Unit 1: Introduction to E-Commerce

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Commerce

- **Commerce** is a division of trade or production which deals with the exchange of goods and services from producer to final consumer
- It comprises the trading of something of economic value such as goods, services, information or money between two or more entities.
- Commerce primarily express the fairly abstract notions of buying and selling.

Definition of E-commerce

- It is commonly known as electronic Commerce.
- It consist of buying and selling goods and services over an electronic system such as the internet.
- Electronic commerce (EC) refers to using the Internet and other networks (e.g., intranets) to purchase, sell, transport, or trade data, goods, or services.
- E-commerce is the purchasing, selling & exchanging goods and services over computer network or internet through which transactions or terms of sale are performed electronically.
- E-Commerce or modern Electronics Commerce is a methodology of business which addresses the need of business organizations, vendors and customers to reduce cost and improve the quality of goods and services while increasing the speed of delivery.
- E-commerce refers to paperless exchange of business information using following ways.

i) Electronic Data Exchange (EDI)
ii) Electronic Mail (e-mail)
iii) Electronic Bulletin Boards
iv) Electronic Fund Transfer (EFT)
v) Other Network-based technologies

Electronic Commerce under different perspectives

- ***Communications Perspective:*** EC is the delivery of information, products /services, or payments over the telephone lines, computer networks or any other electronic means.
- ***Business Process Perspective:*** EC is the application of technology toward the automation of business transactions and work flow.
- ***Service Perspective:*** EC is a tool that addresses the desire of firms, consumers, and management to cut service costs while improving the quality of goods and increasing the speed of service delivery.
- ***Online Perspective:*** EC provides the capability of buying and selling products and information on the internet and other online services.

e-business

- **E-Business** refers to a broader definition of EC, not just the buying and selling of goods and services but conducting all kinds of business online such as servicing customers, collaborating with business partners, delivering e-learning, and conducting electronic transactions within organizations.
- Some experts view e-business only as comprising those activities that do not involve buying or selling over the Internet, such as collaboration and intra-business activities.
- That is, it is a complement of the narrowly defined e-commerce. In its narrow definitions, e-commerce can be viewed as a subset of e-business.

E-commerce v/s E-business

- **E-business**: refers to a broader definition of EC, not just the buying and selling of goods and services, but also servicing customers, collaborating with business partners, conducting e-learning, and conducting electronic transactions within an organization.
- **E-commerce (EC):** describes the process of buying, selling, transferring, or exchanging products, services, and/or information via computer networks, including the Internet.
- We use the term **e-business** to refer primarily to the digital enablement of transactions and processes within a firm, involving information systems under the control of the firm.
- **E-commerce** include commercial transactions involving an exchange of value across organizational boundaries

Pure Versus Partial EC

EC can be either **pure or partial** depending on the nature of its three major activities:

1. Ordering and payments
2. Order fulfillment
3. Delivery to customers

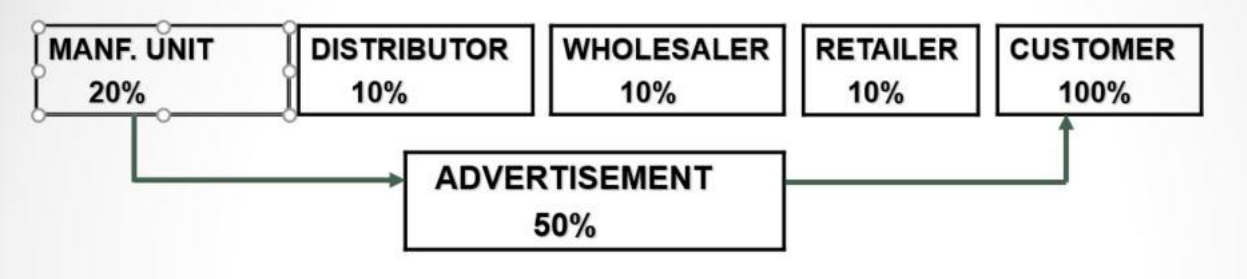
Classifications of e-commerce

Activity	1	2	3	4	5	6	7	8
Ordering, payment	P	D	D	D	D	P	P	P
Order fulfillment	P	D	D	P	P	D	P	D
Delivery (shipment)	P	D	P	P	D	D	D	D
Type of EC	Non-EC	Pure EC	Partial EC					

Legend: *P* physical, *D* digital

- Each activity can be done physically or digitally. Thus, there are eight possible combinations as shown in Table.
- If all activities are digital, we have pure EC; if none are digital, we have no EC; otherwise, we have partial EC.
- For example, purchasing a computer from Dell's website or a book from Amazon.com is partial EC, because the merchandise is physically delivered.
- However, buying an e-book from Amazon.com or a software product from microsoft.com is pure EC, because ordering, processing, and delivery to the buyer are all digital.

TRADITIONAL BUSINESS



DIRECT SELLING

E-commerce v/s Traditional Commerce

Traditional Commerce	E-commerce
1. Face to Face	1. No personal contact
2. Printed & written documents	2. Documents on the web
3. Customization is rare	3. Web pages personalized for a particular customer
4. Telephone or postal mail communication	4. E-mail communication
5. Payment by Cash, check or Draft	5. Payment: credit card, direct withdrawal, fund transfer (paypal, esewa)
6. Ads: print media, radio, TV	6. Ads on web, Social Media, radio, TV
7. Merchandise deliver immediately i.e. Customer takes goods to home.	7. Merchandise deliver home usually within 2-5 days
8. heavy dependency on information exchange from person to person	8. Information sharing is made easy via electronic communication channels making a little dependency on person to person information exchange.
9. Communication/transactions are done in synchronous way. Manual intervention is required for each communication or transaction.	9. Communication or transactions can be done in asynchronous way. The whole process is completely automated.
10. It is difficult to establish and maintain standard practices in traditional commerce.	10. A uniform strategy can be easily established and maintained in e-commerce.
11. Communication of business depends upon individual skills.	11. In e-commerce, there is no human intervention.

Working process in e-Commerce

1. Select the vendor's web site and browse it.
2. Add item in a basket.
3. Give credit card details to pay off money
4. Payment Gateway verify credit card for sufficient balance with help of Bank.
5 Merchant account debited By Bank.
6. Vendor gives order to their warehouse to ship the product to customer.

