- Don't speak one way
- Use more than one communication channel
- Develop listening habit
- Achieve accurate perception of others
- Respect believes of audience
- Don't force yourself on others
- Provide right climate
- Remember, communication is a two way process

# 2. Extension talk

Man is bestowed with a gift of speech. He communicates with other people in different situations to fulfill his needs and interests. But all the communications in the form of gossips, chit-chatting and loud talks are not planned. Hence, such talks cannot become extension talk. It is basically different from other talks and discussions.

The extension talk can be defined as a planned communication in form of verbal explanation or presentation to a group of people for sharing common interest to impart knowledge by activating listeners.

**Advantages of Extension talk**

- Much material in short time can be given.
- It is suitable for all types of audience.
- Introduction to new subject can be made easily through extension talk.

**Limitations**

- Learners will be passive if the speaker/communicator is not skillful.
- No skill can be taught.
- Good execution is rare.

**Basic elements of extension talk**

- Audience
- Communicator
- Facilities {Environment}

Before we see further about extension talk, one thing should be made clear that people learn those things which interest them and look important for them. Hence interest of people should be aroused first by showing them their problems. If these things are taken care of and then extension talk is planned, it becomes effective.

**Planning the extension talk**

While planning the extension talk, following points should be taken into consideration

1. Aim: It should be specific, well defined and should be such that can be measured in terms of change in behaviour

2. Audience: Size, education, knowledge, interest, social background and expectation of the audience should be taken care of.

3. Contents: Content should be presented in sequential steps and proper order. Whole the extension talk should be divided into three parts:

- Opening
- Body
- Summary

4. Method and style of presentation of extension talk is important

5. Duration: Extension talk should be finished in the prefixed duration. Opening/introduction, body part and summary should be given due time. Generally 10 to 15 percent of total time should be given to opening and summary each while around 70 percent of time should be allocated for body part.

**Effective Extension Talk**

For effective delivery of extension talk, following points should be given due consideration:

1. Use of Visuals should be made to sustain the interest of the audience and enhance their understanding.
2. Audience should be activated. This can be done by asking them questions from time to time. Questions can be of four types:
   - Direct
   - General
   - Reverse
   - Passed on

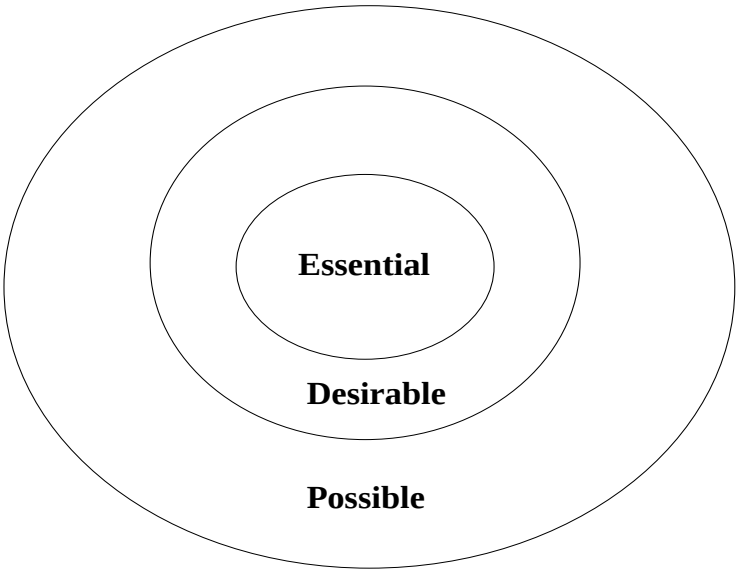
While asking the questions, following care should be taken:

Ask very clearly.

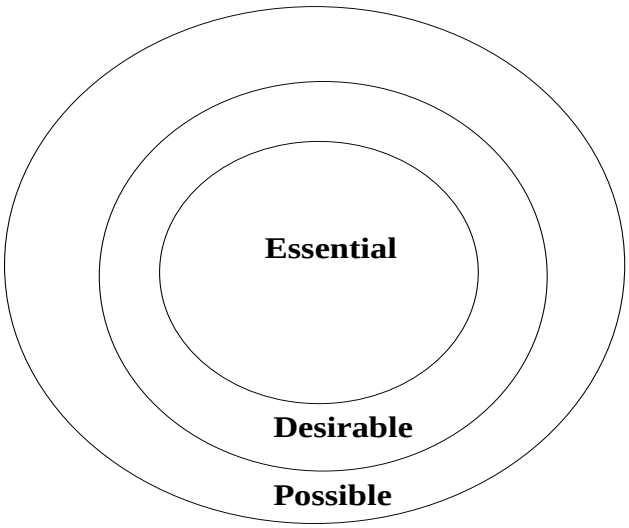
- Choose words carefully.
- Make questions short.
- Make intension clear.
- Adopt question to listeners' level.
- Give sufficient time to answer.
- Do not interrupt in middle.
- Give chance to others.

3. Proper timing should be followed.
4. Characteristics of audience should be understood first.
5. Preparation on part of communicator should be excellent so that he can give a nice talk. It should not be taken lightly at any time with a misconception that farmers are not much intelligent and no serious preparation is required to give a talk before them.
6. Communicator must have thorough knowledge on the subject he is to deliver an extension talk.
7. Communicator must be inquisitive for search of new information on the subject.

**Content ( Materials )**




**Materials**



## 3. Simple Visuals

The value of visuals in teaching has been known for centuries. The shilpkala and painting in old temples, churches, caves etc. were nothing but instructional aids, each of them told a story at a time when books were not in existence.

Generally we are using three types of instructional devices i.e. Visual, Audio and Audio-visual.

A visual-aid is an instructional device than can be seen but not heard.

An audio – aid is an instructional device that can be heard but not seen.

An Audio-visual-aid is an instructional device that can be heard and seen.

Visuals help in creating psychological environment for learning. We learn through five senses i.e. eyes, ears, nose, tongue & skin. Out of them eye is the most helpful in learning. The first step in teaching or communicating is attracting attention of people, learners or audience. Research studies of **HASS & Ewing** (1950) show that the attention of people is attracted through our five senses in to the following proportion.

Sight-87%
Hearing-7%
Smell-3.6%
Touching-1.5%
Tasting-1.0%

Thus we can say that sight and hearing are the major senses involved in attraction of learners. The second thing is retention of knowledge through our five senses. The Research results of Marks (1955) regarding the retention of knowledge through different senses are as under:

- People retain 30% of what they see.
- People retain 20% of what they hear.

If we combine both senses hearing and seeing (Audio-visual) the retention of knowledge will increase by 10% more, means people retain 60% of what they heard and saw. Through smell, touch and taste retention of knowledge is 20%. If the physical facilities are good then retention of knowledge increases 10% more.

Beside this oral or verbal communication has certain limitations such as

- You may speak fast
- You may use difficult words
- Your may audience does not follow your pronunciations.

So we can say that oral or verbal communication is not enough. There are many phrases which show the importance of visual some of them are as follow:

- If I hear I forget.
- If I see I remember
- One picture is more than thousand words
- Pictures have universal language

Generally visual are to used make learning experience more concrete, more realistic and more dynamic.

**Role of non-projected aids in communication**

- Why are non-projected aids?

In case of projected aids for visualizing any object or material for teaching we have to use any instructional equipment or aid. It means that the need of equipments is essential for projected aids. But, in case of non-projected aids we do not require any equipment or aid like projector etc. These aids are very easy to make, easy to carry and can be made with locally available inexpensive material.

Generally we use following visual aids in teaching or communication process:

- Black board
- Poster
- Charts
- Flash card
- Flannel graph
- Photograph
- Leaflet, Folder and Pamphlet

**1. Black board or chalk board**

It is called chalk board also. The black board itself is not a visual aid. it is the most common and generally accepted medium of visual instruction. A teacher should develop a skill in using chalk board. It is always helpful in teaching work to clarify our ideas in a simple and understandable form. It is also helpful for drawing pictures, diagrams and graphs. But majority of the teachers have failed to appreciate the advantages of the black board as, they have not made any special effort to become proficient in its use.

**Types of Black board:**

- Glass made
- Wooden Made
- Roll up board

Glass made Japanese black board green & black.

**Advantages of Black board**

- It is the most convenient means for every class room, shops
- It is a very flexible medium of instruction. It is probably the most adoptable to changing requirements of the teaching job.

**How to use Black board**

- Have it clean
- Use clean eraser or duster
- Write in large letters or bold letters
- Do not talk as you write
- Face group after writing and continue the discussion
- Do not crowd the black board
- Do not use abbreviations
- Use colour chalk whenever required
- Do not stand in front of the black board
- All unnecessary and unrelated materials should be erased
- Have a chalkboard summary ready with you, so that you write only important words and not full sentences.

**2. Poster**

"A poster is a peculiar device designed to attract attention and communicate a story, a fact an idea or an image rapidly and clearly"

**Why we use poster?**

A poster helps the extension worker to get across one idea to the audience. It is a visual which has to catch the attention of the audience and pass on to them a simple message at a glance.

- ❖ It create awareness
- ❖ It is a cheap method
- ❖ It attracts attention
- ❖ It should have life
- ❖ It should have some message

**Components of a poster:**

a. A poster has:

- ❖ To be bold in design
- ❖ Simplicity to understand
- ❖ Attractiveness in colour

Major components may be

a. Picture or illustration
b. Words
c. Colour
d. Space

a. Picture or illustration

- ❖ Bring out message at a glance
- ❖ Drawing should be clear and bold
- ❖ Avoid unnecessary details

b. Caption in words

As small as possible. Never write caption vertically as it creates difficulty in reading. Do not break the caption. Avoid fancy lettering style.

c. Colour

- ❖ Do not use more than three colours
- ❖ Do not use odd combinations of colours

d. Space

- ❖ It should not be loaded with pictures and words
- ❖ Provide adequate space

Where should we place poster?

Placing of poster is important thing. It should be placed where people pass or gather like – public places, schools, milk co-operative society, village panchayat, cross road etc.

**3. Charts**

A chart contains a series of idea. It is, generally, used for awareness of any innovation or any new idea.

Different types of charts

a. Pictorial
b. Organizational

c. Flow chart or suspense chart or strip chart
d. Tree chart

**a. Pictorial Chart**

A pictorial chart may contain picture suitably colored and written matter. Sometimes it may also contain a graph or may be combination of graph and picture.

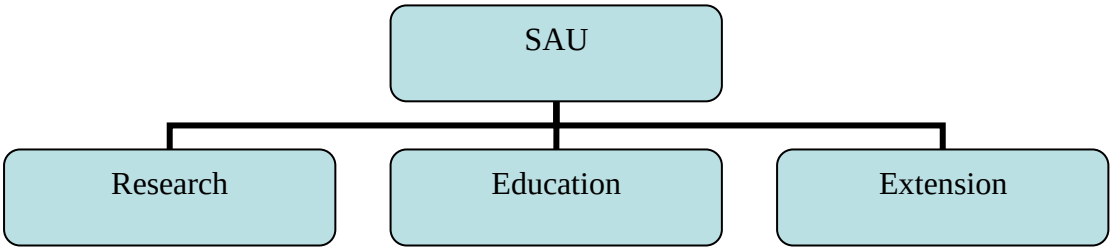
e.g. important steps or package of practices of any crop.

- Improved variety
- Seed treatment
- Method of sowing
- Use of fertilizers
- Use of pesticides
- Irrigation
- Harvesting technology

**b. Organizational chart**

It is generally useful to show the administrative structure of an organization e.g. Agricultural university, District co-operative marketing and purchase society.

**Function of SAU**




**C. Flow chart**

It is helpful to tell a story like – how a product is obtained as a result of series of processes e.g. key points for more production.

- Soil testing
- Balanced use of fertilizers
- Selection of improved/hybrid varieties
- Seed treatment
- Proper seed rate & spacing
- Gap filling
- Inter-culturing
- Weeding
- Irrigation (time & method)
- Plant protection measures.

**d. Tree chart**

Major organizations can be represented by tree chart. Major organization is represented by trunk of tree and its major works represented by branches and its related works can be represented by sub-branches.

**e. Suspense chart**

The complete story is presented in writing or in a picture and it is kept covered with strips of paper. As our talk goes ahead, we remove the strips one by one. So, we hold our audience in attention throughout a lecture because people are interested in knowing further.

**f. Time chart or Table chart**

Anything that is recorded or presented in a tabular form is a Table chart.

e.g. State-wise area, production and yield of wheat during 1985-86.

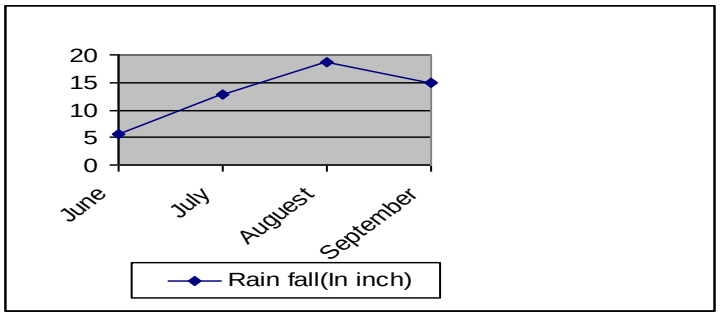
| State | Area (hect.) | Production (tones) | Yield (kg/hect.) |
|---|---|---|---|
| 1. Bihar | 1.91 | 3.14 | 1646 |
| 2. Haryana | 1.70 | 5.26 | 3094 |
| 3. Gujarat | 0.43 | 0.78 | 1815 |

**4. Graphs**

If we represent statistical data or any comparison between two or more factors through graphs, it will be easy to under stand for educated or uneducated persons.

**Different types of graphs:**

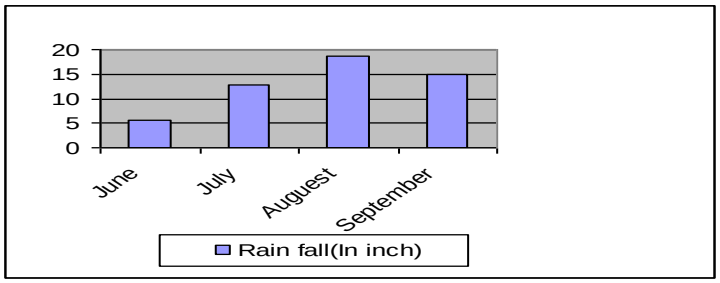
**a. Line graph**




**b. Bar graph**

Two types: 1. Multiple bar graph

2. Divided bar graph




1. **Multiple bar graph**

It compares two or more bars with a numbered scale to show the desired information.

e.g. Bar showing the yield of maize in quintal per hectare in different situations.

