Week 11:

MIS 3537: Internet and Supply Chains
2003: Video
7 C’s of Strategic Collaboration

1. Connection with Purpose and People
2. Clarity of Purpose
3. Congruence of Mission, Strategy and Values
4. Creation of Value
5. Communication between Partners
6. Continual Learning
7. Commitment to the Partnership

Ref: Collaboration Challenge: How Nonprofits and Businesses Succeed Through Strategic Alliances  James Austin
2003 - Present

- 2004: new purchasing guidelines attracted more growers than expected
  - Higher Price
  - Incentive of being SBX Preferred Supplier (stable, hi-price buyer)
- 2004: C.A.F.E. – Coffee and Farmer Equity practices launched
  - Quality: meets SBX quality standards
  - Economic Accountability & Transparency: Suppliers submit evidence of how much of price gets to the farmer
  - Social Responsibility: 3rd party verify rights of workers
  - Environmental Leadership: 3rd party verify (waste, water, energy, emissions, carbon storage, iodeviversity)
Starbucks verified **99% of their coffee** (> 400 mm pounds) as ethically sourced through C.A.F.E. Practices.

With CI over **a million coffee farmers** on **four continents** have benefitted
Present

Week 11:
Supply Chain IT Standards

MIS 3537: Internet and Supply Chains
Learning Objectives

- Electronic Data Interchange: EDI
- RosettaNet standards
- XML and Web services
How computers communicate?

- Computers connected to a network can pass messages to each other

- **Unicast**
  - One sender, one receiver

- **Multicast**
  - One sender, many targeted receivers

- **Broadcast**
  - One sender, everyone else a receiver
Getting ‘em to talk

- Consider our beer supply chain
  - The retailer uses Windows PCs
  - The distributor uses Linux workstations
  - The wholesaler and the factory have old IBM mainframes

- How do you pass messages among these entities?
Getting ‘em to talk

Manual Method

EDI Method
Protocols

- Protocols are computer communication standards
  - HTTP, HTTPS, FTP, SMTP, ATM, NNTP etc.

- Protocols wrap the actual message in a packet, add some extra information (called header) to it and transport the packet across the network.

- At the other end, the receiver gets the packet, knows what the protocol is, and unwraps the packet to get the message.
Electronic Data Interchange
- Structured transmission of data between organizations by electronic means

Is it like e-mail? No!

EDI is like a technical representation of a business conversation between two entities, the entities being two computer systems
Components of an EDI system

- Computer System
  - A computer, network and an Internet connection

- But EDI is more than just the hardware
  - Data transmission
  - Message flow
  - Document format
  - Software used to interpret documents
Older than the World Wide Web

- EDI has been in use for a long time
- EDI describes the whole process
  - Communication Methods
    - Connect to partners using direct connections
    - Value Added Networks (one connection – many partners)
    - With the advent of the WWW, non-internet transmission methods are being replaced by Internet protocols
EDI standards

- **Content of the Message**
  - **UN/EDIFACT**
    - Recommended by the UN
    - Predominantly used outside North America
  - **ANSI ASC X12**
    - Recommended by the US
    - Predominant in North America
  - **TRADACOMS**
    - Used by the UK retail industry
  - **ODETTE**
    - Used within the automotive industry in Europe
EDI standards

• Standards prescribe
  ◦ Data formats
  ◦ Character sets (e.g.: language, encoding)
  ◦ Data elements

• Drawback
  ◦ Requires effort to get different standards to interoperate among each other
    ◦ Software tools (EDI translators) help overcome this
    ◦ Electronic Hubs (e.g. Elemica) also do translations
  ◦ Managing Partner specific details (e.g. code maps)
Advantages & disadvantages

**Advantages**
- Increased efficiency
- Cost savings
- Weeds out paper-based systems

**Disadvantages**
- Requires changes to business processes
- Initial setup cost and time
- Forced adoption: (e.g. **WAL*MART** requires all partners to have compliant EDI systems)
What’s your EDI View?