Features of E-Commerce

- **Non-Cash Payment** – E-Commerce enables use of credit cards, debit cards, smart cards, wallets, electronic fund transfer via bank's website and other modes of electronics payment.
- **24x7 Service availability –** E-commerce automates business of enterprises and services provided by them to customers are available anytime, anywhere. Here 24x7 refers to 24 hours of each seven days of a week.
- **Advertising / Marketing –** E-commerce increases the reach of advertising of products and services of businesses. It helps in better marketing management of products / services.
- **Improved Sales –** Using E-Commerce, orders for the products can be generated anytime, anywhere without any human intervention. By this way, dependencies to buy a product reduce at large and sales increases.
- **Support –** E-Commerce provides various ways to provide pre sales and post sales assistance to provide better services to customers.
- **Inventory Management –** Using E-Commerce, inventory management of products becomes automated. Reports get generated instantly when required. Product inventory management becomes very efficient and easy to maintain.
- **Communication improvement –** E-Commerce provides ways for faster, efficient, reliable communication with customers and partners.

Advantages of E-Commerce

Advantages to Organizations

- Using E-Commerce, organization can expand their market to national and international markets with minimum capital investment. An organization can easily locate more customers, best suppliers and suitable business partners across the globe.
- E-Commerce helps organization to reduce the cost to create process, distribute, retrieve and manage the paper based information by digitizing the information.
- E-commerce improves the brand image of the company.
- E-commerce helps organization to provide better customer services.
- E-Commerce helps to simplify the business processes and make them faster and efficient.
- E-Commerce reduces paper work a lot.
- E-Commerce increase the productivity of the organization. It supports "pull" type supply management. In "pull" type supply management, a business process starts when a request comes from a customer and it uses just-in-time manufacturing way.

Advantages to Customers

- 24x7 support. Customer can do transactions for the product or enquiry about any product/services provided by a company anytime, anywhere from any location. Here 24x7 refers to 24 hours of each seven days of a week.
- E-Commerce application provides user more options and quicker delivery of products.
- E-Commerce application provides user more options to compare and select the cheaper and better option.
- A customer can put review comments about a product and can see what others are buying or see the review comments of other customers before making a final buy.
- E-Commerce provides option of virtual auctions.
- Readily available information. A customer can see the relevant detailed information within seconds rather than waiting for days or weeks.
- E-Commerce increases competition among the organizations and as result organizations provides substantial discounts to customers.

Advantages to Society

- Customers need not to travel to shop a product thus less traffic on road and low air pollution.
- E-Commerce helps reducing cost of products so less affluent (not well off) people can also afford the products.
- E-Commerce has enabled access to services and products to rural areas as well which are otherwise not available to them.
- E-Commerce helps government to deliver public services like health care, education, social services at reduced cost and in improved way.

Table 1.2 Benefits of e-commerce

Benefit	Description
Benefits to organizations	
Global reach	Quickly locating customers and business partners at reasonable cost worldwide
Cost reduction	Lower cost of information processing, storage, and distribution
Facilitate problem-solving	Solve complex problems that have remained unsolved
Supply chain improvements	Reduce delays, inventories, and cost
Business always open	Open 24/7/365; no overtime or other costs
Customization/personalization	Make order for customer preference
Ability to innovate, use new business models	Facilitate innovation and enable unique business models
Lower communication costs	The Internet is cheaper then VAN private lines
Efficient procurement	Saves time and reduces costs by enabling e-procurement
Improved customer service and relationship	Direct interaction with customers, better CRM
Help SME to compete	EC may help small companies to compete against large ones by using special business models
Lower inventories	Using customization inventories can be minimized
Lower cost of distributing digitizable product	Delivery online can be 90% cheaper; save paperworks
Provide competitive advantage	Lower prices, better service, improve brand image
Benefits to consumers	
Availability	Huge selection to choose from (vendor, products, information styles)
Ubiquity	Can shop any time from any place
Self-configuration	Can self-customize products
Find bargains	Use comparison engine; pay less
Real-time delivery	Download digital products quickly
No sales tax	Sometimes; changing
Enable telecommuting	Can work or study at home or any place
Social interaction and engagement	In social networks, get reviews, recommendations
Find unique items	Using online auctions, collectible items can be found
Comfortable shopping	Shop at your leisure without pushy sales clerks bothering you; open 24/7
Benefits to society	
Enable telecommuting	Facilitate work at home; less traffic, pollution
More and better public services	Provided by e-government (e.g., e-health)
Improved homeland security	Facilitate domestic security
Increased standard of living	Can buy more and cheaper goods/services, get better education
Close the digital divide	Allow people in rural areas and developing countries to use more services and purchase what they really like
Home shipping	Less travel, air pollution

Disadvantages of E-Commerce

Technical Disadvantages

- There can be lack of system security, reliability or standards owing to poor implementation of e-Commerce.
- Software development industry is still evolving and keeps changing rapidly.
- In many countries, network bandwidth might cause an issue as there is insufficient telecommunication bandwidth available.
- Special types of web server or other software might be required by the vendor setting the e-commerce environment apart from network servers.
- Sometimes, it becomes difficult to integrate E-Commerce software or website with the existing application or databases.
- There could be software/hardware compatibility issue as some E-Commerce software may be incompatible with some operating system or any other component.

Non-Technical Disadvantages

- **Initial cost**: The cost of creating / building E-Commerce application in-house may be very high. There could be delay in launching the E-Commerce application due to mistakes, lack of experience.
- **User resistance**: User may not trust the site being unknown faceless seller. Such mistrust makes it difficult to make user switch from physical stores to online/virtual stores.
- **Security/ Privacy**: Difficult to ensure security or privacy on online transactions.
- Lack of touch or feel of products during online shopping.

- E-Commerce applications are still evolving and changing rapidly.
- Internet access is still not cheaper and is inconvenient to use for many potential customers like one living in remote villages.

Limitation and barriers of EC

Technological limitations

1. Need for universal standards for quality, security, and reliability
2. The telecommunications bandwidth may be insufficient, especially for m-commerce, videos, and graphics
3. Software development tools are still evolving
4. It is difficult to integrate Internet and EC software with some existing (especially legacy) applications and databases
5. Special Web servers are needed in addition to the network servers, which add to the cost of EC
6. Internet accessibility is still expensive and/or inconvenient for many Large-scale B2C requires special automated warehouses for order fulfillment

Non-technological limitations

1. Security and privacy concerns deter customers from buying.
2. Lack of trust in sellers, in computers, and paperless faceless transactions hinders buying
3. Resistance to change
4. Many legal and public policy issues are not resolved or are not clear
5. National and international government regulations sometimes get in the way
6. Global competition intensifies
7. It is difficult to measure some of the costs and benefits of EC
8. Not enough customers. Lack of collaboration along the supply chain

Classification of e-commerce

E-Commerce business models can be classified as following:

1. Business-to-business (B2B)
2. Business-to-Consumer (B2C)
3. Business-to-government (B2G)
4. Consumer-to-consumer (C2C)
5. Government to consumer (G2C)
6. Government-to-business (G2B)

