Roots of E-Business

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Overview

• Perspectives and Definition
• Driving forces
  – Roots
  – Key forces
  – Peripheral forces
• Electronic business transactions
• The current technologies
  – The Internet and World Wide Web
  – Client server systems
  – Smart software

Perspectives on E-Business

• E-Business continues to evolve
• It may be examined from a variety of perspectives
  – Business: efficient business management
  – Technology: transformed and new processes
  – Economic: new markets and mechanisms
  – Cultural: new behaviors and expectations
Electronic Commerce
Kalakota and Whinston

- The delivery of information and services by electronic means
- The application of technology to business transactions and workflow
- Tools to cut the cost of, and improve the quality of, services
- The buying and selling of products and information on the internet

Electronic Business

- A business where selected business processes are transformed using computer and network technologies.
- The targets of opportunity are:
  - New channels for products
  - New efficiencies in product and workflow management
  - New capabilities in customer and document management
  - New opportunities for organizational structuring -- process reengineering and knowledge management.

The Emergence of E-Business

- DARPAnet
- E-Markets
- IBM PC
- Star
- Knowledge Management
- Informating
- Ubiquity
- Social Periphery
- Communications
- Atoms vs Bits
- E-Markets

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Roots of E-Business

• Darpanet>>>wireless and bluetooth
  – Unix/Sockets, IP, TCP, and FTP
• The Xerox Star>>>iphone
  – Ethernet, GUI (Mouse, Icons & Windows), Laser printer
• The IBM PC>>>ultra mobile PC
  – Commodity computing

Trunk of E-Business

• Atoms versus Bits
  – Bits versus atoms
  – Information versus inventory
• E-markets
  – Scalable
  – Accessible
  – Disintermediated
  – Transactions vs coordination (Coase, 1937)

Branches

• Information and Informating
• Knowledge Management
  – Competitive intelligence
  – Collective intelligence
• Calculation vs Communication
• Social Periphery and Social Capital
• Ubiquitous Computing and Idiot Savants
A Conceptual Framework
“Informating”
In the Age of the Smart Machine
Shoshanna Zuboff

- Power technology and work – automation
- Computer technology and work – information
- Learning from Fredrick Taylor
- Blauner’s U-curve of technology integration

Blauner’s Hypothesis

Degree of Social Integration

Degree of Technological Innovation

A Conceptual Framework
Reengineering & Knowledge

- Business Process Reengineering
  - Focus on core processes
  - Utilize IT to eliminate routing delays
  - Triage cases to automate the process
    - Turn typical cases over to logic
    - Provide access to needed information for complex cases
  - Retrain practitioners to handle exceptions
- Knowledge Management
  -Tacit knowledge may be lost in the process
  -KM involves discovering what an organization knows
A Conceptual Framework
Beyond Calculation

- The origin of computing focused on their ability to perform repetitive calculation
- Increasingly computers are being used for communications and connections
- The next 50 years of computing will focus on enhanced communications capability and agents
- Moore’s law and the PC of 2044 – $2^{64}$

A Conceptual Framework
Computing on the Periphery

- Much of what transpires in the workplace involves social interaction
- With core processes complete, we are looking to accommodate the need for social information in the process
- Organizations must pay attention to:
  - Financial and Physical capital
  - Intellectual and Human capital
  - Social capital

A Conceptual Framework
Ubiquitous Computing

- Information appliances are devices capable of communicating over a network
- The Negroponte flop
- Sensors, virtual machines, and micro actuators are creating the potential for ad hoc networks
  - Cars will recognize neighborhoods
  - Doors will recognize authorized inhabitants
  - Classrooms will recognize teachers
E-Business Evolving Technologies

- E-Business is not new. It is the evolutionary and revolutionary culmination of a century of technological innovation.
  - The telephone, telegraph, and telex added a first order change in the speed of transactions and the immediacy of management
  - The optical copier and laser printer added a first order change in the cost and ease of information sharing
  - The fax, email, online calendaring, file servers, shared document spaces, and intranets extended this change

E-Business Transaction Evolution

- Mail Order
- Phone and fax orders with COD
- Phone, fax, and e-mail orders using credit cards
  - Fax and e-mail promotions
- Web enabled transactions
  - Product information
  - Inventory information
  - Online orders
  - Order tracking
  - Customer service

Relative Importance of Components

- 3.2 Billion Internet Users
- The Internet 1.1 Billion Websites

- Web Site
- Organizational ERP System
Web Technology

- Javascript
- Vbscript
- HTML
- CSS
- XML
- Applet
- Plugin capable browser
- Server
- Analyzes request and gets page or runs program
- Pages for delivery
- Programs that produce pages
- Java Application
- Javascript
- Vbscript
- HTML
- CSS
- XML
- Applet
- Plugin capable browser

E-Business Technology: Today

- Business at the current time is driven by four developments in technology
  - The Internet – which allows for a global marketplace.
  - Browsers – which provide an understood application program that make the global marketplace accessible
  - Mobile systems – which allow state information, location based info and ubiquitous access for users.
  - Agent based software – which increasingly include complex business rules that help level the playing field for businesses.

The Internet

- The Internet is simply an interconnected network of networks defined in large part by standards:
  - Local Area Network (LAN), Network Interface Card (NIC), and Medium Access Control (MAC) address standards allow messages to move from machine to machine on a simple network.
  - Internet Protocol (IP) and Domain Name Service (DNS) standards allow messages to be passed between networks connected by routers.
  - The Transmission Control Protocol standard provides a means to insure the integrity of messages that are sent.
**Browsers**

- Once the networks were connected and people agreed to use that singular network, application protocols could be developed:
  - The Simple Mail Transfer Protocol (SMTP) and subsequently POP, POP3, IMAP, MIME, etc.
  - The HyperText Transfer Protocol (HTTP) coupled with the HTML standard and the Universal Resource Locator (URL) standard allowed the development of the World Wide Web.
  - Browsers now represent a broadly accepted interface into all the resources on the internet.

**Mobile Systems**

- Distributing computing (of which client server is one form) divides the task among a number of machines.
- Mobile devices make use of multiple sensors – GPS, Bluetooth, motion sensors, other sensors.
- Mobile devices provide always on capability to serve as clients to servers of all sorts – messaging, voice, video, etc.

**Agents**

- Historically, software has been concerned with processing data stores – programs were designed to do simple tasks
  - Payroll checks
- Data Base Management Systems (DBMS) were developed to help manage the data stores
- Programs, freed from managing the data, began to incorporate rules of increased complexity, and to communicate automatically with peers.