**2. Divided bar graph**

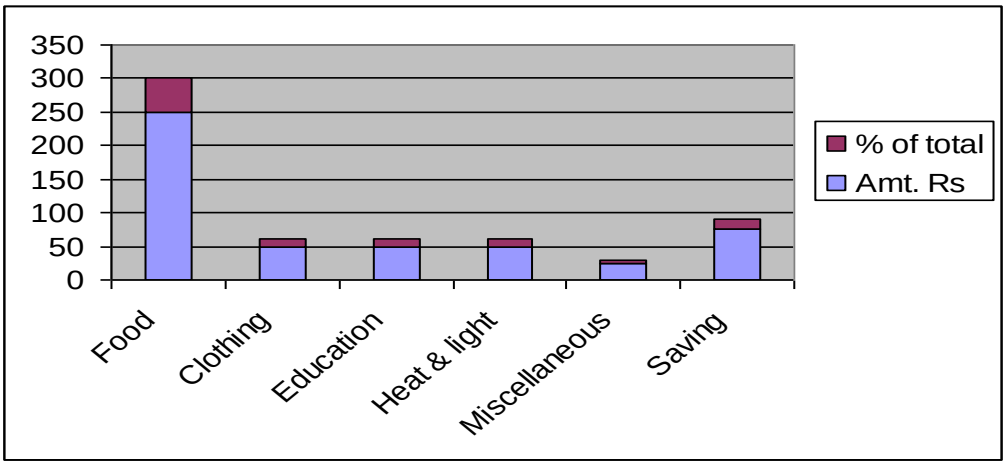
Each bar is divided into sub divisions and sub-divisions may be represented with different colours or different types of lines or signs.

**Advantages**

- ❖ It keeps the audience always active because it creates suspense that what is going on ahead. Therefore, it is the best advantage for activating the audience
- ❖ Less expensive
- ❖ Comfortable to use everywhere

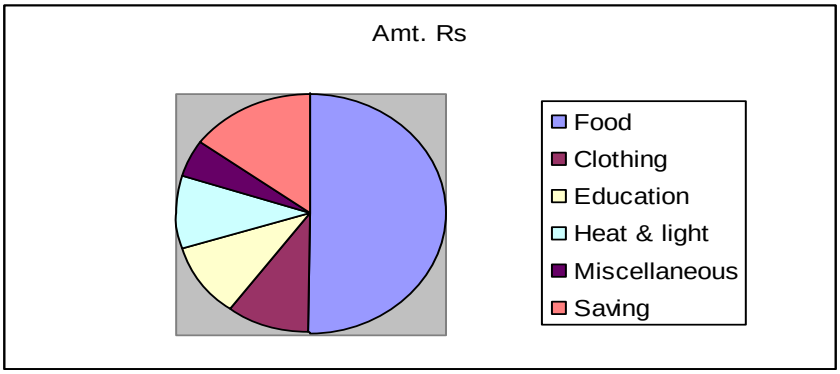
e.g. Family expenditure of one family

| Items of expenditure | Amt. Rs. | % of total |
|---|---|---|
| 1. Food | 250 | 50 |
| 2. Clothing | 50 | 10 |
| 3. Education | 50 | 10 |
| 4. Heat & light | 50 | 10 |
| 5. Miscellaneous | 25 | 5 |
| 6. Saving | 75 | 15 |




**c. Pie graph**

A circle is divided into segments to indicate different parts of whole. e.g. Components of family expenditure of one family i.e.




**5. Flash card**

It is a teaching aid. These are the series of cards presented before the audience in proper sequence (step by step) to tell a complete story. Each card is of about 10" x 12" in size and contains a picture or diagram. Each individual card is flashed before the audience during the talk of lecture. Flash cards can be prepared for the topics as :

- Soft wood grafting in mango
- How to take a soil sample
- Feeding of cross-breed animals
- Birth control of family planning

Key points for preparation of flash card

- A brief story should be written
- A suitable title should be selected
- The story should be divided into parts which are presented in a number of individual cards.
- Card size may be 10" x 12" enough for a group of 30 people
- Story should be simple and represent a single point or message
- Card should have simple line drawings, photographs or cartoons
- Attractive in colour
- Individual card having its number and written a brief story of points written behind the card helps a communicator at the time of presenting information.

**6. Flannel graph**

Pieces of flannel cloth or flannel strips will be placed on flannel board. On its back side, pieces of sand papers are stuck. These sand papers will stay on flannel board, until they are removed. When we want to deliver a lecture in the class room or group discussion in meeting flannel graph is very useful to us in representing our message to our audience and it saves time and creates interest among the audience.

Key points for preparation of flannel graph

- The title of story should be in large letters
- Entire story contains a drawing, photographs or printed illustrations
- Paste the sand paper pieces on the back side of your drawing, photographs or printed illustrations
- Keep the story simple
- Arrange all strips in order and number them on back side

**Advantages**

- It keeps the audience always active because it creates suspense that what is going on ahead. Therefore, it is the best advantage for activating the audience throughout lecture.
- Less expensive
- Comfortable use everywhere.

## 4. Simple Drawing and lettering Techniques

For the preparation of simple visuals, an extension worker requires to be proficient in drawing and writing. But every extension workers can't have these skills. In such situation, following drawing and lettering techniques can be helpful to him.

**Simple Drawing Techniques**

**A Templates Method**

Template can be the most useful aid when it is necessary to produce a series of simple outline drawing. They can save much time. Such templates may be cut out of thick card or thin plywood or hardboard and provided with a small wooden handle to produce desired outline drawing the templates held against the surface of the chalkboard and then a chalk line is drawn round it. The techniques may also be used for the production of outline maps, human figures etc.

**B. Dot dusting**

For dot dusting, can also use a perforated sheet of paper. Place the stencil against the board and shake on it pad containing chalk dust. When you remove the sheet a dotted drawing will appear in the surface of the blackboard. Afterward by joining the dots with a line, a picture can be produced.

**C. Grid method**

This is a very simple method by which a small picture / drawing can be replicated on a large sheet. Grid method is nothing but dividing the original work in to small equal squares. It helps the worker in concentrating the attention on one small space at a time.

The copy paper is similarly divided but the squares, though equal in number, are of larger in size, the picture is then copied square by square .If large number of squares is high, each row may be numbered for easy reference.

The repetitive and concentrated practice in above methods would help the worker in the preparation of simple visual to make his work more effective.

**Lettering**

There are many good mechanical lettering methods which are quick and efficient but there are occasions when such equipments are not available and when it is necessary to produce an aid with the utmost speed. This alone is sufficient justification for a little time spent on the development of an individual technique.

The tools available for free hand lettering may range from simple pencil made from strips of bamboo to a wedge point to ground and broad tip lettering pens and markers.

The technique for using each type of pen is similar, but the felt marker tip pen permits the fastest work. A felt marker tip pen with a wedge shaped tip is the best type for lettering and should be used as shown below.

A felt marker tip open with a wedge shaped tip is suitable for lettering purposes. Note the angle of the tip and use of the sharp edge.

1. Use marker keeping out angle of the tip upper side.
2. The sharp edge of the tip is presented to the paper, and this will produce the neatest line. The pencil should be held with the point at an angle of approximately 45 degree to the guideline.

Light pencil is used for horizontal and vertical guide lines to be drawn. Forms of freehand lettering.

Guidelines should be drawn in preparation for freehand lettering.

Although the vertical lines may not be in the exact place required for any particular letter, it is in practice much easier to draw a vertical line near by other vertical line.

Wherever possible, letters should be formed from a series of down strokes. The letter 'S' for example could be drawn by making three down strokes as indicated. All freehand letters should be formed with a combination of down strokes.

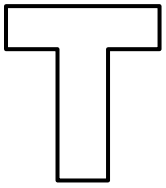
Holding the pen at the angle described will help to give the letter, character and style. Quickly readable letters are most essential for making visuals effective.

Quick readability requires.

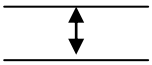
**A. Simplicity**

**B. Right size**

Two inches letter is visible up to 60 feet Height

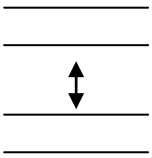


Thickness



Thickness and height of a letter should be in proportion of 1:7

**C. Spacing**



**B E T W E E N L I N E S**

**E Q U A L T O H E I G H T**

**D. Contrast**

- Good – Black :- Yellow , Green ,Red , Purple , Orange ,
- Good – White :- Blue , Green , Red , purple ,Orange ,

Purple # Yellow

Green # Red

Orange # Blue

# 5 Non-verbal Communication

**What is non-verbal communication?**

nonverbal communication involves those nonverbal stimuli in a communication setting that are generated by both the source [speaker] and his or her use of the environment and that have potential message value for the source or receiver [listener] (Samovar et al). Basically it is sending and receiving messages in a variety of ways without the use of verbal codes (words). It is both intentional and unintentional. Most speakers / listeners are not conscious of this. It includes — but is not limited to:

- touch
- glance
- eye contact (gaze)
- volume
- vocal nuance
- proximity
- gestures
- facial expression ? pause (silence)
- intonation
- dress
- posture
- smell
- word choice and syntax
- sounds (paralanguage)

Broadly speaking, there are two basic categories of non-verbal language: nonverbal messages produced by the body; Nonverbal messages produced by the broad setting (time, space, silence)

**Why is non-verbal communication important?**

Basically, it is one of the key aspects of communication (and especially important in a high-context culture). It has multiple functions:

- Used to **repeat** the verbal message (e.g. point in a direction while stating directions.
- Often used to **accent** a verbal message. (e.g. verbal tone indicates the actual meaning of the specific words).
- Often **complement** the verbal message but also may contradict. E.g.: a nod reinforces a positive message (among Americans); a "wink" may contradict a stated positive message.
- **Regulate** interactions (non-verbal cues covey when the other person should speak or not speak).

- May **substitute** for the verbal message (especially if it is blocked by noise, interruption, etc) — i.e. gestures (finger to lips to indicate need for quiet), facial expressions (i.e. a nod instead of a yes).

Note the implications of the proverb: "Actions speak louder than words." In essence, this underscores the importance of non-verbal communication. Non-verbal communication is especially significant in intercultural situations. Probably non-verbal differences account for typical difficulties in communicating.

**Cultural Differences in Non-verbal Communication**

1. General Appearance and Dress

All cultures are concerned for how they look and make judgements based on looks and dress. Americans, for instance, appear almost obsessed with dress and personal attractiveness. Consider differing cultural standards on what is attractive in dress and on what constitutes modesty. Note ways dress is used as a sign of status?

2. Body Movement

We send information on attitude toward person (facing or leaning towards another), emotional statue (tapping fingers, jiggling coins), and desire to control the environment (moving towards or away from a person).

More than 700,000 possible motions we can make — so impossible to categorize them all! But just need to be aware the body movement and position is a key ingredient in sending messages.

3. Posture

Consider the following actions and note cultural differences:

- Bowing (not done, criticized, or affected in US; shows rank in Japan)
- Slouching (rude in most Northern European areas)
- Hands in pocket (disrespectful in Turkey)
- Sitting with legs crossed (offensive in Ghana, Turkey)
- Showing soles of feet. (Offensive in Thailand, Saudi Arabia)
- Even in US, there is a gender difference on acceptable posture?

4. Gestures

Impossible to catalog them all. But need to recognize: 1) incredible possibility and variety and 2) that an acceptable in one's own culture may be offensive in another. In addition, amount of gesturing varies from culture to culture. Some cultures are animated;

other restrained. Restrained cultures often feel animated cultures lack manners and overall restraint. Animated cultures often feel restrained cultures lack emotion or interest.

Even simple things like using hands to point and count differ.

Pointing : US with index finger; Germany with little finger; Japanese with entire hand (in fact most Asians consider pointing with index finger to be rude) Counting: Thumb = 1 in Germany, 5 in Japan, middle finger for 1 in Indonesia.

5. Facial Expressions

While some say that facial expressions are identical, meaning attached to them differs. Majority opinion is that these do have similar meanings world-wide with respect to smiling, crying, or showing anger, sorrow, or disgust. However, the intensity varies from culture to culture. Note the following:

- Many Asian cultures suppress facial expression as much as possible.
- Many Mediterranean (Latino / Arabic) cultures exaggerate grief or sadness while most American men hide grief or sorrow.
- Some see "animated" expressions as a sign of a lack of control.
- Too much smiling is viewed in as a sign of shallowness.
- Women smile more than men.

6. Eye Contact and Gaze

In USA, eye contact indicates: degree of attention or interest, influences attitude change or persuasion, regulates interaction, communicates emotion, defines power and status, and has a central role in managing impressions of others.

1. Western cultures — see direct eye to eye contact as positive (advise children to look a person in the eyes). But within USA, African-Americans use more eye contact when talking and less when listening with reverse true for Anglo Americans. This is a possible cause for some sense of unease between races in US. A prolonged gaze is often seen as a sign of sexual interest.
2. Arabic cultures make prolonged eye-contact. — believe it shows interest and helps them understand truthfulness of the other person. (A person who doesn't reciprocate is seen as untrustworthy)
3. Japan, Africa, Latin American, Caribbean — avoid eye contact to show respect.

7. Touch

Question: Why do we touch, where do we touch, and what meanings do we assign when someone else touches us?

Illustration: An African-American male goes into a convenience store recently taken over by new Korean immigrants. He gives a $20 bill for his purchase to Mrs Cho who is cashier and waits for his change. He is upset when his change is put down on the counter in front of him.

What is the problem? Traditional Korean (and many other Asian countries) don't touch strangers., especially between members of the opposite sex. But the African-American sees this as another example of discrimination (not touching him because he is black).

Basic answer: Touch is culturally determined! But each culture has a clear concept of what parts of the body one may not touch. Basic message of touch is to affect or control — protect, support, disapprove (i.e. hug, kiss, hit, kick).

- USA — handshake is common (even for strangers), hugs, kisses for those of opposite gender or of family (usually) on an increasingly more intimate basis. Note differences between African-Americans and Anglos in USA. Most African Americans touch on greeting but are annoyed if touched on the head (good boy, good girl overtones).
- Islamic and Hindu: typically don't touch with the left hand. To do so is a social insult. Left hand is for toilet functions. Mannerly in India to break your bread only with your right hand (sometimes difficult for non-Indians)
- Islamic cultures generally don't approve of any touching between genders (even hand shakes). But consider such touching (including hand holding, hugs) between same-sex to be appropriate.
- Many Asians don't touch the head (Head houses the soul and a touch puts it in jeopardy).

Basic patterns: Cultures (English , German, Scandinavian, Chinese, Japanese) with high emotional restraint concepts have little public touch; those which encourage emotion (Latino, Middle-East, Jewish) accept frequent touches.

2. Smell

USA — fear of offensive natural smells (billion dollar industry to mask objectionable odors with what is perceived to be pleasant ) — again connected with "attractiveness" concept.

- Many other cultures consider natural body odors as normal (Arabic).
- Asian cultures (Filipino, Malay, Indonesian, Thai, Indian) stress frequent bathing — and often criticize USA of not bathing often enough!

3. Paralanguage

Vocal characterizers (laugh, cry, yell, moan, whine, belch, yawn). These send different messages in different cultures (Japan — giggling indicates embarrassment; India – belch indicates satisfaction)

- Vocal qualifiers (volume, pitch, rhythm, tempo, and tone). Loudness indicates strength in Arabic cultures and softness indicates weakness; indicates confidence and authority to the Germans,; indicates impoliteness to the Thais; indicates loss of control to the Japanese. (Generally, one learns not to "shout" in Asia for nearly any reason!). Gender based as well: women tend to speak higher and more softly than men.
- Vocal segregates (un-huh, shh, uh, ooh, mmmh, humm, eh, mah, lah). Segregates indicate formality, acceptance, assent, uncertainty.