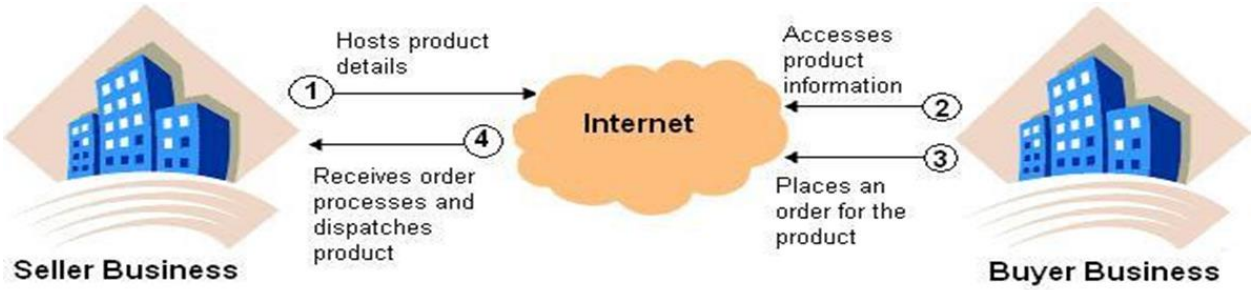
B2B e-commerce

B2B e-commerce is simply defined as ecommerce between companies.

Website following B2B business model sells its product to an intermediate buyer who then sells the product to the final customer.

As an example, a wholesaler places an order from a company's website and after receiving the consignment, sells the end product to final customer who comes to buy the product at wholesaler's retail outlet

Example: Intel selling microprocessor to Dell

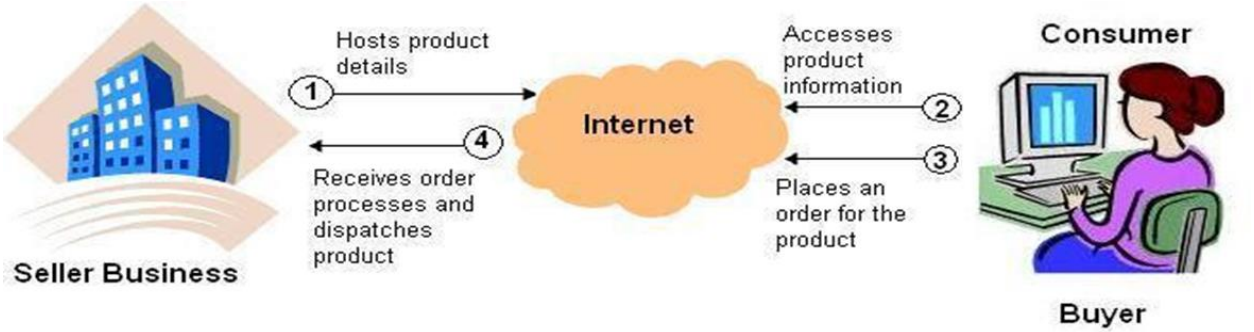


B2B Business Model

B2C e-commerce

Website following B2C business model sells its product directly to a customer. A customer can view products shown on the website of business organization. The customer can choose a product and order the same. Website will send a notification to the business organization via email and organization will dispatch the product/goods to the customer.

Examples: amazon.com, daraz.com, gyapu.com, flipcart.com.

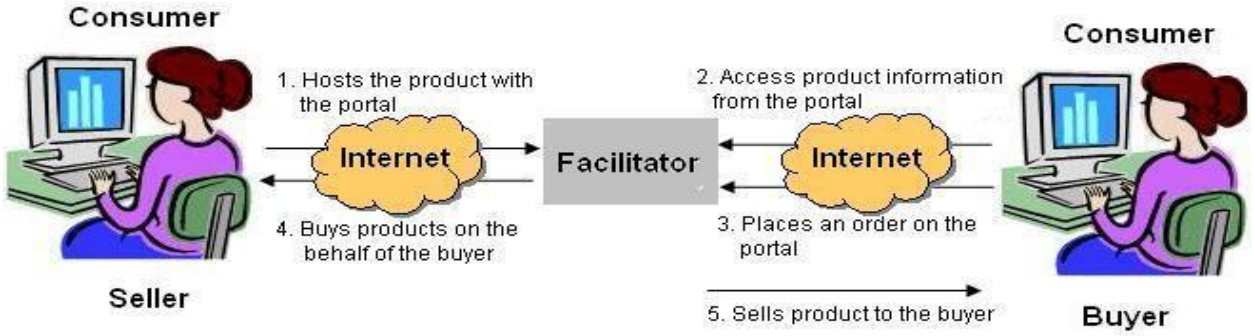


B2C Business Model

C2C e-commerce

Website following C2C business model helps consumer to sell their assets like residential property, cars, motorcycles etc. or rent a room by publishing their information on the website. Website may or may not charge the consumer for its services. Another consumer may opt to buy the product of the first customer by viewing the post/advertisement on the website.

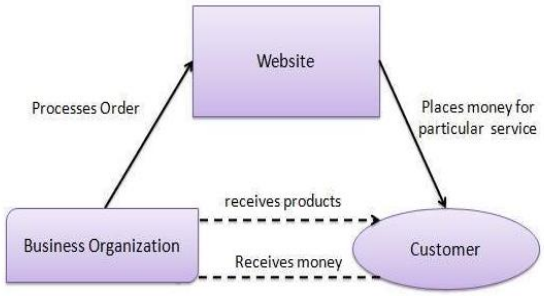
Examples: hamrobazar.com, olx.com, quikr.com



C2C Business Model

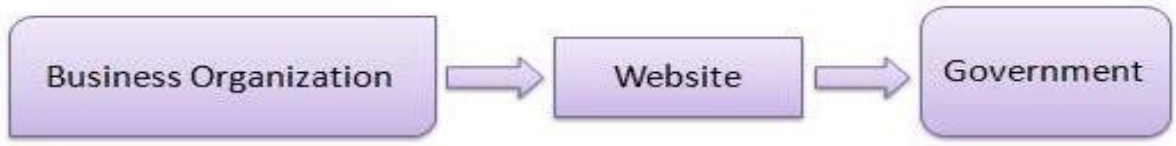
C2B e-commerce

In this model, a consumer approaches website showing multiple business organizations for a particular service. Consumer places an estimate of amount he/she wants to spend for a particular service. For example, comparison of interest rates of personal loan/ car loan provided by various banks via website. Business organization who fulfills the consumer's requirement within specified budget approaches the customer and provides its services.



