Week 11:

Supply Chain IT Standards

What Language are you Speaking?

RosettaNet

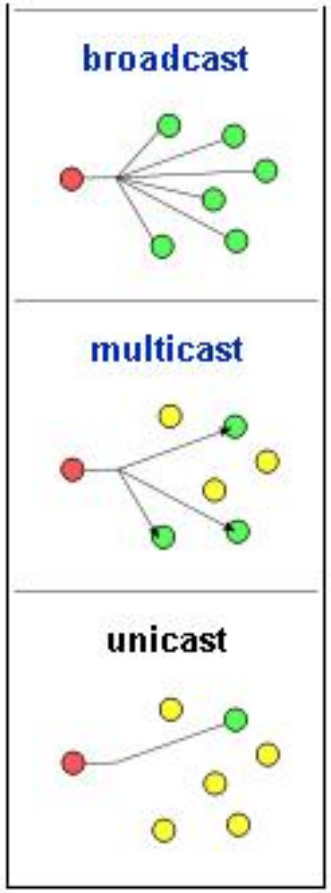
Fox School of Business
TEMPLE UNIVERSITY

Learning Objectives

- Electronic Data Interchange: EDI
- RosettaNet standards
- XML and Web services

How computers communicate?

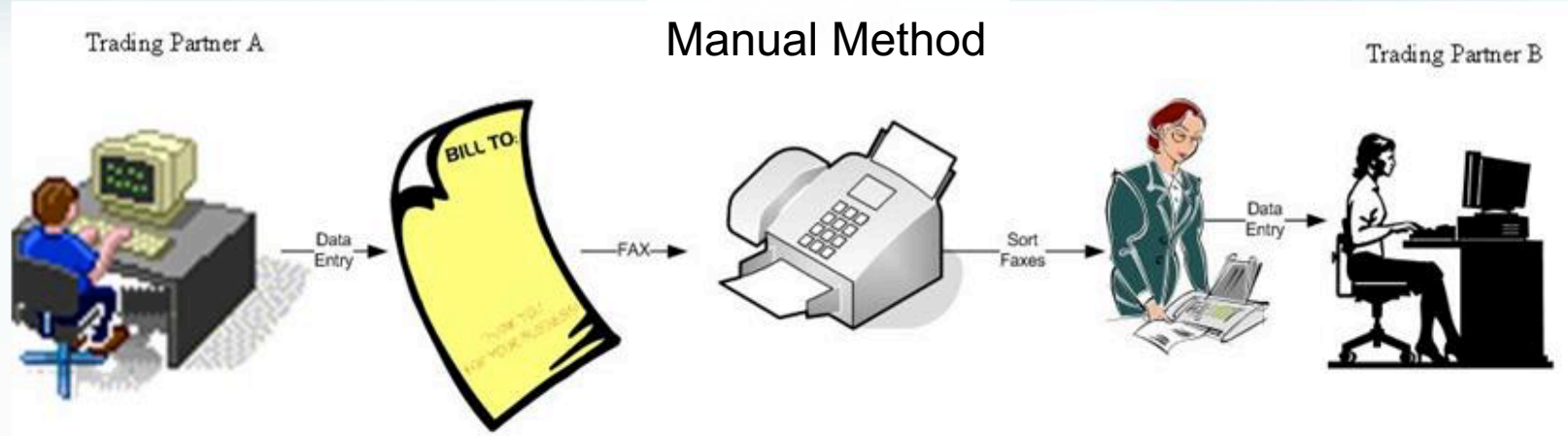
- Computers connected to a network can pass messages to each other
- Unicast
  - One sender, one receiver
- Multicast
  - One sender, many targeted receivers
- Broadcast
  - One sender, everyone else a receiver