**Categories of Non Verbal Communication**

Communication is transferring information between one person and another. Non verbal communication can be divided into four categories: aesthetic, physical, signs, and symbols. Following is an explanation and examples of non verbal communication.

- Aesthetic communication occurs through creative expression. This would include all the arts: music, dance, theatre, crafts, art, painting, and sculpture. Ballet is a great example of this, as there is dance and music, but no spoken or sung words. Even in an opera, where there are words, there are still facial expressions, costumes, posture, and gestures.
- Physical communication covers the personal kind of communication, and includes a smile or frown, wink, touch, smell, salute, gesture, and other bodily movements. Social conversation uses a lot of these physical signals along with the spoken words.
- Signs are a more mechanical kind of non verbal communication, which includes signal flags or lights, a 21 gun salute, a display of airplanes in formation, horns, and sirens.
- Symbols of communication are used for religious or personal status reasons, as well as to build self esteem. This includes jewelry, cars, clothing, and other things to communicate social status, financial means, influence, or religion.

**Physical Communication**

Physical communication is the most used form of non verbal communication. A person that is aware of another's non verbal cues will understand that person better. Even the way you are standing and your position in a group of people can communicate.

The amount of distance between you and another person will be interpreted a certain way, and the meaning will change according to the culture. It can mean either an attraction, or can signal intensity. Standing side-to-side can show cooperation, where a face-to-face posture may show competition. Your posture can communicate in a non verbal way, whether you are folding your arms, slouching, crossing your legs, or standing and sitting erect. Finally, any actual touching can convey attraction or a level of intimacy. Examples of non

verbal communication of this type include shaking hands, patting the back, hugging, pushing, or other kinds of touch.

Other forms of non verbal communication are facial expressions, gestures, and eye contact. When someone is talking, they notice changes in facial expressions and respond accordingly. These include raising your eyebrows, yawning, sneering, rolling your eyes, gaping, and nodding. The meaning of these movements is pretty much the same in all cultures. Gestures, however, are many times an individual's way of communicating as most people gesture when talking. Eye contact is very important in communicating nonverbally. You can read a person's emotion through their eyes, and many times is not the same emotion as their words are saying.

**Effects of Non Verbal Communication**

Non verbal communication, especially body language, can send a strong message, in spite of what your words say. Even the tone of your voice, its pitch, volume, quality, and speed effects what you say. Your body language can:

- Repeat the message your words are saying
- Contradict what your words are saying
- Be a substitution for your verbal message
- Add to the meaning of your message
- Accent or make the message stronger, like pounding your fist on a table

Relationships depend on non verbal communication if they are to be strong and lasting. The quality of your relationships can be improved if you can skillfully read people, and understand the emotions behind their words. When one party receives mixed signals, trust can leave the relationship and it will be damaged. Trust can be created in a relationship by sending non verbal clues that match your words. The way you respond to someone nonverbally can show that you understand and care about them and the relationship will grow and be fulfilling to both.

# 6 Basic Computer Application for Communication

A programmable machine: The two principal characteristics of a computer are:

- It responds to a specific set of instructions in a well-defined manner.
- It can execute a prerecorded list of instructions (a program).

Modern computers are electronic and digital. The actual machinery -- wires, transistors, and circuits -- is called hardware; the instructions and data are called software.

All general-purpose computers require the following hardware components:

- **Memory :** Enables a computer to store, at least temporarily, data and programs.
- **Mass storage device:** Allows a computer to permanently retain large amounts of data. Common mass storage devices include disk drives and tape drives.
- **Input device :** Usually a keyboard and mouse, the input device is the conduit through which data and instructions enter a computer.
- **Output device :** A display screen, printer, or other device that lets you see what the computer has accomplished.
- **Central processing unit (CPU):** The heart of the computer, this is the component that actually executes instructions.

In addition to these components, many others make it possible for the basic components to work together efficiently. For example, every computer requires a bus that transmits data from one part of the computer to another. Computers can be generally classified by size and power as follows, though there is considerable overlap:

- **Personal computer :** A small, single-user computer based on a microprocessor. In addition to the microprocessor, a personal computer has a keyboard for entering data, a monitor for displaying information, and a storage device for saving data.
- **Workstation :** A powerful, single-user computer. A workstation is like a personal computer, but it has a more powerful microprocessor and a higher-quality monitor.
- **Minicomputer :** A multi-user computer capable of supporting from 10 to hundreds of users simultaneously.
- **Mainframe :** A powerful multi-user computer capable of supporting many hundreds or thousands of users simultaneously.
- **Supercomputer :** An extremely fast computer that can perform hundreds of millions of instructions per second.

**Computer Hardware**

**Computer Hardware is the Physical Equipment:**

- **Keyboard** = Input
- **Mouse** = Input
- **Monitor** = Soft Copy Output
- **Printer** = Hard Copy Output

- **Speakers/headphones/microphones** = Sound
- **Modem** (internal or external) = Connects computer to phone lines.
- **CPU** = **C**entral **P**rocessing **U**nit (Pentium, Pentium II, Pentium III, Pentium IV, Athalon) CPU speed is also affected by the **HERTZ**; the larger the number, the faster the speed. The speeds may be measured in Megahertz (millions hertz) or Gigahertz (billions hertz) **Pentium IV 2 $G_{HZ}$** (Gigahertz) chip is much faster than a **Pentium IV 750 $M_{HZ}$** (Megahertz) chip.
- **Disk Drives** (used for permanent storage of software & data)**:**

  **A: =** Floppy Disk drive (for external storage)
  **C: =** Hard drive located in same box casing as the CPU (for internal storage)
  **D:** = CD drive
  **H:** = **File Server** (network hard drive)

**File Server:** The main computer used to run the network.

**Memory**

- **Permanent Memory** is storage of software or work on one of your Disk Drives. It will stay there when power is turned off & can't be removed unless deleted.
- **Temporary Memory** is memory necessary to run your software & hold new work you create. Temporary Memory is known as **RAM** (**R**andom **A**ccess **M**emory) It is running or working only when the computer is ON.

Memory (permanent or temporary) is stored in **BYTES**.

It takes 1 byte of memory to store one letter f the alphabet; therefore a 5-letter word would take 5 bytes of memory.

Memory in thousands of bytes is referred to as **kilobytes**.
Memory in millions of bytes is referred to as **megabytes**.
Memory in billions of bytes is referred to as **gigabytes**.
Memory in trillions of bytes is referred to as **terabytes**.

**RAM**

**R**andom **A**ccess **M**emory is the temporary memory the computer needs to access & run the software you want to use and hold the data (work) you create until you save it to a disk for example in drive **A:**, **C:**, or network drive **H:**. RAM memory is also measured in BYTES.

The more programs (also called **Tasks**) you run, the more **RAM** you will need.

**Computer Software**

Computer Software are programs that run the hardware.
(Software & Programs mean the same thing).

There are 3 Major Kinds of Software:

1. Operating System Software
2. Application Software
3. Internet Browser Software

"Operating System" Software ("NOVELL" & "WINDOWS"): An Operating System Software is a program that allows you to communicate with the computer by giving it

commands to operate its disks in various disk drives where information can be stored & retrieved (drive A, C, D or the network drive H).

**If you are working on a network, you need 2 Operating System Softwares** (both running at the same time)**:**

- **Novell** = Network Operating System Software
- **Windows** = Desktop Operating System Software

Major Advantages of using **WINDOWS** vs. **DOS (Disk Operation System):**

1. **GUI** (Graphical User Interface — pronounced "gooey")
2. **Multi-Tasking** = running more than one program at a time

**OLE** (Object Linking & Embedding) = allows sharing information from one application (program) to another. For example, placing a piece of clipart into a **Word** document; the clipart was created with some other program, not with **Word**.

**"Application" Software :**

Each kind of application software automatically adds a 3-letter extension to each file created & saved with that program. The 3-letter extension "associates" the file with the program so if you just open the file, the program in which it was created will open with it.

| | |
|---|---|
| Word Processing<br>Words Program; used for letters; reports, tables , etc. | "MICROSOFT WORD"<br>(*.DOC) |
| Spreadsheet<br>Numbers Program; used for payroll; budgets; financial statements, etc. | "MICROSOFT EXCEL"<br>(*.XLS) |
| Database<br>Records Program; used for employee, customer or inventory records, etc. | "MICROSOFT ACCESS"<br>( *.MDB) |
| Desktop Publishing<br>Publishing Program; used for brochures; flyers; newsletters, posters, etc. | "MICROSOFT PUBLISHER"<br>( *.PUB) |
| Presentation<br>Slides Program; used for speeches | "MICROSOFT POWERPOINT" (*.PPT) |
| Web Site Design & Management<br>Web Program; used for designing & managing web sites | "MICROSOFT FRONTPAGE"<br>(no extension) |

**"Internet Browser" Software:**

Programs such as **Internet Explorer** or **Netscape Navigator** that you use to browse the Internet

**Central Processing Unit, and pronounced as separate letters.** The CPU is the brains of the computer. Sometimes referred to simply as the processor or central processor, the CPU is where most calculations take place. In terms of computing power, the CPU is the most important element of a computer system. On large machines, CPUs require one or more printed circuit boards. On personal computers and small workstations, the CPU is housed in a single chip called a microprocessor.

Two typical components of a CPU are:

- The arithmetic logic unit (ALU), which performs arithmetic and logical operations.
- The control unit, which extracts instructions from memory and decodes and executes them, calling on the ALU when necessary.

**Hardware:**

Refers to objects that you can actually touch, like disks, disk drives, display screens, keyboards, printers, boards, and chips. In contrast, software is untouchable. Software exists as ideas, concepts, and symbols, but it has no substance.

**Mainframe:**

A very large and expensive computer capable of supporting hundreds, or even thousands of users simultaneously. In the hierarchy that starts with a simple microprocessor (in watches, for example) at the bottom and moves to supercomputers at the top, mainframes are just below supercomputers. In some ways, mainframes are more powerful than supercomputers because they support more simultaneous programs. But supercomputers can execute a single program faster than a mainframe. The distinction between small mainframes and minicomputers is vague, depending really on how the manufacturer wants to market its machines.

**Microprocessor**

A silicon chip that contains a CPU. In the world of personal computers, the terms microprocessor and CPU are used interchangeably. At the heart of all personal computers and most workstations sits a microprocessor. Microprocessors also control the logic of almost all digital devices, from clock radios to fuel-injection systems for automobiles.

Three basic characteristics differentiate microprocessors:

- **Instruction set**: The set of instructions that the microprocessor can execute.
- **Bandwidth :** The number of bits processed in a single instruction.
- **Clock speed :** Given in megahertz (MHz), the clock speed determines how many instructions per second the processor can execute.

**Minicomputer**

A midsized computer. In size and power, minicomputers lie between workstations and mainframes. In the past decade, the distinction between large minicomputers and small mainframes has blurred, however, as has the distinction between small minicomputers and workstations. But in general, a minicomputer is a multiprocessing system capable of supporting from 4 to about 200 users simultaneously.

**PC.**

A small, relatively inexpensive computer designed for an individual user. All are based on the microprocessor technology that enables manufacturers to put an entire CPU on one chip. Businesses use personal computers for word processing, accounting, desktop publishing, and for running spreadsheet and database management applications. At home, the most popular use for personal computers is for playing games.

Personal computers first appeared in the late 1970s. One of the first and most popular personal computers was the Apple II, introduced in 1977 by Apple Computer. During the late 1970s and early 1980s, new models and competing operating systems seemed to appear daily. Then, in 1981, IBM entered the fray with its first personal computer, known as the IBM PC. The IBM PC quickly became the personal computer of choice, and most other personal computer manufacturers fell by the wayside. One of the few companies to survive IBM's onslaught was Apple Computer, which remains a major player in the personal computer marketplace.

Other companies adjusted to IBM's dominance by building IBM clones, computers that were internally almost the same as the IBM PC, but that cost less. Because IBM clones used the same microprocessors as IBM PCs, they were capable of running the same software. Over the years, IBM has lost much of its influence in directing the evolution of PCs. Many of its innovations, such as the MCA expansion bus and the OS/2 operating system, have not been accepted by the industry or the marketplace.

Today, the world of personal computers is basically divided between Apple Macintoshes and PCs. The principal characteristics of personal computers are that they are single-user systems and are based on microprocessors. However, although personal computers are designed as single-user systems, it is common to link them together to form a network. In terms of power, there is great variety. At the high end, the distinction between personal computers and workstations has faded. High-end models of the Macintosh and PC offer the same computing power and graphics capability as low-end workstations by Sun Microsystems, Hewlett-Packard, and DEC

**Software**

Computer instructions or data. Anything that can be stored electronically is software. The storage devices and display devices are hardware.

The terms software and hardware are used as both nouns and adjectives. For example, you can say: "The problem lies in the software," meaning that there is a problem with the program or data, not with the computer itself. You can also say: "It's a software problem."

The distinction between software and hardware is sometimes confusing because they are so integrally linked. Clearly, when you purchase a program, you are buying software. But to buy the software, you need to buy the disk (hardware) on which the software is recorded.
Software is often divided into two categories:
**systems software :** Includes the operating system and all the utilities that enable the computer to function.
**applications software :** Includes programs that do real work for users. For example, word processors, spreadsheets, and database management systems fall under the category of applications software.

A program or group of programs designed for end users. Software can be divided into two general classes: systems software and applications software. Systems software consists of low-level programs that interact with the computer at a very basic level. This includes operating systems, compilers, and utilities for managing computer resources.

In contrast, applications software (also called end-user programs) includes database programs, word processors, and spreadsheets. Figuratively speaking, applications software sits on top of systems software because it is unable to run without the operating system and system utilities.

**Supercomputer**

The fastest type of computer. Supercomputers are very expensive and are employed for specialized applications that require immense amounts of mathematical calculations. For example, weather forecasting requires a supercomputer. Other uses of supercomputers include animated graphics, fluid dynamic calculations, nuclear energy research, and petroleum exploration.

The chief difference between a supercomputer and a mainframe is that a supercomputer channels all its power into executing a few programs as fast as possible, whereas a mainframe uses its power to execute many programs concurrently.

**Work station:**

**1)** A type of computer used for engineering applications (CAD/CAM), desktop publishing, software development, and other types of applications that require a moderate amount of computing power and relatively high quality graphics capabilities.

Workstations generally come with a large, high-resolution graphics screen, at least 64 MB (megabytes) of RAM, built-in network support, and a graphical user interface. Most workstations also have a mass storage device such as a disk drive, but a special type of workstation, called a diskless workstation, comes without a disk drive. The most common operating systems for workstations are UNIX and Windows NT.

In terms of computing power, workstations lie between personal computers and minicomputers, although the line is fuzzy on both ends. High-end personal computers are equivalent to low-end workstations. And high-end workstations are equivalent to minicomputers.