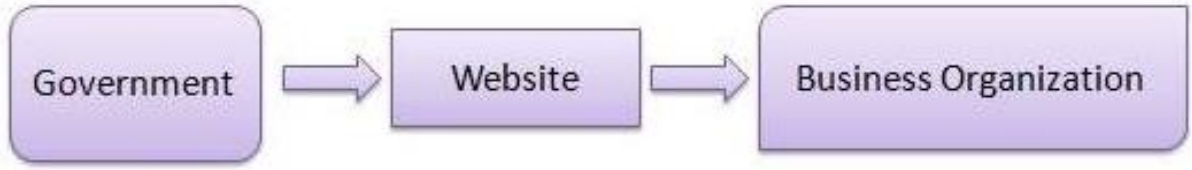
B2G e-commerce

B2G model is a variant of B2B model. Such websites are used by government to trade and exchange information with various business organizations. Such websites are accredited by the government and provide a medium to businesses to submit application forms to the government.



G2B e-commerce

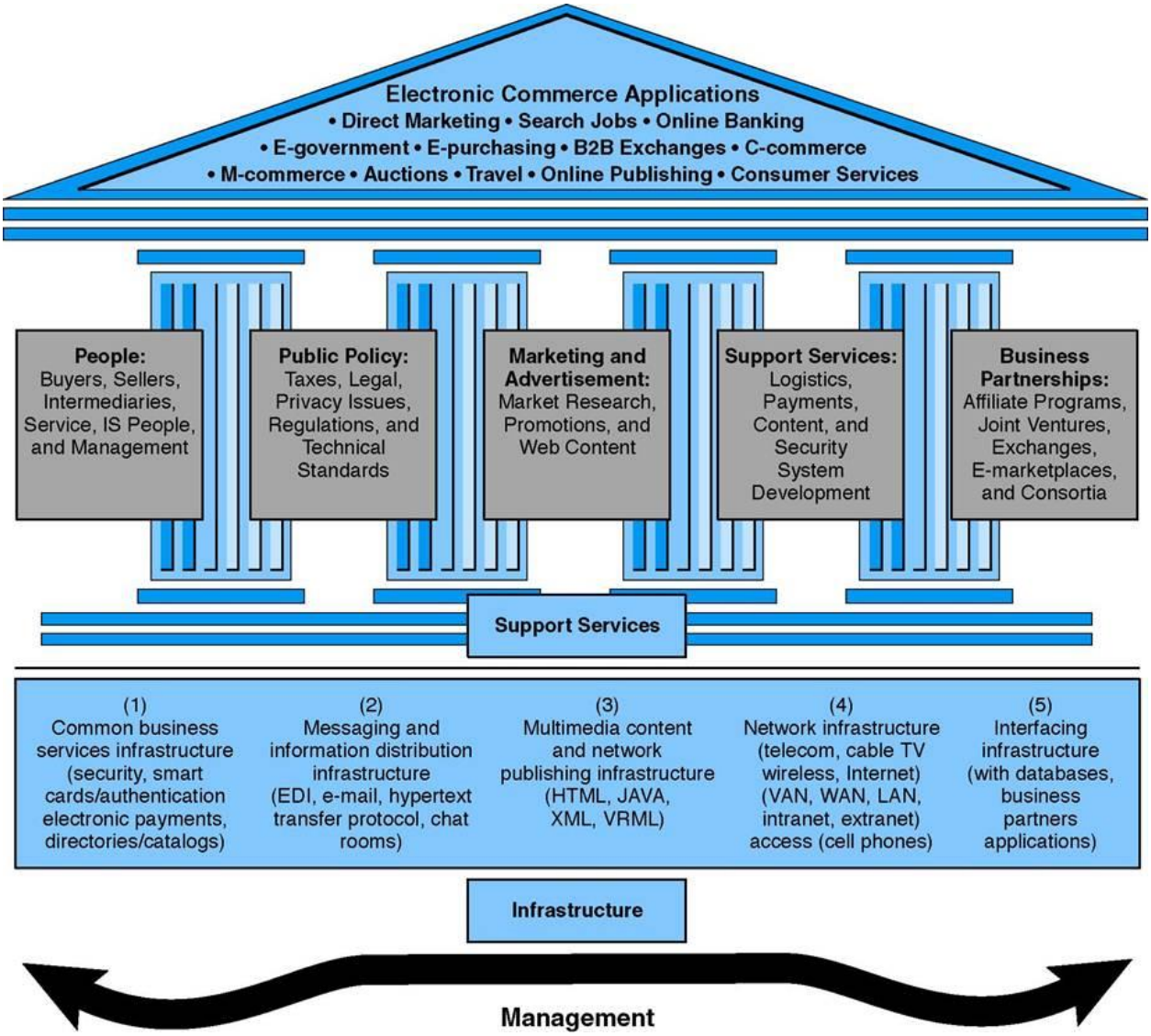
Government uses B2G model website to approach business organizations. Such websites support auctions, tenders and application submission functionalities.



G2C e-commerce

Government uses G2C model website to approach citizen in general. Such websites support auctions of vehicles, machinery or any other material. Such website also provides services like registration for birth, marriage or death certificates. Main objectives of G2C website are to reduce average time for fulfilling people requests for various government services.