I/T View
- a Data format
- Connect the systems together

Business View
- System for exchanging business documents (PO’s, Orders, Shipping papers, etc.) with external entities
- Integrate data from the documents into internal systems
Learning Objectives

- Electronic Data Interchange
- RosettaNet standards
- XML and Web services
• RosettaNet is a self-funding non-profit organization

• Founded in 1998 by 40 IT companies; now over 350 member companies

• Creates, implements and promotes industry-wide e-business standards that form a common language and align processes throughout the global high-tech trading network

• Members include IT, electronic components and semiconductor manufacturing companies
RosettaNet standards

- RosettaNet dictionaries
  - Provide a common set of properties for business transactions

- RosettaNet Implementation Framework
  - Provides common exchange protocols

- Partner Interface Processes
  - Define business processes between trading partners
The standards in perspective

- RosettaNet standards enable communication
- Dictionaries provide words for the communication
- RNIF provides the grammar
- PIPs for the dialog
Partners: Electronic Components Industry

Semiconductor Suppliers
- Altera, AMD, Hitachi Semiconductor, Intel, Lucent Technologies, Micron Technology, Motorola, National Semiconductor, NEC Corporation, Philips Semiconductors, Samsung Electronics, STMicroelectronics, Texas Instruments, Toshiba America Electronic Components, Tyco Electronics, Xilinx

Connector Suppliers
- FCI, Molex

Customers
- Agilent Technologies, Cisco Systems, IBM, Nokia, Selectron, Sony

Distributors
- Arrow Electronics, Avnet, Future Electronics, Memec, Pioneer-Standard Electronics

Passive Suppliers
- AVX, Bourns, KEMET
Partners: IT Industry

Manufacturers
3Com, Cisco Systems, Compaq Computer, Dell Computer, Hewlett-Packard, IBM, Intel, NEC Technologies, Quantum, Siemens AG, Solectron, Toshiba America Information Systems

Shippers
FedEx, UPS

ETechnologists
SAP Labs, Trilogy Software

Software Publishers
Netscape Communications

Resellers
CompUSA, Insight, MicroAge, Office Depot

End Users
GSA, Lucent Technologies

Distributors
Arrow Electronics, Avnet, Ingram Micro, Pioneer-Standard Electronics, Tech Data
Partners: Semiconductor Industry

Integrated Device Manufacturers
United States: Agilent Technologies, Intel, Lucent Technologies, Micron Technology, Motorola, National Semiconductor, Texas Instruments
Asia: NEC Corporation, Samsung Electronics, Winbond Electronics
Europe: Philips Semiconductors

Materials Suppliers
Air Products and Chemicals, Applied Materials, JSR, Shin-Etsu Handoutai, Shinko Electric Industries, Sumitomo Bakelite, Sumitomo Metal Industries SITIX, Toppan

Assembly, Test, Probe Companies
Amkor Technology, ASE, SPIE

Fabless Device Manufacturers
Xilinx

Foundries
Chartered Semiconductor Manufacturer TSMC, UMC
Learning Objectives

- Electronic Data Interchange
- RosettaNet standards
- XML and Web services
Markup and tags

- HTML – Hypertext Markup Language
  - A way to define how a web browser displays content
  - Makes use of tags; tags control display
  - Any content within `<b>` and `</b>` will be displayed in bold
  - The function of each tag is defined; not possible to modify
  - Tags can be nested; `<b><u>content</u></b>`
  - New tags cannot be defined
eXtensible Markup Language

- XML is not HTML; it is not an extension of HTML

- XML also uses tags; but all XML tags are user-defined

- XML is not used to control how content is displayed; it defines the content
eXample

@student>
  <student-name>
    <first-name>Jane</first-name>
    <last-name>Doe</last-name>
  </student-name>
  <year>Junior</year>
  <major>MIS</major>
  <major2></major2>
  <minor>Marketing</minor>
</student>
Understanding XML

• In the previous example
  ◦ A student’s details are presented in XML format
  ◦ Each XML file has a schema – a file that defines what tags are permitted, and what nesting is permitted in each XML file
  ◦ Similar XML files share the same schema
  ◦ When information is transmitted between parties, if the schema is sent along with the content, the receiver can make sense of the content that is being transmitted
How does it help?

- All that two parties need to do is to agree on the schema
- No special systems needed to decode the incoming data
- XML is a popular and widely-used standard; everyone is adopting it
Examples

Chemistry XML

Fox School of Business
TEMPLE UNIVERSITY
Web services

- Web services are business and consumer applications that are delivered over the Internet.

- Users access these services to get the information they need.

- Uses a set of shared protocols and standards, largely based on XML.

- Can be accessed through a variety of systems and devices.
Why do Web Services matter?

- Faster, cheaper integration
- Systems integration is the single biggest IT expense for most companies
- Web Services obviate the need to create develop interfaces — less work, less worry!
<Questions ? />