Like personal computers, most workstations are single-user computers. However, workstations are typically linked together to form a local-area network, although they can also be used as stand-alone systems.

**(2)** In networking, workstation refers to any computer connected to a local-area network. It could be a workstation or a personal computer.

# 7. Microsoft PowerPoint

PowerPoint is Microsoft's presentation software. Presentations may be run "live," or you may make 35mm slides to run in a slide projector (expensive option for classroom presentations).

Each of the PowerPoint tutorials is designed as a single Module. In this Module, you'll learn how to create a PowerPoint presentation. You'll also learn how to edit slides, include text and graphics, insert sounds and colors, and view the PowerPoint slide show. The individual areas, covered in this Module, are furnished below. All of the tutorials follow the same theme - creating a PowerPoint presentation. This is purposeful. It was felt that, as a person progressed to newer versions of PowerPoint, having the same tutorial theme would make them more comfortable with learning the material. Each succeeding tutorial is enhanced to incorporate new features in PowerPoint and respond to added features requested by users.

- How to create a graphics presentation Slide Templates, Text, Graphics and Pictures, Sound, and Charts Inserting animated clip-art Slide transitions, Text Building , Sound and Color PowerPoint Templates Running and editing a slide show

**Why use PowerPoint?**

- Create well-organized, professional-looking presentations
- Create notes for yourself and handouts for the audience at the same time you create your presentation
- Seamless presentation of joint projects

**Some PowerPoint features**

- Master slide gives your presentation a uniform look
- Easily add charts, pictures or clip art
- Spell check your presentation
- Use timer to rehearse your presentation
- Add interest with transitions and builds

**Accessing PowerPoint**

From Windows, click the PowerPoint icon in the Microsoft Office tool bar at the top of the window, or open the Microsoft program group and click the PowerPoint icon. Note: If you're not sure which icon from the Microsoft Office toolbar to click, let the cursor rest on each icon for a couple of seconds until the icon's function is displayed on the screen.

**Creating a new presentation**

From the PowerPoint startup dialog box, select the Pick a Look Wizard then click OK. Follow the Wizard instructions, answering questions as necessary. Click Next to go to the next Wizard dialog box.

When you have gone through the Wizard dialog boxes, you will see a blank slide. Click in the title area to type the title, then click in the subtitle area to type the subtitle.

To add a new slide, click the New Slide icon on the toolbar, or select New Slide from the Insert menu. Select the slide layout you want, then click OK.

You'll notice that text entered in a slide is formatted as a bulleted list. As soon as you press **e**, a new bullet appears. If you want a second level of bullets, press tab after you press enter. To return to the higher level, press shift+ tab.

**Adding clip art and images to your presentation**

Click the Insert New Slide icon then select text and clip art format from the dialog box. Click OK. When the slide is displayed, double click in the clip art area of the slide, and select the clip art you want from the list.

To add a picture that you have scanned or downloaded from the Internet, Select Picture from the Insert menu. Using the dialog box, locate the picture and click OK. In many instances it will be necessary to resize the picture so that it will fit nicely onto your slide. In order to resize the picture proportionally, resize using the corner handles. (Handles are the small square boxes located at each corner and in centers of the top, bottom and sides of the picture. Click and drag a handle to resize a picture.)

Note: Pictures take up a lot of room. Make sure you have room on your disk to accommodate all the pictures you might want to put in your slide presentation. Making them smaller saves space.

**Saving your presentation**

Select Save from the File menu. Make sure you have selected the proper path for the file (i.e., a:), then type the file name and click OK. PowerPoint will automatically append the extension .ppt — don't change the extension.

Save True Type fonts with your presentation to make sure that wherever you go, you have the fonts you need. From the File menu, select Save As and select the embed True Type Fonts check box.

**Showing your presentation**

Use PowerPoint Viewer to show the presentation. Order a computer and overhead (data show) from Audio/Visual Services (see related flyer) to be delivered to your classroom. PowerPoint Viewer is found in the Presentations program group or on the desktop.

**Printing from PowerPoint**

There are several options for printing PowerPoint. To save paper, consider printing three or six slides per page. Select Print from the File menu. In the dialog box that opens, "Print what" lets you determine what you want to print, e.g., six slides per page. You can specify the range of slides to print from the Slide Range area of the dialog box. Make sure that you select "Pure Black & White" for the best output quality on a black and white printer.

Note: If you click the print button rather than selecting Print from the File menu, the dialog box will not appear, and you don't get to control what is printed!

**Getting PowerPoint help**

Use Microsoft PowerPoint's online help and wizards to get you started using PowerPoint. There is also a self-paced tutorial available through Information Systems.

**Exiting PowerPoint**

Make sure you have saved your presentation, then select Exit from the File menu.

**Hints for better PowerPoint presentations**

- Include only the main topics for your slides — save the details for your talk
- Give your audience handouts for reference and note-taking
- Use a large font size, at least 18 points
- Limit the number of bullets on a slide
- View slides with projection equipment before you give your presentation. Colors can be deceiving, and fonts can take on strange characteristics.
- Allow your audience time to digest the material — figure a minimum of one minute per slide.

Microsoft PowerPoint is the presentation graphics component of the Office suite. Some day you may be asked to give a presentation outlining a business plan, recommending a strategy, or even (Heaven forbid!) communicating bad news. Use PowerPoint to create an effective, attractive slide presentation you can project on screen or through the PC, as well as handouts for your audience and notes for yourself.

PowerPoint makes getting started easy. It has Wizards that guide you through the process of creating common presentations, presentation templates that provide ready-made models to get you started and design templates to give your presentations a polished, professional look.

**PowerPoint has many features to help you to convey your message effectively:**

- ❖ Emphasize key points with bullet lists
- ❖ Draw shapes, text boxes, or WordArt on your slides
- ❖ Place clip art, other graphics, or photographs on your slides
- ❖ Create organization charts
- ❖ Create tables

Use PowerPoint alone, or tap into the real power of Microsoft Office by using it with the other applications in the suite. Here are some examples:

- ❖ Outline your ideas in Word, and then open your Word document in PowerPoint. Watch PowerPoint create a slide for each heading in the outline
- ❖ Create graphs in Excel, and then paste them into PowerPoint
- ❖ Create tables in Word, and then paste them into PowerPoint

You can save your presentations as self-running shows, or Web pages

**Function Key Assignments in PowerPoint**

| | Function key | +SHIFT | +CTRL | +ALT | +OTHER |
|---|---|---|---|---|---|
| F1 | Displays the Help task panel Displays a list of controls (Slide Show View) | | Closes and reopens the current task pane | | |
| F2 | Turns on editing in selected placeholder | | Opens Print Preview | | +ALT+SHIFT<br><br>Saves the active presentation |
| F3 | | Switches case of selected text | | | |
| F4 | Repeats the last command or action (if possible) | Finds the next occurrence of the text specified in the Find dialog box when the dialog box is closed | Closes the presentation window | Quits Microsoft PowerPoint<br><br>Closes the active window or dialog box | |
| F5 | Begins slide show | Begins slide show from current slide | Restores the window size of the presentation window | | |
| F6 | Switches between the Help task pane and the program window<br><br>Moves (clockwise) to a task pane from another pane in the program | Moves (counterclockwise) to a task pane from another pane in the program window<br><br>Moves (counterclockwise) among panes of Normal View | Switches to the next presentation window when more than one presentation window is open | | CTRL+SHIFT<br><br>Switches to the previous presentation window when more than one presentation window is open |

| | | | | | |
|---|---|---|---|---|---|
| | window<br><br>Moves (clockwise) among panes of Normal View | | | | |
| F7 | Checks spelling | | Moves the presentation window (when it isn't maximized) | | |
| F8 | | | Resizes the presentation window (when it isn't maximized) | Displays the Macros dialog box | |
| F9 | | Shows/hides the grid | Minimizes the presentation window | Shows/hides guides | |
| F10 | Selects the Menu Bar<br><br>Closes an open menu and submenu at the same time | Displays the Shortcut menu for the selected item<br><br>Displays a menu of commands for the Help window when the Help window has active focus | Maximizes or restores the presentation window | Maximizes the program window | +ALT+SHIFT<br><br>Displays the menu or message for a smart tag (If more than one smart tag is present, switches to the next smart tag and displays its menu or message) |
| F11 | | | | Switches between the Visual Basic Editor and the previous active window | +ALT+SHIFT<br><br>Opens the Microsoft Script Editor |

| | | | | | |
|---|---|---|---|---|---|
| F12 | Opens the Save As dialog box | Saves the active presentation | Opens the Open dialog box | | +CTRL+SHIFT<br><br>Opens the Print dialog box |

## Keys for General Use: Working with Presentation Files

| To perform this action... | Press... |
|---|---|
| To create a new presentation file | **CTRL+N** |
| To open a presentation file | **CTRL+O** |
| To close a presentation file | **CTRL+W** |
| To save a presentation file | **CTRL+S** |
| To quit PowerPoint | **ALT+F4** |

### Keys for Displaying and Using Windows

| To perform this action... | Press... |
|---|---|
| To when more than one window is open, switch to the next window | **CTRL+F6** |
| To switch to the previous window | **CTRL+SHIFT+F6** |
| To minimize a window to an icon | **CTRL+F9** |
| To maximize a selected window | **CTRL+F10** |
| To restore the size of the active window after you've minimized or maximized it | **CTRL+F5** |

### Keys for Moving between Panes

| To perform this action... | Press... |
|---|---|
| To move clockwise among panes of Normal View | **F6** |
| To move counterclockwise among panes of Normal View | **SHIFT+F6** |
| To switch between Slides and Outline tabs | **CTRL+SHIFT+TAB** |

| | |
|---|---|
| of the Outline and Slides pane in Normal View | |

**Keys for Sending a Presentation in an E-Mail**

To send the current presentation as the body of an e-mail message, press ALT+F,

Use the following keys when the e-mail header is active. To activate the e-mail header, press SHIFT+TAB as many times as necessary. (If text within a text box is selected, you must first press F2 to select the text box before pressing SHIFT+TAB.)

| To perform this action... | Press... |
|---|---|
| To select the next box in the e-mail header or the body of the message when the last box in the e-mail header is active | **TAB** |
| To select the previous field or button in the e-mail header | **SHIFT+TAB** |
| To open the Address Book | **CTRL+SHIFT+B** |
| To check the names on the To, Cc, and Bcc lines against the Address Book | **ALT+K** |
| To send the current presentation | **ALT+S** |

**Keys for Showing and Hiding the Grid and Guides**

| To perform this action... | Press... |
|---|---|
| To show or hide the grid | **SHIFT+F9** |
| To show or hide guides | **ALT+F9** |
| To change grid or guide settings | **CTRL+G** |

# 8. Operation of Internet & E-mail

**What is Internet?**

- Network of Networks. A collection of thousands of networks connecting million of computers worldwide.
- The Network uses TCP/IP family of Protocols
- No central authority of on internet. The administrators have to agree to use the same transmission protocols
- A group of volunteers directs, provides standards and monitors the technological development of the Internet

**What can we do with Internet?**

- Messaging: email
- R & D Searching
- Customer Service
- Marketing
- Job Opportunity
- E-Business (B2B, B2C)

**How do we connect to Internet?**

Some common ways of connecting to the Internet include:

- Internet service provider (ISP) by modem
- Internet ready cable
- Digital Subscriber Line (DSL)
- Simply turning on your computer which is on a network at Work/ Home connected to the Internet
- Today you can even get a wireless connection to the Internet with a handheld PC or notebook computer.

**Internet History**

- 1962–1969: The Internet is first conceived in the early '60s. Under the leadership of the Defense Advanced Research Project Agency (DARPA), it grows from a paper architecture into a small network (ARPANET) intended to promote the sharing of super-computers amongst researchers in the United States.
- 1971: The ARPANET grows to 23 hosts connecting universities and government research centers around the country.
- 1973: The ARPANET goes international with connections to University College in London, England and the Royal Radar Establishment in Norway.
- 1981: ARPANET has 213 hosts. A new host is added approximately once every 20 days.
- 1982–1987: Bob Kahn and Vint Cerf are key members of a team which creates TCP/IP, the common language of all Internet computers. For the first time the loose collection of networks which made up the ARPANET is seen as an "internet", and the Internet as we know it today is born.

- 1984- William Gibson coins the term "cyberspace" in his novel "Neuromancer." The number of Internet hosts exceeds 1,000.
- 1991: At the University of Minnesota, a team led by computer programmer Mark MaCahill releases "gopher," the first point-and-click way of navigating the files of the Internet.
- 1992: World-Wide Web released by CERN (Conseil Européen pour la Recherche Nucleaire).
- 1993: InterNIC created by National Science Foundation (NSF) to provide specific Internet services: directory and database services (by AT&T), registration services (by Network Solutions Inc.), and information services (by General Atomics/CERFnet).
- Marc Andreessen and NCSA and the University of Illinois develops a graphical user interface to the WWW, called "Mosaic for X".
- Advent of Internet Browsers
- 1995: $50 annual fee is imposed on domains, excluding .edu and .gov domains which are still funded by the National Science Foundation.
- Currently the Internet Society, the group that controls the INTERNET, is trying to figure out new TCP/IP to be able to have billions of addresses, rather than the limited system of today. The problem that has arisen is that it is not known how both the old and the new addressing systems will be able to work at the same time during a transition period.

**Key Organizations/Contributors to Internet Standard Development and Coordination :**

- Internet Society (ISOC) : The international, umbrella Internet organization.
- Internet Architecture Board (IAB): Oversees development of the Internet technology standards.
- Internet Engineering Task Force (IETF): Responsible for improvement of the Internet technology protocols and standards
- Internet Research Task Force (IRTF): conducts research into the future Internet.
- Internet Corporation for Assigned Names and Numbers (ICANN) (www.ICANN.ORG): Manages the domain name system and allocation of IP addresses.
- Internet Assigned Numbers Authority (IANA) www.IANA.org: the central coordination, allocation, and registration organization for Internet addresses, domain names, and protocol parameters since the early days of the Internet.
- Network Solutions the first public registrar of domain names, and still manages the central domain name system database.
- National Science Foundation (NSF): managed the Internet from 1990 to 1995 during its first period of explosive public growth.

**Internet Service Provider (ISP)**

- ISP provides the connectivity to Internet
- Types of connections are: PSTN, ISDN, Leased, VSAT
- ISP Maintains a reliable and high capacity network and deploys high end routing and switching equipments and, servers etc.
- ISP is connected to Internet thru a gateway over high capacity backbone channel

**General Terms**

- Routers: forwards packets from one network to another network.
- Servers: Provide file and application service to the PCs connected in a network
- Client: PCs which request services from the server.
- Packet: Information/data broken down into manageable units by the various functional layers of the network
- Host Name: Each computer on Internet are identified by an unique name which contains the name of the machine (host) and its domain name.
- IP Address: Unique number assigned to identify a host on the internet example: 120.12.60.121
- Domain Name: Made up of several pieces that identify the organization and the hierarchy to which it belongs. Example: ctae.ac.in, yahoo.com
- Domain Name System: Allows to translates the IP address to a Name that is more easy to remember.