A Framework for Electronic Commerce



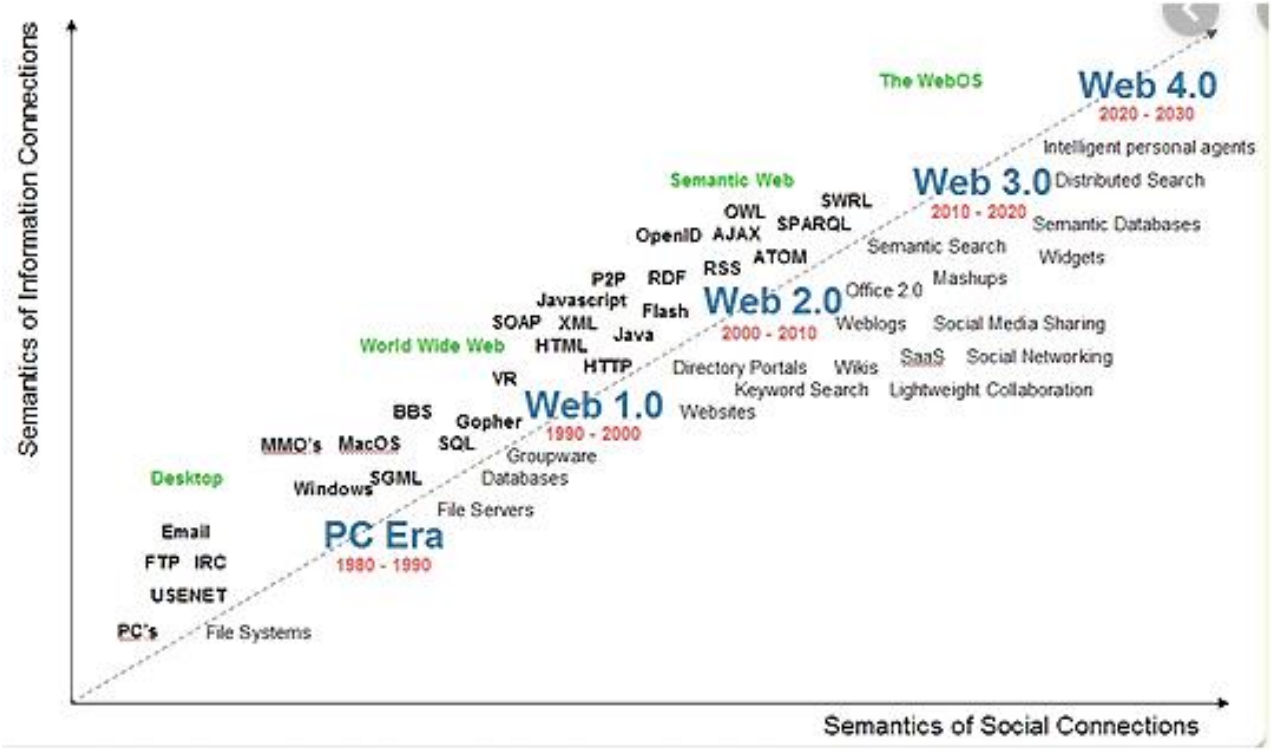
- Figure shows that the EC applications are supported by infrastructures, and their implementation is dependent on five major areas (shown as supporting pillars) people, public policy, marketing and advertisement, support services and business partnerships.
- The EC management coordinates the applications, infrastructures, and pillars. It also includes Internet marketing and advertisement.
- Information superhighway(i-way) infrastructure
  - Internet, LAN, WAN, routers, etc
  - Telecom, cable TV, wireless, etc
- Messaging and information distribution infrastructure
  - HTML, XML, email, HTTP, etc
- Common business infrastructure
  - Security, authentication, electronic payment, directories catalogs, etc
- Web architecture
  - Client/server model
  - N-tier architecture; e.g. web servers, application servers, database servers, scalabilty

Electronic market

- EC can be conducted in an electronic market (e-marketplace), an online location where buyers and sellers conduct commercial transactions such as selling goods, services, or information.
- Electronic markets are connected to sellers and buyers via the Internet or to its counterpart within organizations, an intranet.
- An intranet is a corporate or government internal network that uses Internet tools, such as Web browsers and Internet protocols.
- Another computer environment is an extranet, a network that uses Internet technology to link intranets of several organizations in a secure manner

Role of Internet and Web in E-Commerce

- Internet provides a worldwide collection of networks, linked with each other to share information by using a common set of protocols.
- The Internet opens up the opportunity for people all over the world to get linked inexpensively and consistently. Since it is a large network of people and information around the world, the **Internet is an enabler for e-commerce** as because it allows businesses to showcase and sell their products and services online.
- It gives potential customers, prospects and business partners access to information about these business houses and their products and services which might lead to purchase.
- World Wide Web or commonly referred as WWW is a unique information space where data and other internet resources are distinguished by URLs and can be get-at-able through internet. Web 1.0, web 2.0, web 3.0 gradually popular day by day provide better services to customer.
- Internet create newly types of services like Cloud Services which include Infrastructure as a Service (**IaaS**), Platform as a Service (**PaaS**) Software as a Service (**SaaS**).



	Web 1.0	Web 2.0	Web 3.0
Definition	Accessible as Read – Only Mode	Accessible as Read – Write Mode	Accessible as Read – Write- Execute Mode
Stages	First Stage	Second Stage	Third Stage
Classification	Simply Web	Social Web	Semantic Web
Technologies Connected With …	• Web Servers • E-mail • Enterprise Portals • Subscribe Technologies • File Sharing	• Instant Messaging • Adobe Flex • Java Script Frameworks • Blogs	• Personal Intelligent Digital Assistants • Ontologies • Semantic Searching
Fundamental Concept	To Connect Information	To Connect People	To Connect Knowledge
Highlights	• It allowed to do bookmarking and hyperlinking on pages. • User Participation • Static Pages • Content served from the server's file system instead of RDBMS. • Graphics, GIF buttons to promote operating systems and other products.	• It gave introduction to web applications. • It allows end users to differentiate and find information • It counts on functions like video streaming, image hosting.	• Highly mobile, 3D • Artificial Intelligence • Information is better connected to semantic data • Every device i.e. every content seems handy through multiple applications
Affiliated Websites	CNN	YouTube Blogger	My Yahoo Google Maps
Number of Users Linked	Millions	Billions	Trillions

Social Networks and Social Networking Services

- The most interesting e-commerce application in recent years has been the emergence of social and enterprise social networks.
- Originating from online communities, these networks are growing rapidly and providing many new EC initiatives, revenue models, and business models
- A **social network** is a social entity composed of nodes (which are generally individuals, groups, or organizations) that are connected by links such as hobbies, friendship, or profession.
- The structures are often very complex. In its simplest form, a social network can be described by an image of the nodes and links.
- We define social networking as the execution of any Web 2.0 activity, such as blogging or having a presence in a social network. It also includes all activities conducted in social networks.
- **Social commerce (SC)**, also known as social business, refers to e-commerce transactions delivered via social media.

- Social commerce is considered a subset of e-commerce by some.
- More specifically, it is a combination of e-commerce, e-marketing, the supporting technologies, and social media content.