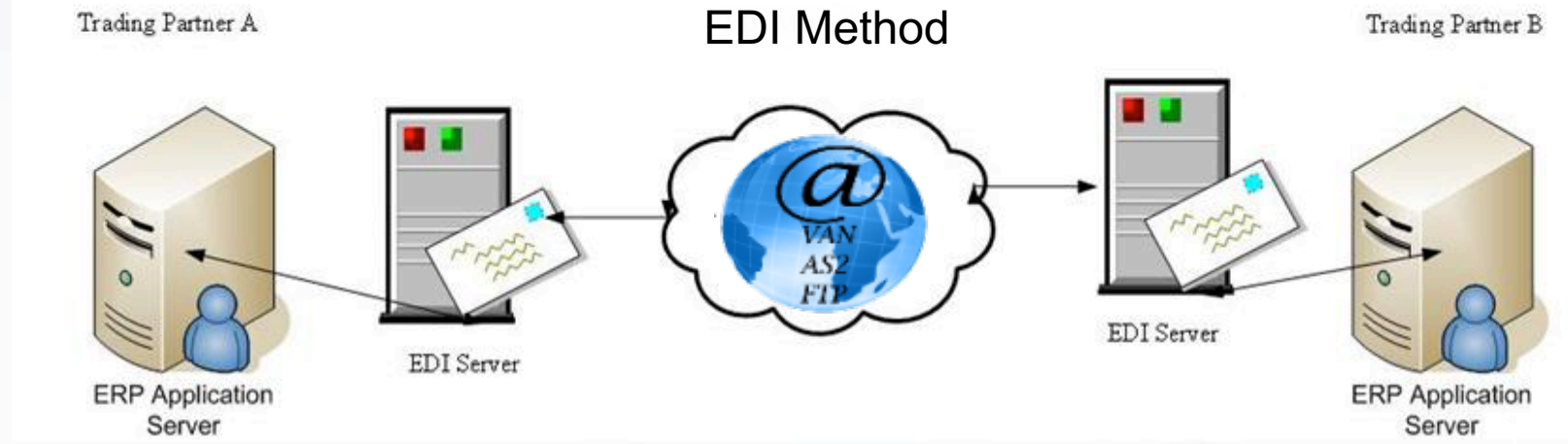


Getting ‘em to talk

- Consider our craft beer supply chain
  - The retailer uses Windows PCs
  - The distributor uses Linux workstations
  - The wholesaler and the factory have old IBM mainframe systems
- How do you pass messages among these entities?