**Internet Services**

- ❖ Telnet
- ❖ FTP: File Transfer Protocol
- ❖ E-Mail: Electronic Mail
- ❖ WWW: Word Wide Web
- ❖ Gopher
- ❖ USENET News groups

**Gopher**

- ❖ Before the Web, Gopher was the first attempt at making it easy to access resources on the internet, till 1994, gopher was considered as hot.
- ❖ Gopher used text based menu to access FTP sites, directories and files
- ❖ Gopher sites did good job for organize ftp sites.

**USENET Newsgroups**

- ❖ Newsgroup provide a bulletin board type area where users can read others opinion or send entries of their own to be posted
- ❖ Are based on Network News Transfer Protocol (NNTP) over TCP/IP.
- ❖ Modern web browsers include software for reading and posting Usenet

**Word Wide Web (WWW)**

- ❖ Hypermedia & Multimedia started emerging by the end of eighties and Nineties developed at CERN
- ❖ An easy to use method for storing and retrieving information that resides on system in the internet
- ❖ Enabling technologies are:
  - # Hypertext
  - # Hypermedia

# Graphical User Interface

Common language called HTML for writing hypertext documents was also defined
Available on all platforms

**HTML**

- Hyper Text Markup Language (HTML) is the simple and powerful language used to describe web pages, and is still used as the main interface language to the web.
- HTML is designed to be as simple as possible. Each command consists of an opening tag in angle brackets, like <tag>, and a closing tag with an added slash, like </tag>. Some of the most common commands are listed below, together with the result displayed when the HTML is read by a web browser.
- HTML: "The water is very blue."
- Web Page Result: "The water is very blue."

**Webpage**

- Can be containing just text.
- Can be a page containing Links to other Pages/Sites.
- Can be Page flooded with text, graphics and even video.
- It can allow you to fill up a form and submit it. May be an Application Form.
- It can allow us to submit your Query and can return you the results for the requested query.
- It can even allow you do financial transactions thru it.
- Technically it is written in a language called HTML, Hypertext Markup Language. You can view HTML code for any page by selecting Source option in the menu

**Static or Dynamic Webpage**

- Pages, which are created by website designer and content remain same unless designer changes it, are called static pages
- Pages, which are dynamically created on the fly on the basis of inputs received from the user, for example Examination results, Your Inbox on yahoo, Stock quotes etc.

**Secured Page**

- Internet is public network, information you send, may be thru email or by submitting thru a webpage, is vulnerable to be seen by others, not only seen can even be modified by hackers.
- Pages which receives critical information from you like your credit card No., bank passwords, requires to transfer the information in secured manner.
- There is protocol called Secured Socket Layer, in which critical data are encrypted before leaving your system, and are decrypting at server end, and process.
- You will find a lock at status bar of the browser, this means page is secured, you can give your information to the page.

**Homepage**

- An electronic welcome mat to a person's, company's home.

- ❖ Entry page to the website
- ❖ Default filename is index.html, default.html

**Uniform Resource Locator-URL**

- A unique address on the internet
- Specifies
- Server name: www, ftp, email
- Directory path: local or remote
- File name padded with Servername, for example-

  http://www.ctae.ac.in/ssit.htm
  ftp://user@ftp.abc.com
  https://ctae.ac.in:8080/
  file://c:/MyDocuments/SSIT/internet.doc

**Web Server**

- A computer with powerful hardware and software which is
  - Stores Information in the form of Databases and Web-Pages
  - Connected to internet with high band-width line
  - Equipped with to hear clients request and responds accordingly
  - Mail server, stores your incoming e-mail messages till you pick them up and routes outgoing messages
  - Provides security to unauthorized access to data

**Intranet/Extranet/VPN**

- Intranet: Private network based on TCP/IP protocol
- Extranet/VPN: Private network over the public network, Security is the more concern and there is new term for this is Virtual Private Network (VPN).

**Web Browsers**

- Your Window on WWW
- GUI to the Internet
- Browsers are the software that allows you to access the Word Wide Web
- Retrieves information from a site on Internet

**How Web Browser Works**

A web browser works by using a protocol called HTTP to request a text document from a web server. The text document contains special instructions (written in HTML) that tell the browser how to display the document on the users screen. The Instructions may include references (Hyperlinks) to other web pages. Information about text formatting, color, and images and their positions are specified in HTML documents

**Browser Features**

- Address Bar
- Bookmark and Favorites
- History

- Home
- Refresh/Reload

**Internet Design:**

Internet refers to the global information system that is logically linked together by a globally unique address space based on the Internet Protocol (IP) or its subsequent extensions/follow-ones; is able to support communications using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite or its subsequent extensions/follow-ones, and/or other IP-compatible protocols; and provides, uses or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure described herein.

**TCP/IP**

TCP/IP( Transmission Control Protocol / Internet Protocol ) stands for a set of protocols and not just 2 protocols TCP and IP But as TCP and IP are the two most important protocols, the whole set is known as TCP/IP.

- Application Layer represents the application for example HTTP, FTP, Telnet
- Transport Layer Controls reliability of transmission; ex. TCP and UDP
- Internet Layer Takes care of addressing the packets; ex. IP
- Network Access Layer Convert IP address into MAC address
- Physical Medium

**Telnet**

- Is a TCP/IP based application that allows us to log into a remote computer
- It is like a terminal emulation program in for TCP/IP hosts
- Traditionally it is text based interface.
- Simple command is: telnet remote-computer-name

**File Transfer Protocol (FTP)**

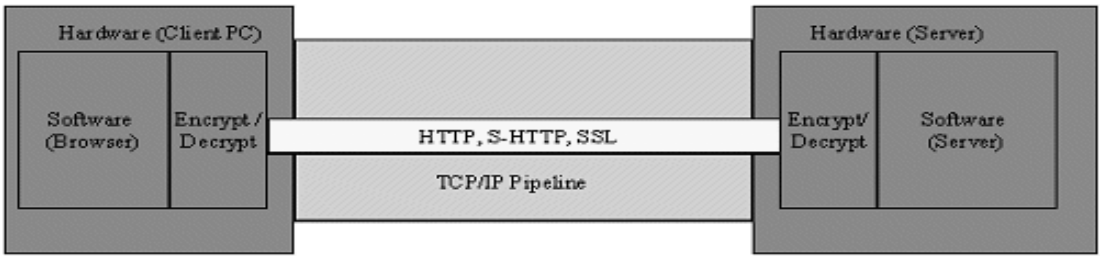
- This protocol is used to send files from one computer to another
- FTP transfers can be either through "Anonymous" connection or by password protected ID.
- Command line and Graphical user interfaces are available
- Available on all Operating system.
- Files could be transferred in compressed form to reduce the transfer time

**E-mail**

- Used to send and receive messages
- POP3 is the most protocol for retrieving mails from mail server. IMAP is another later protocol for the same purpose.
- SMTP is the protocol for routing the mails through mail servers.
- Multimedia Internet Mail Extensions (MIME) is a method of attaching files with email.
- MIME compliant e-mail clients will launch an appropriate viewer for the attached binary files

**HTTP**

- ❖ The Hypertext Transfer Protocol HTTP is the protocol that web servers use to communicate HTML web pages to browsers.
- ❖ HTTP is used when your browser connects to a web server, requests a web page from the server, and downloads the page. It is the common standard that enables any browser to connect to any server, anywhere in the world.




**How Internet works**

- ❖ Routers
- ❖ Addressing thru IP
- ❖ Identifying host and client from the packet and properly receives and send operation

**IP Address**

- Each computer on the Internet has a unique numerical address used to route packets to it across the net.
- Just as your postal address enables the postal system to send mail to your house from anywhere around the world, your computer's Internet Protocol (IP) address gives the Internet routing protocols the unique information they need to route packets of information to your desktop from anywhere across the net.
- If a machine needs to contact another by a domain name, it first looks up the corresponding IP address with the domain name service. The IP address is the geographical descriptor of the virtual world, and the addresses of both source and destination systems are stored in the header of every packet that flows across the net.
- Example IP address: 238.17.159.4 is a four byte piece of information, in this format there is possibility of having 4,294,967,296 = 256 * 256 * 256 * 256 at maximum

# 9 Mobile Technology for better communication

**Introduction to How Cell Phones Work**

Millions of people around the world use **cellular phones**. They are such great gadgets -- with a cell phone, you can talk to anyone on the planet from just about anywhere!

These days, cell phones provide an incredible array of functions, Depending on the cell-phone model, you can:

- Store contact information
- Make task or to-do lists
- Keep track of appointments and set reminders
- Use the built-in calculator for simple math
- Send or receive e-mail
- Get information (news, entertainment, stock quotes) from the Internet
- Play games
- Watch TV
- Send text messages
- Integrate other devices such as PDAs, MP3 players and GPS receivers

But have you ever wondered how a cell phone works? What makes it different from a regular phone? What do all those terms like PCS, GSM, CDMA and TDMA mean? In this article, we will discuss the technology behind cell phones so that you can see how amazing they really are.

- To start with, one of the most interesting things about a cell phone is that it is actually a radio -- an extremely sophisticated radio. The telephone was invented by Alexander Graham Bell in 1876, and wireless communication can trace its roots to the invention of the radio by Nikolai Tesla in the 1880s (formally presented in 1894 by a young Italian named Guglielmo Marconi). It was only natural that these two great technologies would eventually be combined.

**Cell-phone Frequencies**

In the dark ages before cell phones, people who really needed mobile-communications ability installed **radio telephones** in their cars. In the radio-telephone system, there was one central antenna tower per city, and perhaps **25 channels** available on that tower. This **central antenna** meant that the phone in your car needed a powerful transmitter -- big enough to transmit 40 or 50 miles (about 70 km). It also meant that not many people could use radio telephones -- there just were not enough channels.

The genius of the cellular system is the division of a city into small **cells**. This allows extensive **frequency reuse** across a city, so that millions of people can use cell phones simultaneously.

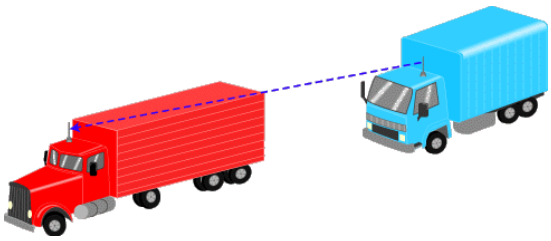
A good way to understand the sophistication of a cell phone is to compare it to a CB radio or a walkie-talkie.

- **Full-duplex vs. half-duplex** - Both walkie-talkies and CB radios are **half-duplex** devices. That is, two people communicating on a CB radio use the same frequency, so

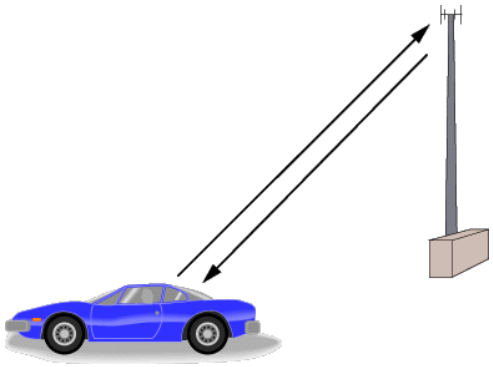
only one person can talk at a time. A cell phone is a **full-duplex** device. That means that you use one frequency for talking and a second, separate frequency for listening. Both people on the call can talk at once.

- **Channels** - A walkie-talkie typically has one channel, and a CB radio has 40 channels. A typical cell phone can communicate on 1,664 channels or more!
- **Range** - A walkie-talkie can transmit about 1 mile (1.6 km) using a 0.25-watt transmitter.

A CB radio, because it has much higher power, can transmit about 5 miles (8 km) using a 5-watt transmitter. Cell phones operate within **cells**, and they can switch cells as they move around. Cells give cell phones incredible range. Someone using a cell phone can drive hundreds of miles and maintain a conversation the entire time because of the cellular approach.



**In half-duplex radio, both transmitters use the same frequency. Only one party can talk at a time.**



**In full-duplex radio, the two transmitters use different frequencies, so both parties can talk at the same time. Cell phones are full-duplex.**

In a typical analog cell-phone system, the cell-phone carrier receives about **800 frequencies** to use across the city. The carrier chops up the city into cells. Each cell is typically sized at about **10 square miles** (26 square kilometers). Cells are normally thought of as hexagons on a big **hexagonal grid**, **Because cell phones and base stations use low-power transmitters, the same frequencies can be reused in non-adjacent cells. The two purple cells can reuse the same frequencies.**

Each cell has a **base station** that consists of a tower and a small building containing the radio equipment. We'll get into base stations later. First, let's examine the "cells" that make up a cellular system.

**Cell-phone Channels**

A single cell in an analog cell-phone system uses one-seventh of the available **duplex voice channels**. That is, each cell (of the seven on a hexagonal grid) is using one-seventh of the available channels so it has a unique set of frequencies and there are no collisions:

- A cell-phone carrier typically gets **832 radio frequencies** to use in a city.
- Each cell phone uses two frequencies per call -- a duplex channel -- so there are typically **395 voice channels** per carrier. (The other 42 frequencies are used for **control channels**)

Therefore, each cell has about **56 voice channels** available. In other words, in any cell, 56 people can be talking on their cell phone at one time. Analog cellular systems are considered first-generation mobile technology, or **1G**. With **digital transmission** methods (2G), the number of available channels increases. For example, a **TDMA-based** digital system can carry three times as many calls as an analog system, so each cell has about 168 channels available.

Cell phones have **low-power transmitters** in them. Many cell phones have two signal strengths: 0.6 watts and 3 watts (for comparison, most CB radios transmit at 4 watts). The base station is also transmitting at low power. Low-power transmitters have two advantages:

- The **transmissions** of a base station and the phones within its cell do not make it very far outside that cell. Therefore, in the figure above, both of the purple cells can **reuse the same 56 frequencies**. The same frequencies can be reused extensively across the city.
- The **power consumption** of the cell phone, which is normally battery-operated, is relatively low. Low power means small batteries, and this is what has made handheld cellular phones possible.

The cellular approach requires a large number of base stations in a city of any size. A typical large city can have hundreds of towers. But because so many people are using cell phones, costs remain low per user. Each carrier in each city also runs one central office called the **Mobile Telephone Switching Office** (MTSO). This office handles all of the phone connections to the normal land-based phone system, and controls all of the base stations in the region.