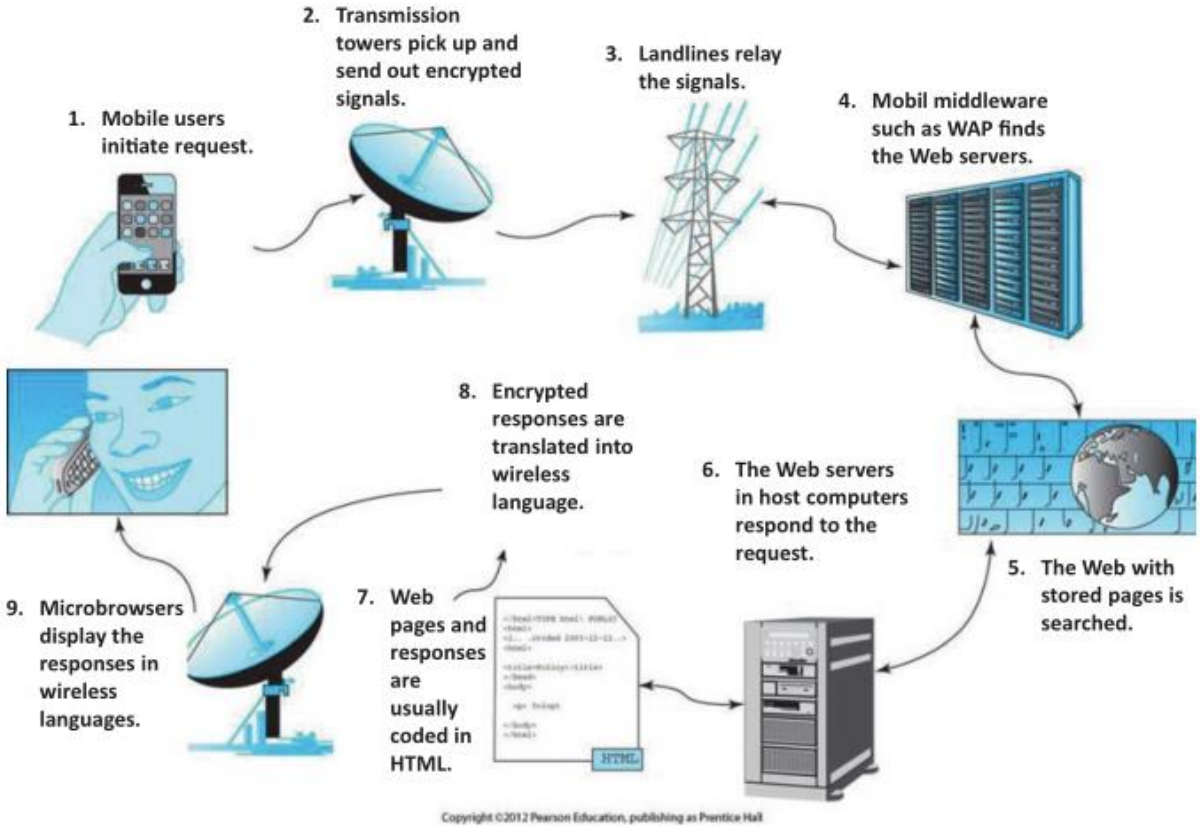
Enterprise Social Networks

- Business-oriented social networks can be public, such as LinkedIn.com. As such, they are owned and managed by an independent company.
- Another type of business-oriented social network is private, owned by corporations, and operated inside them.
- These are known as enterprise social networks (e.g., My Starbucks Idea). These can be directed toward customers and/ or company employees.
- **Social networking services** (SNSs), such as LinkedIn and Facebook, provide and host a Web space for communities of people to build their homepages for free.
- SNSs also provide basic support tools for conducting different activities and allow many vendors to provide apps.
- Social networks are people oriented but increasingly are used for commercial purposes also.
- For example, many performers, notably Justin Bieber, were discovered on YouTube. Initially, social networks were used solely for social activities.
- Today, corporations have a great interest in the business aspects of social networks (e.g., see linkedin.com, a network used for recruiting, and collaboration and Facebook for advertising)

The following are examples of representative social networking services:

- Facebook.com: The most visited social networking website.
- YouTube.com and metacafe.com, vimeo.com: Users can upload and view video clips.
- Flickr.com: Users share and comment on photos.
- LinkedIn.com: The major enterprise-oriented social network.
- Habbo.com: Entertaining country-specific sites for kids and adults.
- Pinterest.com: Provides a platform for organizing and sharing images.
- Google + (plus.google.com): A business-oriented social network.
- MySpace.com: Facilitates socialization and entertainment for people of all ages.
- Instagram.com: Provides a platform for sharing photos and videos