Getting ‘em to talk

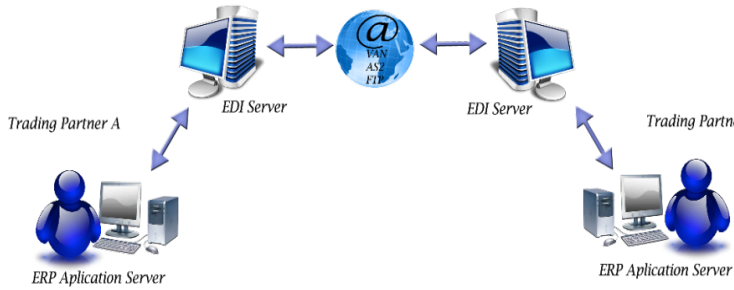




Protocols

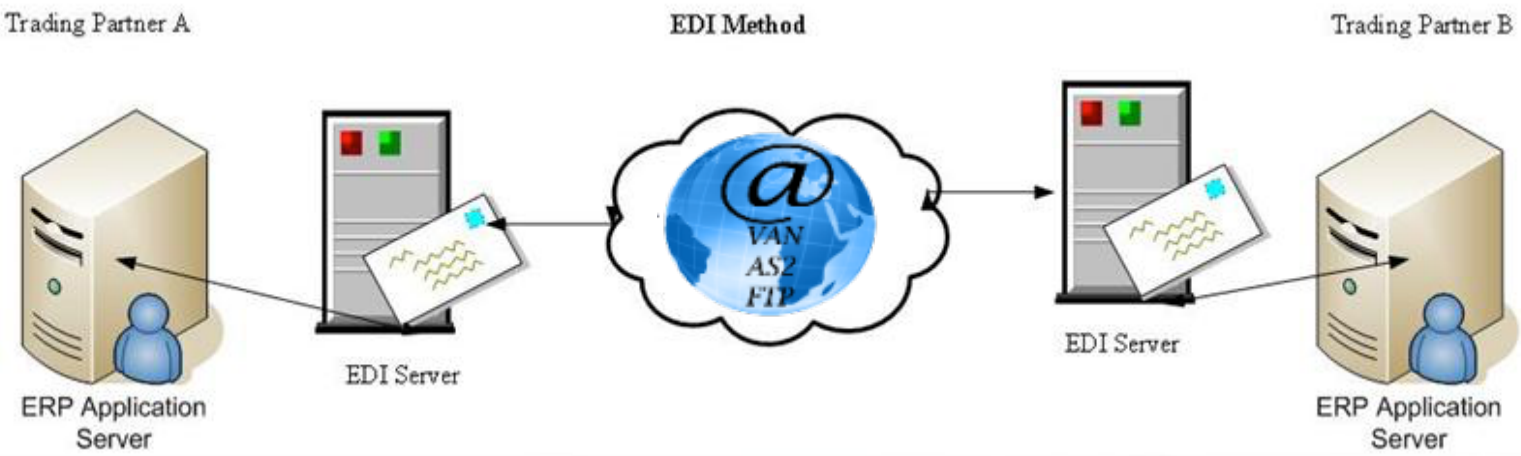
- Protocols are computer communication standards
  - HTTP, HTTPS, FTP, SMTP, ATM, NNTP etc.
- Protocols wrap the actual message in a packet, add some extra information (called header) to it and transport the packet across the network
- At the other end, the receiver gets the packet, knows what the protocol is, and unwraps the packet to get the message

EDI



- 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

Getting 'em to talk:
More than Message Delivery

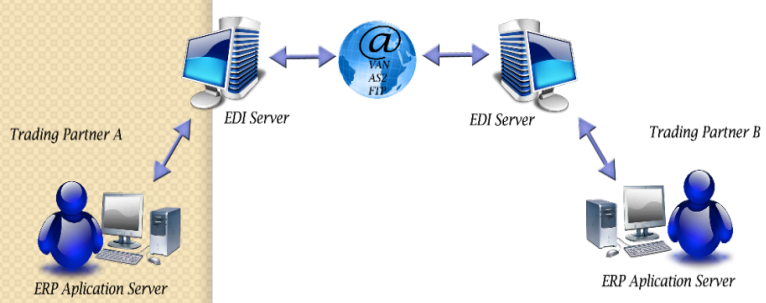


'Hats Exercise'

Components of an EDI system

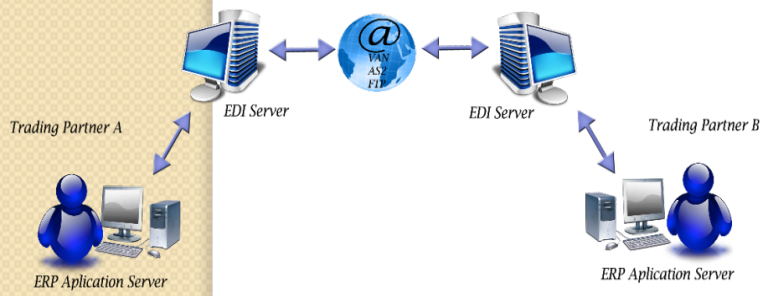
- Computer System
  - A computer, network and an Internet connection