**Cell-phone Codes**

**Electronic Serial Number** (ESN) - a unique 32-bit number programmed into the phone when it is manufactured

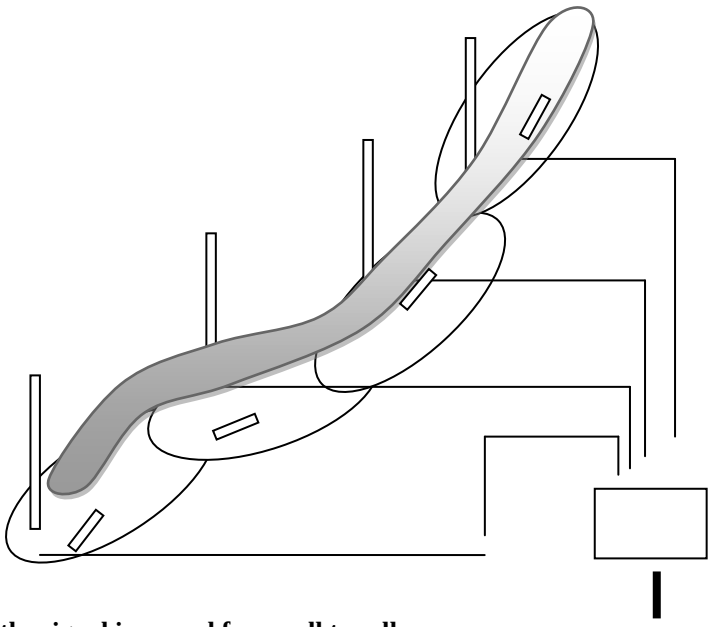
**Mobile Identification Number** (MIN) - a 10-digit number derived from your phone's number

**System Identification Code** (SID) - a unique 5-digit number that is assigned to each carrier by the FCC. While the ESN is considered a permanent part of the phone, both the MIN and SID codes are programmed into the phone when you purchase a service plan and have the phone **activated**.

All cell phones have special **codes** associated with them. These codes are used to identify the phone, the phone's owner and the service provider.

Let's say **you have a cell phone, you turn it on and someone tries to call you**. Here is what happens to the call:

- When you first power up the phone, it listens for an **SID** on the **control channel**. The control channel is a special frequency that the phone and base station use to talk to one another about things like call set-up and channel changing. If the phone cannot find any control channels to listen to, it knows it is **out of range** and displays a "no service" message.
- When it receives the SID, the phone **compares it** to the SID programmed into the phone. If the SIDs match, the phone knows that the cell it is communicating with is part of its **home** system.
- Along with the SID, the phone also transmits a **registration request**, and the MTSO keeps track of your phone's location in a database -- this way, the MTSO knows which cell you are in when it wants to ring your phone.
- The **MTSO** gets the call, and it tries to **find you**. It looks in its database to see which cell you are in.
- The MTSO **picks a frequency pair** that your phone will use in that cell to take the call.
- The MTSO communicates with your phone over the **control channel** to tell it which frequencies to use, and once your phone and the tower switch on those frequencies, the call is **connected**. Now, you are talking by two-way radio to a friend.
- As you move toward the edge of your cell, your cell's **base station** notes that your **signal strength** is diminishing. Meanwhile, the base station in the cell you are moving toward (which is listening and measuring signal strength on all frequencies, not just its own one-seventh) sees your phone's signal strength increasing. The two base stations coordinate with each other through the MTSO, and at some point, your phone gets a signal on a control channel telling it to change frequencies. This **hand off** switches your phone to the new cell.



**As you travel, the signal is passed from cell to cell.**

Let's say you're on the phone and you move from one cell to another -- but the cell you move into is covered by another service provider, not yours. Instead of dropping the call, it'll actually be handed off to the other service provider.

If the SID on the control channel does not match the SID programmed into your phone, then the phone knows it is **roaming**. The MTSO of the cell that you are roaming in contacts the MTSO of your home system, which then checks its database to **confirm** that the SID of the phone you are using is valid. Your home system **verifies** your phone to the local MTSO, which then tracks your phone as you move through its cells. And the amazing thing is that all of this happens within seconds.

**Analog Cell Phones**

In 1983, the analog cell-phone standard called **AMPS** (Advanced Mobile Phone System) was approved by the FCC and first used in Chicago. AMPS uses a range of frequencies between 824 megahertz (MHz) and 894 MHz for analog cell phones. In order to encourage competition and keep prices low, the U. S. government required the presence of two **carriers** in every market, known as A and B carriers. One of the carriers was normally the **local-exchange carrier** (LEC), a fancy way of saying the local phone company.

Carriers A and B are each assigned **832 frequencies**: 790 for voice and 42 for data. A pair of frequencies (one for transmit and one for receive) is used to create one **channel**. The frequencies used in analog voice channels are typically **30 kHz** wide.

A version of AMPS known as **Narrowband Advanced Mobile Phone Service** (NAMPS) incorporates some digital technology to allow the system to carry about **three times as many calls** as the original version. Even though it uses digital technology, it is still considered analog. AMPS and NAMPS only operate in the 800-MHz band and do not offer many of the features common in digital cellular service, such as e-mail and Web browsing.

**Along Comes Digital**

Digital cell phones are the second generation (2G) of cellular technology. They use the same radio technology as analog phones, but they use it in a different way. Analog systems do not fully utilize the signal between the phone and the cellular network -- analog signals cannot be compressed and manipulated as easily as a true digital signal. This is the reason why many **cable companies** are switching to digital -- so they can fit **more channels within a given bandwidth**. It is amazing how much more efficient digital systems can be.

Digital phones convert your voice into **binary** information (1s and 0s) and then compress it. This **compression** allows between three and 10 digital cell-phone calls to occupy the space of a *single* analog call.

Many digital cellular systems rely on **frequency-shift keying** (FSK) to send data back and forth over AMPS. FSK uses **two frequencies**, one for 1s and the other for 0s, **alternating** rapidly between the two to send digital information between the cell tower and the phone.

Clever modulation and encoding schemes are required to convert the analog information to digital, compress it and convert it back again while maintaining an acceptable level of voice quality. All of this means that digital cell phones have to contain a lot of processing power.

Let's take a good look inside a digital cell phone.

**Inside a Digital Cell Phone**

On a "complexity per cubic inch" scale, cell phones are some of the most intricate devices people use on a daily basis. Modern digital cell phones can process **millions of calculations per second** in order to compress and decompress the voice stream.

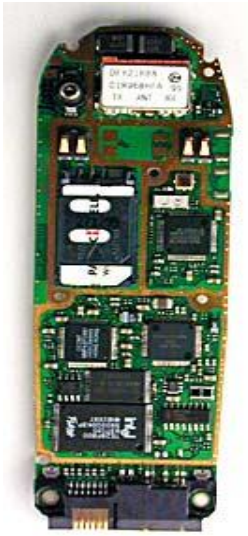

**The parts of a cell phone**

If you take a basic digital cell phone apart, you find that it contains just a few individual parts:

- An amazing circuit board containing the brains of the phone
- An antenna
- A liquid crystal display (LCD)
- A keyboard
- A microphone
- A speaker
- A battery

The circuit board is the heart of the system. Here is one from a typical digital phone:

**The front of the circuit board**



**The back of the circuit board**

In the photos above, you see several computer chips. Let's talk about what some of the individual chips do. The **analog-to-digital** and **digital-to-analog** conversion chips translate the outgoing audio signal from analog to digital and the incoming signal from digital back to analog. The **digital signal processor** (DSP) is a highly customized processor designed to perform signal-manipulation calculations at high speed.

The **microprocessor** handles all of the housekeeping chores for the keyboard and display, deals with command and control signaling with the base station and also coordinates the rest of the functions on the board.

The **ROM** and **Flash memory** chips provide storage for the phone's **operating system** and customizable features, such as the phone directory. The **radio frequency (RF) and power** section handles power management and recharging, and also deals with the hundreds of FM channels. Finally, the **RF amplifiers** handle signals traveling to and from the antenna.

**display and keypad contacts**

**Flash memory card on the circuit board**

**Flash memory card removed**

The **display** has grown considerably in size as the number of features in cell phones have increased. Most current phones offer built-in phone directories, calculators and games. And many of the phones incorporate some type of *personal digital assistant* **(PDA)** or **Web browser**.

Some phones store certain information, such as the SID and MIN codes, in internal Flash memory.

**The cell-phone speaker, microphone and battery backup**

Cell phones have such tiny speakers and microphones that it is incredible how well most of them reproduce sound. As you can see in the picture above, the speaker is about the size of a dime and the microphone is no larger than the watch battery beside it. Speaking of the watch battery, this is used by the cell phone's **internal clock chip**.

**Cell Phone Network Technologies: 2G**

There are three common technologies used by 2G cell-phone networks for transmitting information :

- **Frequency division multiple access** (FDMA)
- **Time division multiple access** (TDMA)
- **Code division multiple access** (CDMA)

Although these technologies sound very intimidating, you can get a good sense of how they work just by breaking down the title of each one.

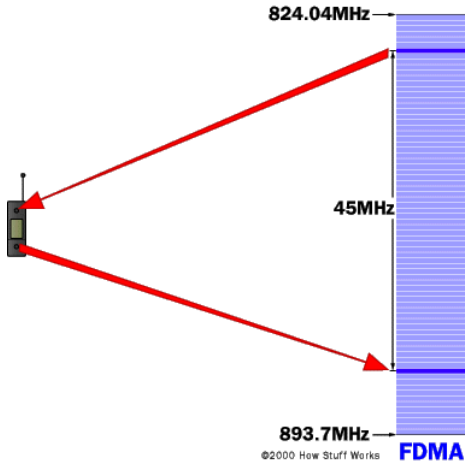
The first word tells you what the **access method** is. The second word, **division**, lets you know that it splits calls based on that access method.

- FDMA puts each call on a separate **frequency**.
- TDMA assigns each call a certain portion of **time** on a designated frequency.
- CDMA gives a unique **code** to each call and spreads it over the available frequencies.

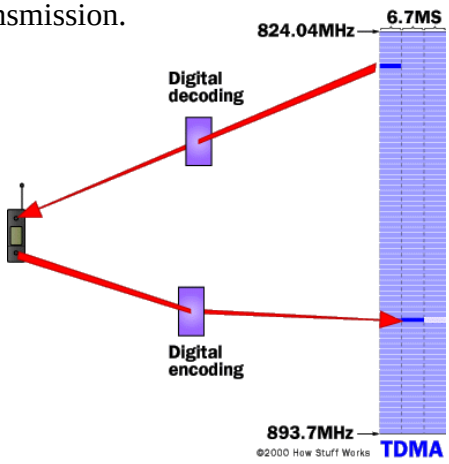
The last part of each name is **multiple access**. This simply means that more than one user can utilize each cell.

**FDMA**

FDMA separates the spectrum into distinct voice channels by splitting it into **uniform chunks of bandwidth**. To better understand FDMA, think of radio stations: Each station sends its signal at a different frequency within the available band. FDMA is used mainly for **analog transmission**. While it is certainly capable of carrying digital information, FDMA is not considered to be an efficient method for digital transmission.




**In FDMA, each phone uses a different frequency.**




**TDMA splits a frequency into time slots.**

**TDMA**

TDMA is the access method used by the Electronics Industry Alliance and the Telecommunications Industry Association for **Interim Standard 54** (IS-54) and **Interim**

**Standard 136** (IS-136). Using TDMA, a **narrow band** that is 30 kHz wide and 6.7 milliseconds long is split time-wise into **three time slots**.

Narrow band means "channels" in the traditional sense. Each conversation gets the radio for one-third of the time. This is possible because voice data that has been converted to digital information is compressed so that it takes up significantly less transmission space. Therefore, TDMA has **three times the capacity** of an analog system using the same number of channels. TDMA systems operate in either the **800-MHz** (IS-54) or **1900-MHz** (IS-136) frequency bands.

**Unlocking Your GSM Phone**

Any GSM phone can work with any SIM card, but some service providers "lock" the phone so that it will only work with their service. If your phone is locked, you can't use it with any other service provider, whether locally or overseas. You can unlock the phone using a special code -- but it's unlikely your service provider will give it to you. There are Web sites that will give you the unlock code, some for a small fee, some for free.

**GSM**

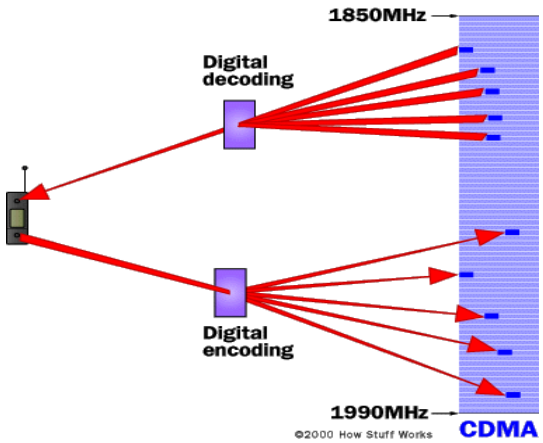
TDMA is also used as the access technology for Global System for Mobile communications (GSM). However, **GSM** implements TDMA in a somewhat different and incompatible way from IS-136. Think of GSM and IS-136 as two different **operating systems** that work on the same **processor**, like Windows and Linux both working on an Intel Pentium III. GSM systems use **encryption** to make phone calls more secure. GSM operates in the 900-MHz and 1800-MHz bands in Europe and Asia and in the 850-MHz and 1900-MHz (sometimes referred to as 1.9-GHz) band in the United States. It is used in digital cellular and **PCS-based** systems.

GSM is the international standard in Europe, Australia and much of Asia and Africa. In covered areas, cell-phone users can buy one phone that will work anywhere where the standard is supported. To connect to the specific service providers in these different countries, GSM users simply switch **subscriber identification module** (**SIM**) cards.

IM cards are small removable disks that slip in and out of GSM cell phones. They store all the connection data and identification numbers you need to access a particular wireless service provider.

**CDMA**

**CDMA** takes an entirely different approach from TDMA. CDMA, after digitizing data, **spreads it out** over the entire available bandwidth. Multiple calls are **overlaid** on each other on the channel, with each assigned a **unique sequence code**. CDMA is a form of **spread spectrum**, which simply means that data is sent in small pieces over a number of the discrete frequencies available for use at any time in the specified range.




**In CDMA, each phone's data has a unique code.**

All of the users transmit in the same **wide-band** chunk of spectrum. Each user's signal is spread over the entire bandwidth by a **unique**

**spreading code**. At the receiver, that same unique code is used to recover the signal. Because CDMA systems need to put an accurate time-stamp on each piece of a signal, it references the **GPS** system for this information. Between eight and 10 separate calls can be carried in the same channel space as one analog AMPS call. CDMA technology is the basis for **Interim Standard 95** (IS-95) and operates in both the 800-MHz and 1900-MHz frequency bands.
Ideally, TDMA and CDMA are transparent to each other. In practice, high-power CDMA signals raise the noise floor for TDMA receivers, and high-power TDMA signals can cause overloading and jamming of CDMA receivers.

# Multi-band vs. Multi-mode Cell Phones

**Dual Band vs. Dual Mode**

If you travel a lot, you will probably want to look for phones that offer multiple bands, multiple modes or both. Let's take a look at each of these options:

- **Multiple band** - A phone that has multiple-band capability can **switch frequencies**. For example, a dual-band TDMA phone could use TDMA services in either an 800-MHz or a 1900-MHz system. A quad-band GSM phone could use GSM service in the 850-MHz, 900-MHz, 1800-MHz or 1900-MHz band.
- **Multiple mode** - In cell phones, "mode" refers to the **type of transmission technology** used. So, a phone that supported AMPS and TDMA could switch back and forth as needed. It's important that one of the modes is AMPS -- this gives you analog service if you are in an area that doesn't have digital support.
- **Multiple band/Multiple mode** - The best of both worlds allows you to switch between frequency bands and transmission modes as needed.