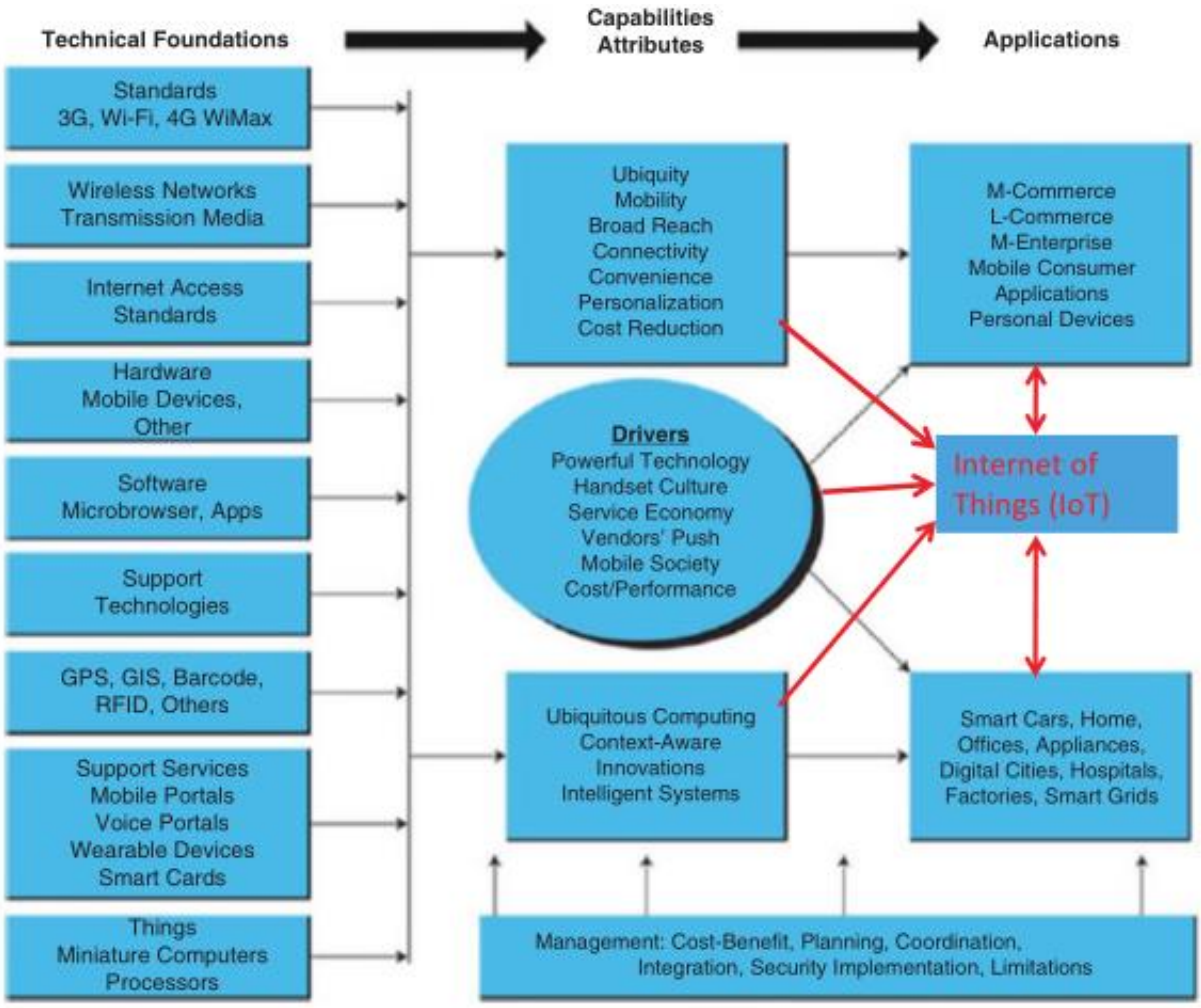
M-Commerce



An m-commerce system at work

- Mobile commerce (m-commerce), also known as m-business, refers to conducting e-commerce by using mobile devices and wireless networks.
- M-commerce involves electronic transaction conducted by using mobile devices via the Internet, corporate intranets, private communication lines, or over other wireless networks.
- For example, paying for an item in a vending machine or paying taxes with an iPhone is considered m-commerce.
- M-commerce provides an opportunity to deliver new services to existing customers and to attract new customers to EC anytime, anywhere.
- Initially, the small screen size and slow bandwidth limited the usefulness to consumers.
- However, this situation is changing rapidly due to the widespread use of smartphones and tablet computers.
- In addition, now consumers are more accepting of the handheld culture.
- Furthermore, the adoption of m-commerce is accelerating due to the spread of 4G networks (and soon 5G). Finally, free Wi-Fi Internet access in many locations helps.

The scope of M-Commerce



Attributes of M-Commerce

- **Ubiquity**. Ubiquity means being everywhere, especially at the same time. It is facilitated by wireless computing. Given that Wi-Fi access is available in more and more places, and that about half of all mobile phones are smartphones, we have easier ubiquity.
- **Convenience and capabilities**. Having a mobile device increases the convenience of communication. The functionality and usability of mobile devices are increasing, while their physical size remains small and the cost is affordable. Unlike traditional computers, mobile devices connect to the Internet almost instantly.
- **Interactivity**. Mobile systems allow for fast and easy interactions (e.g., via Twitter, tablets, or smartphones).
- **Personalization**. Mobile devices are personal devices. While several people may share the same PC, a specific mobile device is usually used by one person.
- **Localization**. Knowing where a user is physically located in real time provides an opportunity to offer him or her relevant mobile advertisements, coupons, or other services. Such services are known as **location-based m-commerce**.

Benefits of M-Commerce

M-commerce has many benefits to organizations, individuals, and society. As a result, many believe that the future of EC is mobile applications.

Benefits for Organizations

1. Increases sales due to ease of ordering by customers from anywhere, anytime
2. Allows location-based commerce for more sales and revenue.
3. Provides an additional channel for advertising and distribution of coupons (wider reach)
4. Increases customers' loyalty.
5. Improves customer satisfaction through real-time apps
6. Increases collaboration, advertisement, customer service, and sales by using IoT.
7. Enables many enterprise application
8. Facilitates CRM and collaboration.
9. Reduces employee training time and help desk resources.
10. Improves time utilization and productivity of mobile employees.
11. Expedites information flow to and from mobile employees.
12. Delivers digitized products and services directly to mobile devices.
13. Reduces order lead-time and fulfillment cycle.
14. Allows for lower, competitive pricing.
15. Ability to work at home and have flextime.

Benefits for Individuals and Customers

1. Allows e-commerce from any place, anytime
2. Assists in shopping by providing real-time information and other shopping app.
3. Helps organization and communication while traveling
4. Expedites banking and financial services.
5. Provides rich media entertainment anytime and anywhere.
6. Facilitates the finding of new friends and whereabouts of existing ones.
7. Provides a choice of mobile devices for transactions.
8. Expedites communication (e.g., locate people, get fast answers to queries, compare prices while in physical stores or via shopping comparison sites/apps)
9. Increases affordability over the cost of using desktop computing in some countries
10. Allows "smart" applications.

Benefits to Society

1. There are many benefits to society. For example, self-driving cars can reduce accidents; smart cities can benefit the dwellers and visitors.
2. Contributions are in almost any field, from medical care and education to law enforcement.
3. Significant reductions in energy expenses are achieved by using smart grids.
4. Traffic jams can be reduced by using wireless sensors and much more.

Location-based commerce (L-commerce)

- It is refers to the use of location-finding systems such as GPS-enabled devices or similar technologies (e.g cell-based stations) to find where a customer with a mobile device or an object is located and provide relevant services, such as an advertisement or vehicle route optimization. LBC is also known as LBS (location-based systems).

- LBS is "a software application for IP-capable mobile device that requires knowledge about where the mobile device is located.

- L-commerce offers convenient services to consumers such as connections with friends, the ability to receive relevant and timely sales information, safety features (e.g. emergency assistance), and

convenience (a user can locate what facility needed is nearby without consulting a directory or a map)

- sellers get the opportunity to advertise and provide or meet a customer's needs in real time. In essence, LBC is the delivery of m-commerce transactions to individuals who are in a known specific location, at a specific

Basic Concepts in L-Commerce:

Location-based m-commerce mainly includes five possible activities, all done in real time:

1. **Location**. Finding where a person (with a smartphone) or another mobile device or a thing (e.g., a truck) is located.

2. **Navigation**. Finding and illustrating a route from one location to another (e.g., as is done in Google Maps)

3. **Tracking**. Monitoring the movements and whereabouts of people or objects (e.g., a truck, airplane)

4. **Mapping**. Creating maps of certain geographical locations with superimposed data if needed (e.g., GIS, Google Maps)

5. **Timing**. Determining the arrival or departure time of something at a specific location (e.g., arrival of a bus to a specific bus stop or an airplane to an airport)

- For example, WeatherBug (weather.weatherbug.com) and Send Word Now (sendwordnow.com) have combined some of these five services to ensure the safety of customers, employees, and stores during severe weather and other emergencies.
- A recent development of l-commerce is known as real-time location systems (RTLS), which are used to track and identify the location of objects in real time.

L-Commerce Infrastructure

L-commerce usually contains following components:

1. Location finder (positioning) component. A GPS (or other device) that finds the location of a person or a thing.

2. **Mobile Positioning Center**. This includes a server that manages the location information received from the location finder.

3**. User**. The user can be a person or thing (e.g., a vehicle).

4. **Mobile devices**. The user needs a mobile device (e.g., a smartphone) that includes a GPS or other feature that locates the location (position) of something or someone.