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

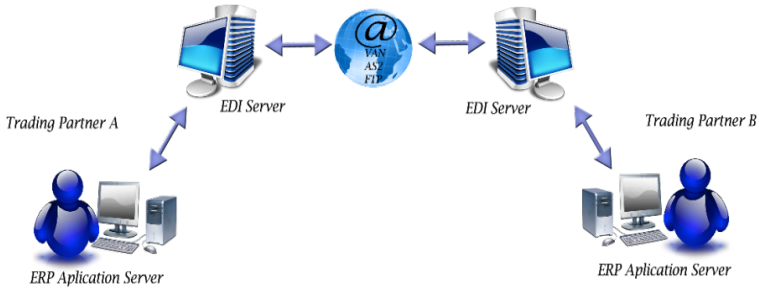


Older than the World Wide Web

- 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

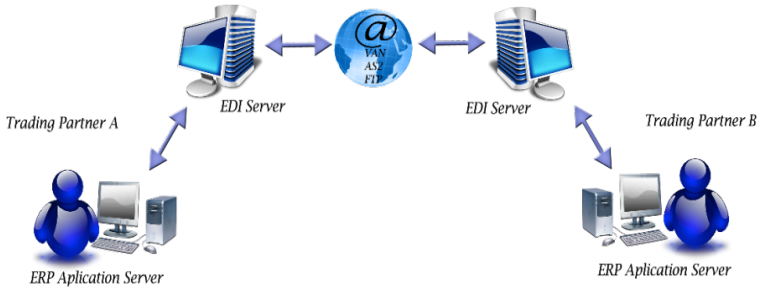


EDI standards



- 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



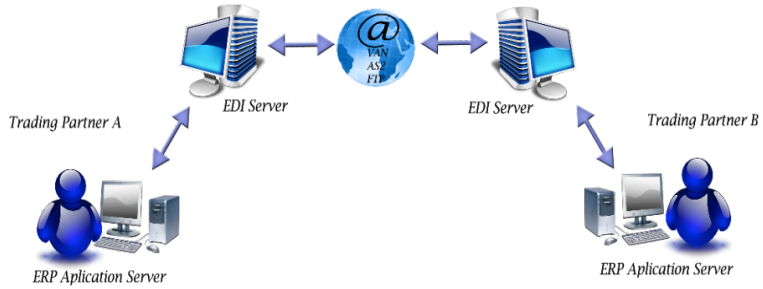
- Standards prescribe
  - Data formats
  - Character sets (e.g.: language, encoding)
  - Data elements

- 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)

Elemica

Advantages & disadvantages

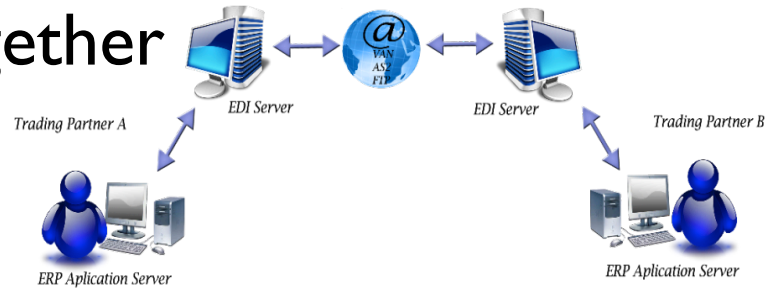
- Advantages
  - Increased efficiency
  - Cost savings
  - Weeds out paper-based systems



- 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

- 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

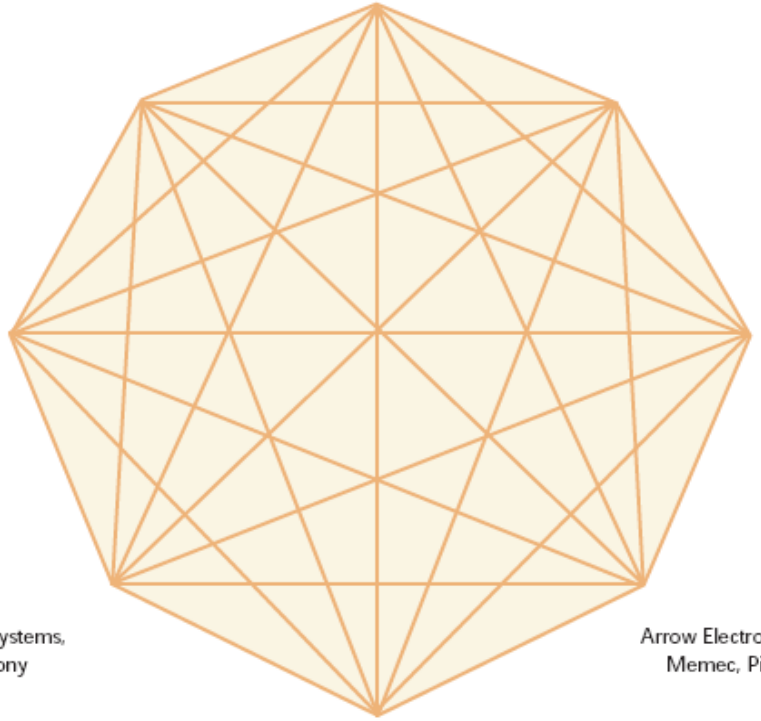
- RosettaNet dictionaries
  - Provide a common set of properties for business transactions
- RosettaNet Implementation Framework
  - Provides common exchange protocols
- Partner Interface Processes
  - Defined business processes between trading partners