You can find both **dual-mode** and **tri-mode** phones. The term "tri-mode" can be deceptive. It may mean that the phone supports two digital technologies, such as CDMA and TDMA, as well as analog. In that case, it is a true tri-mode phone. But it can also mean that it supports one digital technology in two bands and also offers analog support. A popular version of the tri-mode type of phone for people who do a lot of international traveling has GSM service in the 900-MHz band for Europe and Asia and the 1900-MHz band for the United States, in addition to the analog service. Technically, this is a dual-mode phone, and one of those modes (GSM) supports two bands.

**Cell-phone Network Technologies: 3G**

3G phone

3G technology is the latest in mobile communications. 3G stands for "third generation" -- this makes analog cellular technology generation one and digital/PCS generation two. 3G technology is intended for the true multimedia cell phone -- typically called **smartphones** -- and features increased bandwidth and transfer rates to accommodate Web-based applications and phone-based audio and video files.
3G comprises several cellular access technologies. The three most common ones as of 2005 are:

- CDMA2000 - based on 2G Code Division Multiple Access
- WCDMA (UMTS) - Wideband Code Division Multiple Access

- TD-SCDMA - Time-division Synchronous Code-division Multiple Access

3G networks have potential transfer speeds of up to 3 Mbps (about 15 seconds to download a 3-minute **MP3** song). For comparison, the fastest 2G phones can achieve up to 144Kbps (about 8 minutes to download a 3-minute song). 3G's high data rates are ideal for downloading information from the Internet and sending and receiving large, multimedia files. 3G phones are like mini-laptops and can accommodate broadband applications like video conferencing, receiving streaming video from the Web, sending and receiving faxes and instantly downloading e-mail messages with attachments.

Of course, none of this would be possible without those soaring towers that carry cell-phone signals from phone to phone. 3G is a cell phone network protocol.

**Problems with Cell Phones**

A cell phone, like any other electronic device, has its problems:

- Generally, non-repairable internal **corrosion** of parts results if you get the phone **wet** or use wet hands to push the buttons. Consider a protective case. If the phone does get wet, be sure it is totally dry before you switch it on so you can try to avoid damaging internal parts.
- Extreme **heat** in a car can damage the battery or the cell-phone electronics. Extreme cold may cause a momentary loss of the screen display.
- Analog cell phones suffer from a problem known as "**cloning**." A phone is "cloned" when someone steals its ID numbers and is able to make fraudulent calls on the owner's account.

Here is how cloning occurs: When your phone makes a call, it transmits the ESN and MIN to the network at the beginning of the call. The MIN/ESN pair is a unique tag for your phone -- this is how the phone company knows who to bill for the call. When your phone transmits its MIN/ESN pair, it is possible for nefarious sorts to listen (with a scanner) and capture the pair. With the right equipment, it is fairly easy to modify another phone so that it contains your MIN/ESN pair, which allows the nefarious individual to make calls on your account.

For more information about cell phones and related topics, check out the links on the next page and be sure to read How Buying a Cell Phone Works for loads of helpful consumer tips.

Introduction to How WAP Works


Wireless Internet can be built into your cell phone or received through a wireless card.

You and millions of other people around the world use the Internet every day -- to communicate with others, follow the stock market, keep up with the news, check the weather, make travel plans, conduct business, shop, entertain yourself and learn. Staying connected has become so important that it's hard to get away from your computer and your Internet connection because you might miss an e-mail message, an update on your stock or some

news you need to know. With your business or your personal life growing more dependent on electronic communication over the Internet, you might be ready to take the next step and get a device that allows you to access the Internet on the go.

That's where **wireless Internet** comes in. You've probably seen news or advertising about **cell phones and PDAs** that let you receive and send e-mail. This seems a logical next step, but there are some questions that come up when you think about going mobile with the Internet. Will you still be able to surf the Web? How fast will you be able to get the information you need? You might have heard of the **Wireless Application Protocol** (**WAP**) and wonder how it works. Learn just what WAP is, why it is needed and what devices use it.

**The Cellular Explosion**

Probably the most important factor in the birth of wireless Internet has been the proliferation of **digital cell phones** in the last few years. The expanding network of digital cellular and **personal communication services** (**PCS**) has created a solid foundation for wireless Internet services. It is estimated that there are more than 50 million Web-enabled cell phones in use. In 1997, Nokia, Motorola, Ericsson and Phone.com came together to create the WAP because they believed that a universal standard is critical to the successful implementation of wireless Internet. Since then, more than 350 companies have joined them in the **WAP Forum**.

Making a Web site accessible through a wireless device is quite a challenge. So far, only a small portion of the more than a billion Web sites provide any wireless Internet content. As the use of WAP-enabled devices grows, you can expect that many more Web sites will be interested in creating wireless content.

WAP is designed to work on any of the existing wireless services, using standards such as:

- Short Message Service (SMS)
- High-Speed Circuit-Switched Data (CSD)
- General Packet Radio Service (GPRS)
- Unstructured Supplementary Services Data (USSD)

**Short Message Service**

**definition -**

SMS (Short Message Service), commonly referred to as "text messaging," is a service for sending short messages of up to 160 characters (224 characters if using a 5-bit mode) to mobile devices, including cellular phones, smartphones and PDAs.

SMS is similar to paging. However, SMS messages do not require the mobile phone to be active and within range and will be held for a number of days until the phone is active and within range. SMS messages are transmitted within the same cell or to anyone with roaming service capability. They can also be sent to digital phones in a number of other ways, including:

- From one digital phone to another
- From Web-based applications within a Web browser
- From instant messaging clients like ICQ
- From VoIP applications like Skype
- From some unified communications applications.

Typical uses of SMS include:

- Notifying a mobile phone owner of a voicemail message

- Notifying a salesperson of an inquiry and contact to call
- Notifying a doctor of a patient with an emergency problem
- Notifying a service person of the time and place of their next call
- Notifying a driver of the address of the next pickup
- Enhanced messaging service (EMS), an adaptation of SMS that allows users to send and receive ringtones and operator logos, as well as combinations of simple media to and from EMS-compliant handsets.

Many of these uses depend upon short telephone numbers called common short codes (CSCs), usually consisting of five digits, that are used to address SMS and MMS messages from cellular telephones.

In recent years, SMS spam has become an issue for some users, as has SMiShing, a security attack in which the user is tricked into downloading a Trojan horse, virus or other malware onto a cellular phone or other mobile device.

Users can send messages from a computer via an SMS gateway. SMS gateways are Web sites that allow users to send messages to people within the cell served by that gateway. They also serve as international gateways for users with roaming capability.

**Alternatives to SMS**

Alternative messaging services allow for more elaborate types of messages. With **EMS** (Enhanced Messaging Service), you can send formatted text, sound effects, small pictures and icons. **MMS** (Multimedia Messaging Service) allows you to send animations, audio and video files in addition to text. If your mobile phone is EMS- or MMS-enabled, you can use these standards just as you would SMS. However, the cost per message will be higher.

Another alternative to using SMS is using an instant messaging program, such as AOL IM, on your cell phone. This can be in the form of software that's pre-installed on your phone, or you can use **WAP** (Wireless Application Protocol) to access the Internet and sign into your IM account. WAP is a protocol that gives you small, simplified versions of web pages that are easily navigable on your mobile phone or PDA .You can use it to send instant messages or actual e-mails from your phone.

**High-Speed Circuit-Switched Data**

High-Speed Circuit-Switched Data (HSCSD) is circuit-switched wireless data transmission for mobile users at data rates up to 38.4 Kbps, four times faster than the standard data rates of the Global System for Mobile (GSM) communication standard in 1999. HSCSD is comparable to the speed of many computer modems that communicate with today's fixed telephone networks.

HSCSD is an evolutionary technology on the way to Universal Mobile Telecommunications Service (UMTS). 802.11 protocols: wireless protocol, 802.11n

**GPRS**

General Packet Radio Services (GPRS) is a packet-based wireless communication service that promises data rates from 56 up to 114 Kbps and continuous connection to the Internet for mobile phone and computer users. The higher data rates allow users to take part in video conferences and interact with multimedia Web sites and similar applications using mobile

handheld devices as well as notebook computers. GPRS is based on Global System for Mobile (GSM) communication and complements existing services such circuit-switched cellular phone connections and the Short Message Service (SMS).

In theory, GPRS packet-based services cost users less than circuit-switched services since communication channels are being used on a shared-use, as-packets-are-needed basis rather than dedicated to only one user at a time. It is also easier to make applications available to mobile users because the faster data rate means that middleware currently needed to adapt applications to the slower speed of wireless systems are no longer be needed. As GPRS has become more widely available, along with other 2.5G and 3G services, mobile users of virtual private networks (VPNs) have been able to access the private network continuously over wireless rather than through a rooted dial-up connection.

GPRS also complements Bluetooth, a standard for replacing wired connections between devices with wireless radio connections. In addition to the Internet Protocol (IP), GPRS supports X.25, a packet-based protocol that is used mainly in Europe. GPRS is an evolutionary step toward Enhanced Data GSM Environment (EDGE) and Universal Mobile Telephone Service (UMTS).

**USSD**

USSD (Unstructured Supplementary Service Data) is a Global System for Mobile (GSM) communication technology that is used to send textbetween a mobile phone and an application program in the network. Applications may include prepaid roaming or mobile chatting.

USSD is similar to Short Messaging Service (SMS), but,unlike SMS, USSD transactions occur during the session only. With SMS, messagescan be sent to a mobile phone and stored for several days if the phone is notactivated or within range.

The Wireless Application Protocol (WAP) supports USSD. USSDis defined in the GSM standard documents GSM 02.90 and GSM 03.90.

**Wireless Markup Language**

WAP uses **Wireless Markup Language** (WML), which includes the Handheld Device Markup Language (HDML) developed by Phone.com.

WML can also trace its roots to **eXtensible Markup Language** (XML). A markup language is a way of adding information to your content that tells the device receiving the content what to do with it. The best known markup language is Hypertext Markup Language (HTML). Unlike HTML, WML is considered a **meta language**. Basically, this means that in addition to providing predefined tags, WML lets you design your own markup language components. WAP also allows the use of standard Internet protocols such as UDP, IP and XML.

There are three main reasons why wireless Internet needs the Wireless Application Protocol:

- Transfer speed
- Size and readability
- Navigation

Most cell phones and Web-enabled PDAs have **data transfer rates** of 14.4 Kbps or less. Compare this to a typical 56 Kbps modem, a cable modem or a DSL connection. Most Web

pages today are full of graphics that would take an unbearably long time to download at 14.4 Kbps. Wireless Internet content is typically text-based in order to solve this problem.

The relatively small size of the LCD on a cell phone or PDA presents another challenge. Most Web pages are designed for a resolution of 640x480 pixels, which is fine if you are reading on a desktop or a laptop. The page simply does not fit on a wireless device's **display**, which might be 150x150 pixels. Also, the majority of wireless devices use monochrome screens. Pages are harder to read when font and background colors become similar shades of gray.

**Navigation** is another issue. You make your way through a Web page with points and clicks using a mouse; but if you are using a wireless device, you often use one hand to scroll keys.

WAP takes each of these limitations into account and provides a way to work with a typical wireless device.

**Wireless Application Protocol**

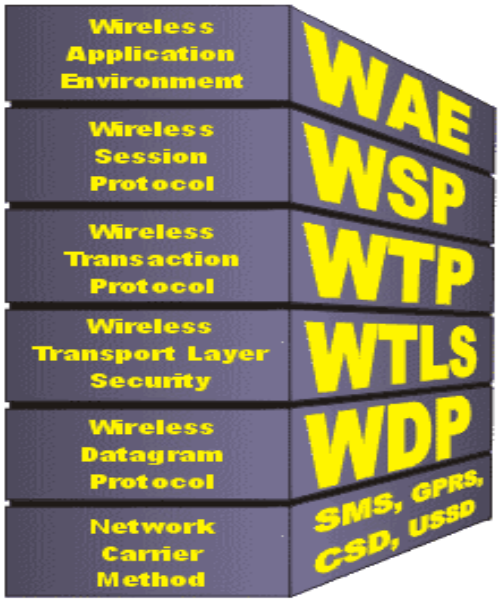
Here's what happens when you access a Web site using a WAP-enabled device:

- You turn on the device and open the minibrowser.
- The device sends out a radio signal, searching for service.
- A connection is made with your service provider.
- You select a Web site that you wish to view.
- A request is sent to a gateway server using WAP.
- The gateway server retrieves the information via HTTP from the Web site.
- The gateway server encodes the HTTP data as WML.
- The WML-encoded data is sent to your device.
- You see the wireless Internet version of the Web page you selected.

To create wireless Internet content, a Web site creates special text-only or low-graphics versions of the site. The data is sent in HTTP form by a Web server to a **WAP gateway**. This system includes the WAP encoder, script compiler and protocol adapters to convert the HTTP information to WML. The gateway then sends the converted data to the WAP client on your wireless device.

What happens between the gateway and the client relies on features of different parts of the **WAP protocol stack**. Let's take a look at each part of the stack:

- **WDP** - The Wireless Datagram Protocol works in conjunction with the network carrier layer (see below). WDP makes it easy to adapt WAP to a variety of bearers because all that needs to change is the information maintained at this level.
- **Network carriers** - Also called **bearers**, these can be any of the existing technologies that wireless providers use, as long as information is provided at the WDP level to interface WAP with the bearer.




**WAP protocol stack**

- **WAE** - The Wireless Application Environment holds the tools that wireless Internet content developers use. These include WML and WMLScript, which is a scripting language used in conjunction with WML. It functions much like Javascript.
- **WSP** - The Wireless Session Protocol determines whether a session between the device and the network will be **connection-oriented** or **connectionless**. What this is basically talking about is whether or not the device needs to talk back and forth with the network during a session. In a connection-oriented session, data is passed both ways between the device and the network; WSP then sends the packet to the Wireless Transaction Protocol layer (see below). If the session is connectionless, commonly used when information is being broadcast or **streamed** from the network to the device, then WSP redirects the packet to the Wireless Datagram Protocol layer (see below).
- **WTP** - The Wireless Transaction Protocol acts like a traffic cop, keeping the data flowing in a logical and smooth manner. It also determines how to classify each transaction request:
    - Reliable two-way
    - Reliable one-way
    - Unreliable one-way

  The WSP and WTP layers correspond to Hypertext Transfer Protocol (HTTP) in the TCP/IP protocol suite.
- **WTLS** - Wireless Transport Layer Security provides many of the same security features found in the Transport Layer Security (TLS) part of TCP/IP. It checks data integrity, provides encryption and performs client and server authentication.