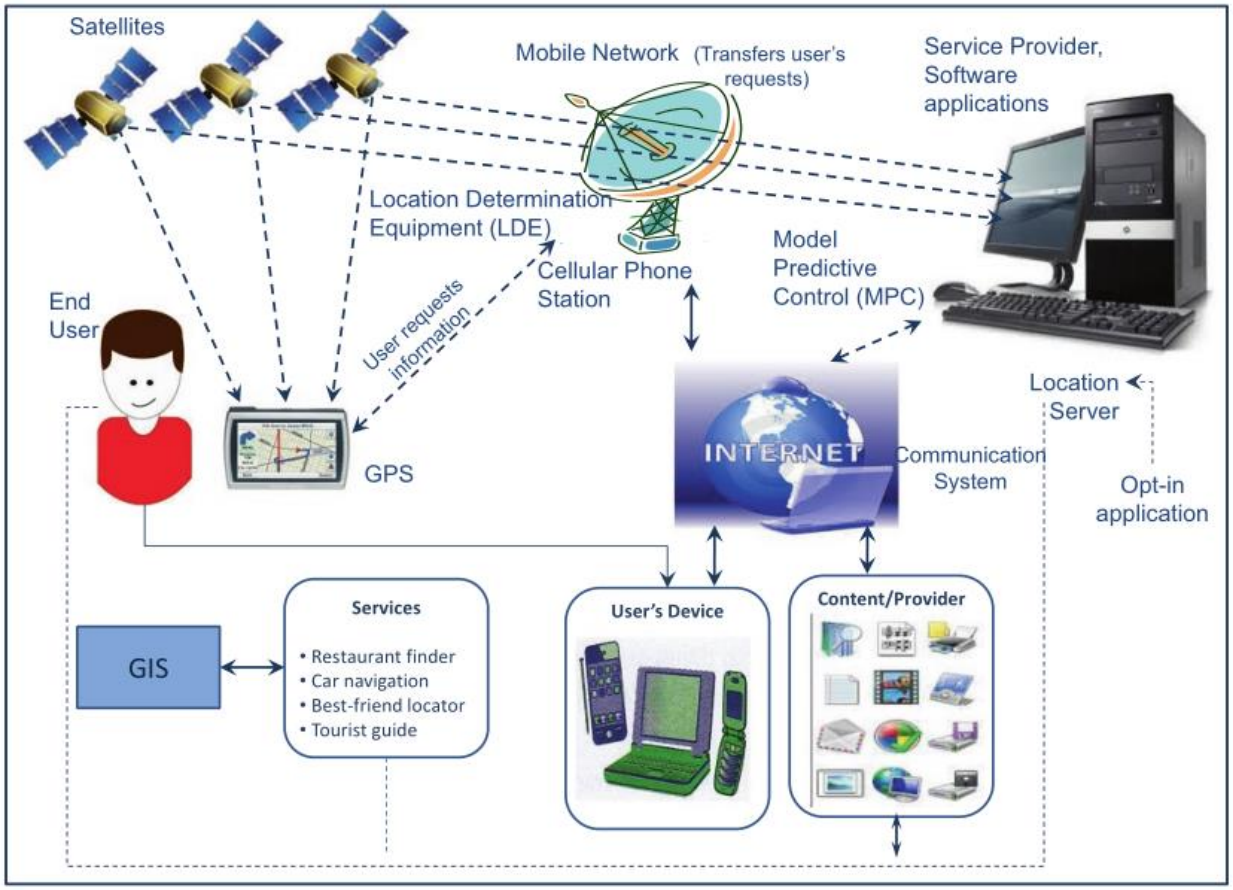
5. **Mobile communication network**. The network(s) that transfers user requests to the service providers and then transmits the reply to the user.

6. **Service or application providers**. Providers are responsible for servicing a user's request. They may use applications such as GIS

7**. Data or content provider**. Service providers usually need to acquire (e.g., geographic, financial, or other data) in order to provide a reply to requests. Data may include maps, coupons, and GIS information.

8. **Geographical information system (GIS).** This includes maps, location of businesses, and more.

9. **Opt-in application**. In the United States and some other countries, LBS can be used only with people's permission (opt-in). This requires an additional software app.



Location-Based Services and Applications:

A location-based service (LBS) is a mobile device-based computerized service, which utilizes information about the geographical position of a user's mobile device (e.g., mobile phone tracking) for delivering a service (e.g., advertisers can target ads to specific location), to the user.

There are a large number of LBS applications. For a list of location-based services (applications)

Location-based services can be used in marketing, operations, services, finance, and so forth.

LBS also works in asset tracking (e.g., of parcels at USPS or FedEx) and in vehicle tracking LBS also includes location-based games.

Other examples of location-based services are:

1. Recommending public events in a city to tourists and residents
2. Asset recovery, for example, finding stolen cars
3. Pointing a user to the nearest business (e.g., a gas station) to his (her) location
4. Providing detailed navigation from any place to any address (sometimes with voice prompts)

5. Locating things (such as trucks) and displaying them on the mobile device map
6. Inventory tracking in warehouses
7. Delivering alerts, such as notification of a real-time sale in a specific store
8. Ride sharing system (tootle, pathoo)

Barriers to Location-Based M-Commerce

1. **Lack of GPS in some mobile phones.** Without GPS, it is difficult to use LBS. However, GPS-enabled phones are increasing in availability. In addition, the use of cell phone towers helps.
2. **Accuracy of devices**. Some of the location-finding tools are not too accurate. A good, but expensive, GPS provides accuracy of 10 ft. Less accurate locators provide accuracy of about 1500 ft.
3. **The cost–benefit justification**. The benefits of location-based services may not justify the cost. For customers, it may be inconvenient to utilize the service.
4. **Limited network bandwidth**. Wireless bandwidth is still limited. As bandwidth improves with 4G and 5G, applications will expand, which will increase the use of the technology.
5. **Invasion of privacy**. Many people are reluctant to disclose their whereabouts and have their movements tracked.

Practice Questions

1. Define E-Commerce and e-business.
2. Distinguish between pure and partial E-Commerce.
3. Define Internet, intranets and extranets.
4. List the major components of the E-Commerce framework.
5. List five benefits each to customers, organizations, and society.
6. Define social networks. Describe the capabilities of social networking services (SNSs).
7. Define social commerce.
8. List the major technological and non-technological barriers and limitations to E-Commerce.
9. Describe some of the benefits of studying E-Commerce.
10. Describe the key elements of the l-commerce infrastructure.
11. What is GPS? How does it work?
12. What are some of the basic questions addressed by location-based services?
13. Define geographical information systems. How do they relate to LBS?
14. List the services enabled by LBS.
15. Describe social location-based marketing.
16. List some applications of LBC.
17. List the major barriers to LBC.
18. Define m-commerce. Briefly describe the five value-added attributes of m-commerce.
19. List and briefly describe eight major drivers of m-commerce
20. Describe the framework of m-commerce applications.
21. What are the major categories of m-commerce applications?
22. Describe the landscape of m-commerce.
23. What are the major benefits of m-commerce?
24. Describe the major online enterprise applications.
25. List five major mobility trends.
26. How properties like ubiquity, richness and information density make e-commerce better than traditional commerce? [TU-2020]
27. Differentiate between B2C, B2B and C2C e-commerce with examples. [TU-2020]