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

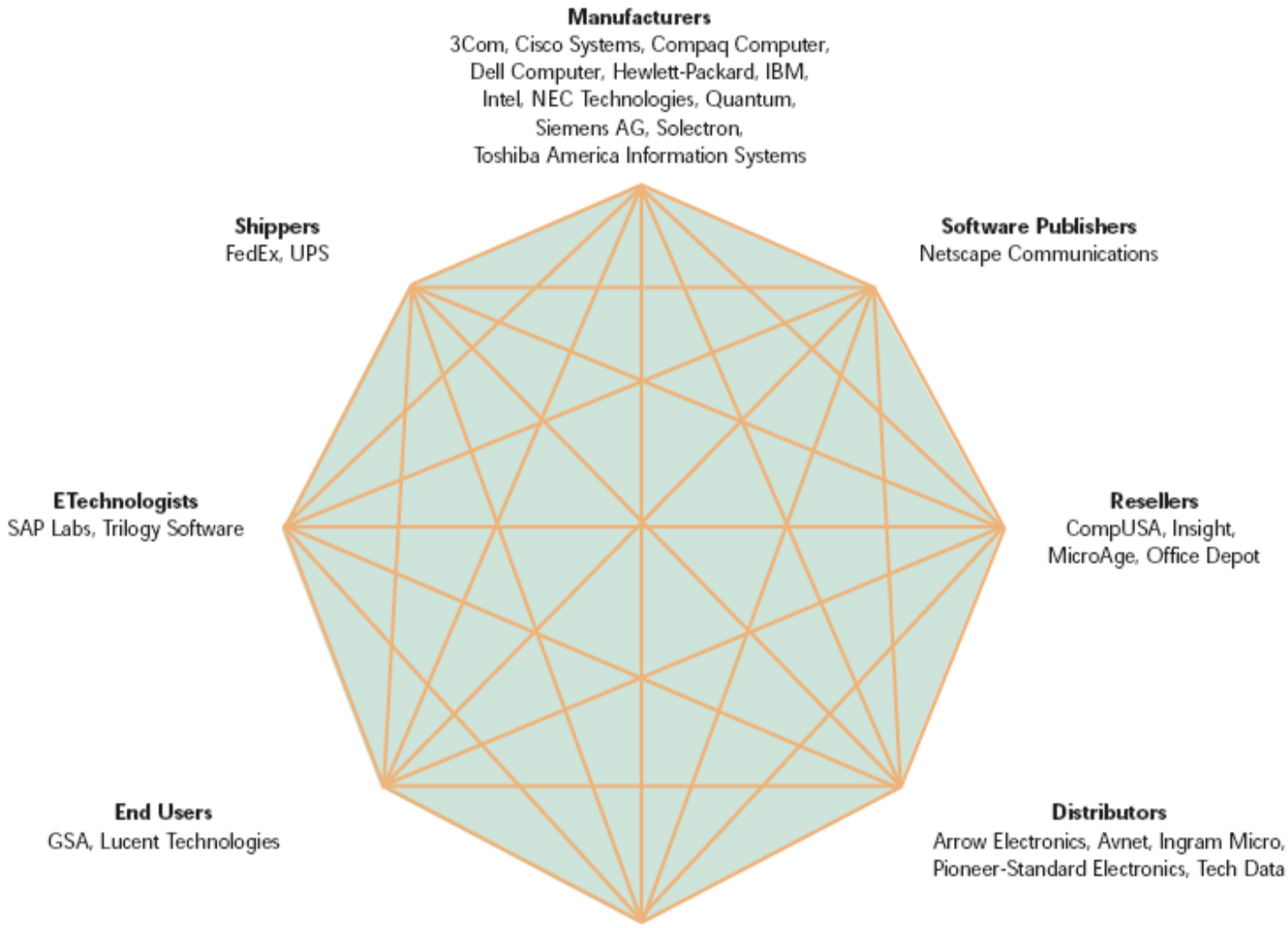
Passive Suppliers
AVX. Bourns, KEMET

Customers
Agilent Technologies, Cisco Systems, IBM, Nokia, Solectron, Sony

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

ROSETTANET

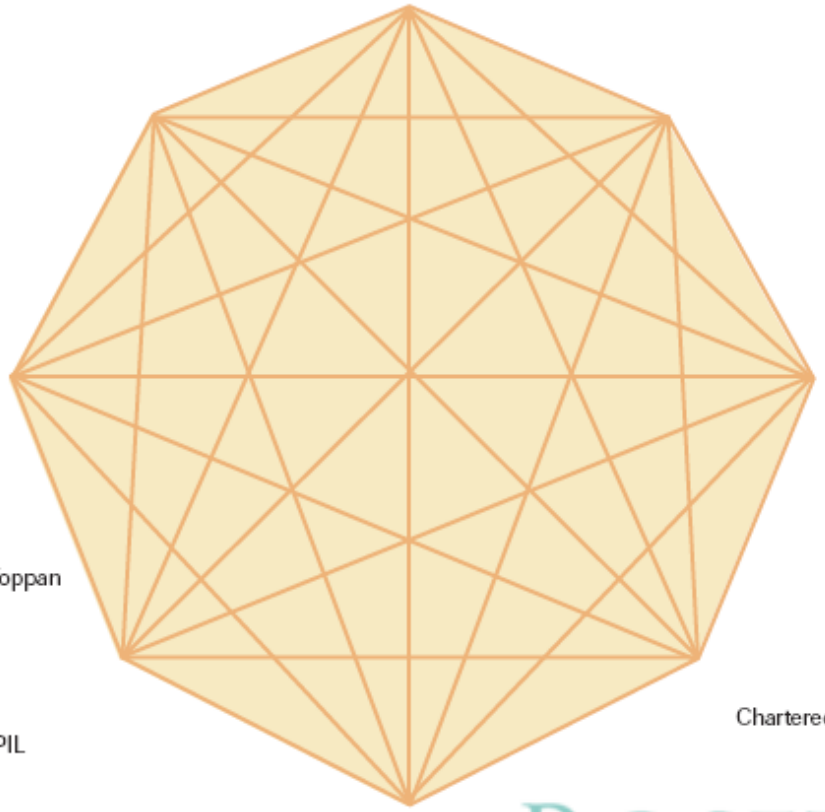
Partners: IT Industry



ROSETTANET

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

Fabless Device Manufacturers
Xilinx

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

Foundries