## 10. Skill teaching

Before using a training aid, the instructor should be sure it applies directly to the subject matter and helps achieve the learning objective. The instructor should preview films and ensure that mechanical aids are in good working order before they are used. Each aid used should present only one basic idea since presenting two or more ideas simulta- neously may be confusing. To be effective, the aid should be used in the presentation at the appropriate time. The training aid should be large enough for the most distant student to see it clearly. If the aid is not large enough to display at the front of the classroom, the instructor could ask students to gather around the display so as to get a closer look. Or, the students may be allowed to pass the aid around the room—from student to student. If this is done, the instructor should allow each student a few moments to examine the aid before proceeding with the presentation. When displaying an aid, the instructor should be sure that no student's view is obstructed.

**Teaching a Skill** One method that is useful for teaching a skill is the demonstration-performance method, or teaching by doing. This procedure covers all the necessary steps in learning a skill and presents them in the most effective order. The teaching-by-doing method of instruction involves "doing" by both the instructor and the student. This method is most effective when a skill is to be taught to one student or a small group of students. Classroom time may not permit a group of more than 10 to learn the skill when this method is employed. For a group of 10, breaking the students into 2 groups of 5 each would probably be more effective. The order of presentation is important. The instructor should begin with the purpose and objectives. There is a difference between seeing and perceiving, so the instructor must take care to explain and stress major points of the presen- tation. If nomenclature is important, then the instructor must name each part and describe its function. The following steps can be applied to most teaching-by-doing situations: 1. The instructor does and tells. 2. The instructor does while a student tells. 3. The student does and tells. 4. Students practice (under supervision). **6-10**

step 1, the instructor performs the skill carefully, accurately, and slowly enough for the students to follow. Care should be taken to emphasize any action the group might miss if it were not pointed out. Applicable safety precautions should be stressed and followed by the instructor at all times. Instructors should beware of the trap implied in the statement "I've done that so many times I could do it blind- folded." Perhaps this is a true statement, but it may cause students to ignore safety precautions. The first step is very important. The presenta- tion must be so organized that no vital information is omitted. Such hesitations or interruptions as "I forgot to tell you . . . ," or "Just a minute while I check this step," would clearly indicate that the instructor is not properly prepared.

In step 2, the physical steps are completed while a student explains what the instructor is doing. The instructor should perform the steps precisely as directed by the student unless safety precau- tions are violated. Then, if an error is made by the student, the other students (or the instructor) can point out the mistake. In the event of an error, the performance should stop and the error be corrected. Then the performance should start over again with the student

explaining the procedure correctly. If there are too many errors, the instructor should stop the performance and repeat step 1 before calling the same student to begin step 2. Step 2 is particularly valuable when there is a chance of harming personnel or damaging equip- ment while the skill is being taught. The students demonstrate orally that they know what to do, but are relieved of the possibility of endangering themselves or the equipment. Students can con-centrate on procedure without fear of injury or failure. This would apply in fire-fighting train-ing or operating audiovisual equipment. Step 2 is the time the instructor should ask a number of questions to be sure the students understand what they are saying rather than simply repeating the instructor's words. Such questions would be as follows: "What do I do next?" "How do I do that?" "What should happen now that will demon- strate to me that the steps I have taken are correct?" "Is there anything I should be careful of at this point?" "Why do we do it this way?"

The instructor should require complete an- swers and stress correct terminology if that is important. The instructor should be reasonably sure that students have a good grasp of procedures before moving on to the next phase of instruction.

In step 3, the students perform the skill. Before any movement, however, the students explain what they are about to do and how they are going to do it. While students are attempting this new operation, the instructor must remember that there may be some who are slow learners or who make more mistakes than others. These students should not be rushed. The instructor should be patient and should not interrupt or remove the training aid from them unless personal injury or harm to the equipment is imminent. The instructor should assist only when asked. If a student appears confused, a review of procedures by the student and instructor together will usually clear up misunderstandings. A word of praise should be given when students perform well.

During step 4, the students practice the entire skill while the instructor observes. At first, the instructor should emphasize accuracy and later speed, if that is important. The instructor needs to be paticularly observant at this point to note any bad habits or variation in procedures which may creep in. When such discrepancies are noted, the instructor should stop the operation to correct these mistakes before they are practiced repeatedly. Again, violation of safety precautions should never be overlooked.

**General Hints for the Instructor**

The instructor should stress correct procedures on the student's first attempt at performing a new skill. The most effective learning results when initial learning is followed immdediately by periods of practical application. Safety precautions should be emphasized at the point in the demonstration that they apply. Explaining the reasons for the precautions will help students understand the need for compliance. Whatever the type of' training, if the instructor finds that the students have not mastered the skill or absorbed the knowledge, the first reaction may be to assume that the students are at fault. However, this may not be the case. Failure to learn on the part of the student is sometimes the result of poor instruction—as in the saying "If the learner hasn't learned, the teacher hasn't taught, While there maybe some exceptions to this old adage, every really good instructor is always ready and willing to become a better instructor. The end product of well-informed students will more than justify the extra effort required.

## 11 The Listening Skill

Listening is an important in conversation as talking. Good listening involves encouraging other people to say interesting things, understanding the things that they tell you and being sensitive to the thoughts and feelings that underlie the things that they tell you. Listening must be active as well as passive. It is not enough just to listen: You must show that you are listening. Body, face, eyes and voices all sound combine to tell the other person that is talking in what he or she saying.

Good listening will bring out the best in your partner in conversation – even the dullest – seeming person has interesting and valuable insight to give and information to pass on. Poor listening by contrast will lead to misunderstanding, boredom and ill-felling.

Given below are a few facts in respect of listening as process.

- Of all the time spent communicating by the greatest is spent in listening.
- On the average, people are only 25 % effective as listener.
- Hearing and listening is not same thing. Listening is a conscious, emotional and intellectual response to it.
- Thinking speed ( 500 to 1000 word/ minute ) is four five time more than the rate of speech ( 125 to 175 words / minute)

All these facts have one implication that each one of has tremendous score to improve our listening skills. The listening process is a combination of what we hear, what we understand and what we remember.

Hearing is the first element is the detection or perception of sound: it refers to the process by which speech is received by ear, the form of sound waves.

The second stage, identifying and recognizing, is one in which patterns familiar relationships are recognized and assimilated. Through auditory analysis, metal reorganization and association, the sound and sound sequences are recognized as words.

Third stage, audioing is the translation of the flow of words into meaning. Audioing involves one or more avenues of though – involve one or more avenues of though – indexing, comparing, noting sequence, forming sensory impressions and appreciating.

Listening demands efforts, only strict self-discipline prevent us pursuing out own line of thought when someone is talking. Often we are intent on speaking next and just waiting for an opportunity to say out piece without regard to what the other person wishes to convey.

A distinct effort is often needed to 'switch on' and tune into others. Then there is thinking to be done. What does he say? What does it mean? How does it fit? Can I support it? What shall I say in response?

Individual trying to present their ideas to others & receive less response than they expect, tend to ask themselves. 'What don't they listen me? The evidence indicates that listening is a difficult for the whole group & assuming that members accept personal responsibility for creating improvement, the question becomes, 'How can I listen better to them? Taking account of interaction, which arises from & influences the way people think, feel & behave it is appropriate to consider the question in a more general form. 'What can speaker & leister do to help one another achieve effective communication? Clearly there is no simple answer but there are conditions which an be developed& practices which can be adopted, that help towards a solution.

These are summarized as below:

**Conditions:**

Common experiences which enable people to communicate in terms they all recognize. A common awareness of the situation: including for instance the stage of systematic approach being dealt with, the risk to be taken into account and passage of time.

A common view of what has to be achieved and for what purpose, that is clearly identified aims which members have agreed to support one another in pursuing.

**Practices in speaking:**

- Mentally clarifying one's own ideas first, checking, their relevance to the aims to the previous speaker's point and to the stage of systematic approach being or about to be dealt with.
- Making specific points rather than vague generalizations.
- Developing points in a clear, concise manner without overburdening listeners with superfluous words.

**Practices in listening:**

- Giving attention to the speaker rather than to one's own thought, so as to discover what he means.
- Acknowledging the speaker indicating by looking at him and by expression that he is receiving attention
- Pausing for thought before responding, so as to relate the ideas to the existing situation.
- Getting clarification, when necessary, for example by repeating in different words what is believed and meant.

**Steps in listening to understand:**

There are four steps in listening to understand.

1. Tune In: Set the stage for listening and focus attention to the speaker.
2. Understand: Listen to what is being communicated and take responsibility for understanding what was said.
3. Say what you understand: Check out the accuracy of your understanding of what was said by listening the speaker know what you understand.
4. Pause: Stay silent and attentive so the speaker can continue. Then tune in to hear what is said next.

**Effective listening guides:**

1. Stop talking: You cannot listen if you are talking. Polonius: "Give every man thin ear but few thy voice."
2. Put the talker at ease: this is also called a permissive environment.

3. Show a talker that you want to listen: Look and act interested. Do not read your mail while someone talks to understand rather to oppose.
4. Remove distractions: Don'ts doodle, tap or shuffle papers. Will it be quiet if you shut the door?
5. Empathize with talkers: try to help yourself see the other person's point of view.
6. Be patient: Allow plenty of time. Do not interrupt a talker. Don't start for the door or walk away.
7. Hold your temper: An angry person takes the wrong meaning from words.
8. Go easy on argument and criticism: These put people on the defensive, and they may "clam up" or become angry. Do not argue. Even if you win, you lose.
9. Ask questions: This encourages a talker and shows that you are listening. It helps to develop points further.
10. Stop talking: This is first and last, because all other guides depend on it. You cannot do an effective listening job while you are talking.

# 12 Interpersonal Communication

Interpersonal Communication ( IPC ) focus upon two or more individuals interacting verbally & non-verbally in a face to face situation

**Function of Interpersonal Communication :**

- *Allows two – way communication*
- *Allows to overcome the social – psychological barriers*
- *Influence to change the strongly held attitude*
- *Develop communication integration*

**Interpersonal Communication built upon two premises:**

- *Human relations & communication are always together*
- *One can not improve human relations with out improving communication*

**Communication Channels**

- *Direct channels : are those that are obvious, and can be easily recognized by the receiver.*
- Verbal *communication channels*
- Non-verbal *communication channels etc.*
- *Indirect channels : are those channels that are usually recognized subliminally or subconciously by the receiver, and not under direct control of the sender.*
- *body language*
- *facial expression etc.*

**Four Principles of Interpersonal Communication**

- *Interpersonal communication is inescapable*
- *Interpersonal communication is irreversible*
- *Interpersonal communication is complicated*
- *Interpersonal communication is related*

**Functions of Interpersonal Communication**

- *Gaining Information : We engage in interpersonal communication is so that we can gain knowledge about another individual. Self-disclosure is often used to get information from another person. We gain this information passively, by observing them; actively, by having others engage them; or interactively, by engaging them ourselves*
- *Building a Context of Understanding : Interpersonal communication to help us better understand what someone says in a given context . The words we say can mean very different things depending on how they are said or in what context. Content Messages refer to the surface level meaning of a message. Relationship Messages refer to how a message is said.*
- *Establishing Identity : Interpersonal communication is to establish an identity. The roles we play in our relationships help us establish identity. Roles and face are constructed based on how we interact with others*
- *Interpersonal Needs : interpersonal communication because we need to express and receive interpersonal needs. William Schutz has identified three such needs:*

- *Inclusion is the need to establish identity with others.*
- *Control is the need to exercise leadership and prove one's abilities. Groups provide outlets for this need. Some individuals do not want to be a leader. For them, groups provide the necessary control over aspects of their lives.*
- *Affection is the need to develop relationships with people. Groups are an excellent way to make friends and establish relationships.*

**Barriers against Effective Interpersonal Communication**

- *Emotions- Sometimes when people communicate an idea or matter across, the receiver can feel how the sender perceives the subject matter. Often messages are interpreted differently for different people.*
- *Filtering- Filtering information may mislead the receiver into thinking into something favorable and the let down may be upsetting if it's found out that information has been filtered.*
- *Overloaded with Information- Too much information about the same subject matter may be confusing.*
- *Defensiveness- Humans tend to refuse for a mutual understanding when they feel that they are being threatened are put in a position which they are at a disadvantage.*
- *Cultural Difference- Sometimes our culture may be a huge hinder for effective interpersonal communication. When two people with different cultures communicate, they often do not understand each other's cultures and may misunderstand the true meaning of what each other's trying to convey through such a sense*

# 13 Important Tips for Effective Communication

**Which are Important points to improve communication skills?**

1. Communication skills = 10% words + 30% (tone +tuning) + 60% body langyage.
   - What is tone?
   - What is tuning?
   - What is body language ?
   - What is miss communication?
2. Effective starting
3. Enthusiasm (Zeal)
4. Clear voice
5. Confidence
6. Self prepared script
7. Subject matter
8. Clear objective / Aim
9. Speed
10. Logical presentation
11. Audience
12. Local language
13. Time limit
14. Effective end
15. Prayer

**How to Communicate ?**

- Speaking
- Writing
- Listening
- Reading
- Non-verbal communication

**1. Effective Speaking**

**(A) DAILY SPEAKING:**

- Remember the person to whom you are talking
- Don't put hands in your pocket while talking to senior in a non-casual manner
- Don't chew anything when you talk
- Avoid playing with a pen or any object
- Look at the person, not away from him
- Do take off your sunglasses

**(B) Public Speaking**

- Presentation
- Visual aids
- Delivery

**[a] Good Presentation**

- Always try to understand the audience.
- Keep in mind the number of people male-female mix
- Determine the general attitude of the audience to the topic.
- Analyze the mood of the audience
- Determine the audience understanding of the subject.
- Preview the main points
- Limit the speech to three or four main points.
- In a large presentation include previews and summary of major points.

**[b] Visual Aids :**

- Use visual aids to show how things look, work and relate to one another.
- Use visual Aids to highlight information and create interest.
- Select appropriate visual Aids
- Limit visual as per main point
- Make sure equipments works

**[c] Delivery :**

- Establish eye contact
- Speak clearly
- Do not go too fast
- Be sure every one hear
- Speak in your natural style
- Use gesture in natural appropriate way
- Encourage question
- Respond to question without being side track

**(2) Effective Writing**

- Fear of writing
- Visualize your audience
- Create a productive environment
- Make an outline or notes
- Just start
- Write the middle first
- Give orders
- Say thing directly
- Adopt a tone of confidence about what you say

**(3) Effective Listening**

- Look beyond the speaker style by asking yourself what the speakers knows that you do not.
- Hold your rebuttal until you have heard the total message
- Listen for the central theme
- Keep an open Mind
- Fight distraction by closing doors, turning off radios and T.V.
- Make meaningful notes that are brief and to the point.
- Stay ahead of the speaker by anticipating what will be said next.
- Evaluate and criticize the content not the speakers.

**(4) Effective Reading**

- Remove all distractions like T.V. Radio etc.
- Ensure proper lighting
- Don't make the surrounding too comfortable
- Read twice for better understanding
- When you don't have the meaning of any word, use the dictionary, do not make assumptions.

**(5) Non-verbal Communication**

- Gestures: Posture
- Vocal qualities
- Attitudes
- Facial expression
- Eye behaviour