

Web users ultimately want to get at data quickly and easily. They don't care as much about attractive sites and pretty design.

Sir Tim Berners-Lee (1955-) British inventor of the World Wide Web

### Management issues

The basic issues in information technology (IT) management are:

- increasing the stability of the system to reduce down-time
- ensuring that information is secure and backed-up (use of encryption, firewalls to keep out hackers, viruses, spyware, etc)

Beyond that, the following may be important issues at different times:

- Tension between the IT department and other business units. How are business requirements translated into an IT solution? How is the efficiency of IT spending measured? Do the business people understand the technology?
- Should the software be a commercial off-the-shelf (COTS) package or a tailor-made solution? If the latter, then what degree of customization is needed?
- How well does the new IT integrate with the old (= legacy) systems?
- How good is the documentation? Is training necessary?
- What level of integration is appropriate? Should the organization use just one standard of software (eg SAP/Oracle) and/or hardware (eg IBM/HP)?

### Trends

Predicting the future of information and communication technology (ICT) is notoriously difficult, but several trends appear to be happening:

- Computing power is moving away from the local PC to the network (delivered where and when it is needed).
- Software is also moving to the network: companies are leasing it online for a monthly fee instead of buying it.
- Wireless connectivity is becoming possible between more and more devices.
- Bandwidth is increasing.
- Processing power and storage capacity keep increasing, while prices keep going down.
- Open-source platforms (designed and improved by users, owned by no-one) are becoming more common.
- Profitability is becoming an issue for vendors as IT becomes widespread and standardized.
- Integrating and managing IT systems is becoming more important than selling new products.
- Backend-office functions (eg payroll) and software development are being outsourced to low-cost countries.

- There is the development of an 'Internet of things' - pervasive computing - where everyday objects have embedded processing power with a connection to the Net.
- There is a convergence between traditionally separate media.

### E-business

A business with no online presence is a 'bricks-and-mortar' organization. At the opposite extreme, a few 'virtual' businesses exist only online. But most businesses are 'clicks-and-mortar' - they have some part of their business on the web, but also physical premises.

The phrase 'e-commerce' refers to the part of e-business related to buying and selling. Retailers set up an electronic storefront (BrE shop front) and shoppers place items they want to buy in an electronic cart (BrE trolley). When the shopper is ready they go to the 'checkout' where their payment is processed.

For customers, key issues include:

- Fraud (the safety of online payment systems).
- Merchandise delivery and returns.
- The difficulty of speaking directly to a customer services representative rather than getting an automated response.

For companies, key issues include:

- The protection of customer data.
- Website costs and maintenance.
- Measuring the effectiveness of the website (click-through rates for ads, traffic counts, conversion rates to show percentage of visitors who make a purchase).

In terms of the technology involved, e-commerce is a good example of the role of dedicated (reserved for a specific use) servers:

- A database server stores customer data and product information in tables. ↓
- An application server is responsible for calculations and program logic; it retrieves data from the database server and feeds it to the web server. ↓
- A web server is responsible for the interface and graphics; it presents the web page to the user. ↓
- A browser on the user's computer allows the customer to interact with the company's web server.

Transaction processing: constant updating of mission-critical data such as orders, invoices, payments, payrolls, inventory

Marketing: CRM (Customer relationship management)

Production/Operations: MRP (Material requirements planning), CIM (Computer integrated manufacturing)

Finance: financial planning and budgeting  
Human Resources: payroll and employees' records

ERP: Enterprise resource planning; manages all stages in the supply chain

Business software

INFORMATION TECHNOLOGY EDUCATION

### Technology

within a hotspot

GPS (Global positioning system) to determine location of device

Bluetooth to enable short-range connection between wireless devices

Mobile and Wireless Computing

### Applications

Personal services (content including news and entertainment is aggregated in a mobile portal)

M-commerce (= mobile-commerce): shopping and payments from your phone, person-to-person payments, advertising based on your location

Intrabusiness support for mobile workers, job dispatch, access to intranet for sales staff to get customer/product info, etc

Data and Knowledge Management

- Raw operational data is kept in databases, eg sales info, inventory info, customer info
- All the databases and documents from across the organisation are collected together in a 'data warehouse'
- Information from the data warehouse is retrieved by 'management information system' (MIS) software using 'data mining'. MIS software supports decision making, identifies patterns and trends, etc

LAN (local area network) allows single-user workstations to share data, eg inside a company building  
WAN (wide area network): a geographically dispersed LAN  
Intranet (company network)

Extranet (part of intranet with limited access for certain people outside the company)

Collaboration tools (= groupware) that allow users at different workstations to work on the same project (screen sharing, webconferencing, etc)

Teleworking (employees can work at home, from a customer's premises, from a hotel, from the beach)

Network Computing

E-business

### B2B

'Electronic exchange' a marketplace for a specific industry  
Supply chain management

Extranet to work more closely with suppliers and partners

### B2C

Online marketing  
Virtual store with online transaction processing and electronic funds transfer

Online customer service  
Major areas include financial services, reservations for travel and holidays, sale of real estate, etc