Chartered Semiconductor Manufacturir
TSMC, UMC

ROSETTANET

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 and will be displayed in bold
  - The function of each tag is defined; not possible to modify
  - Tags can be nested; <u>**content**</u>
  - 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>
  <year>Junior</year>
  <major>MIS</major>
  <major2></major2>
  <minor>Marketing</minor>
</student>
```

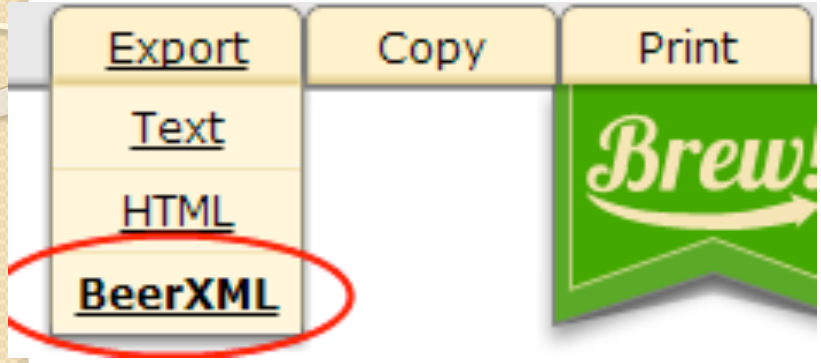
Understanding XML

- 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



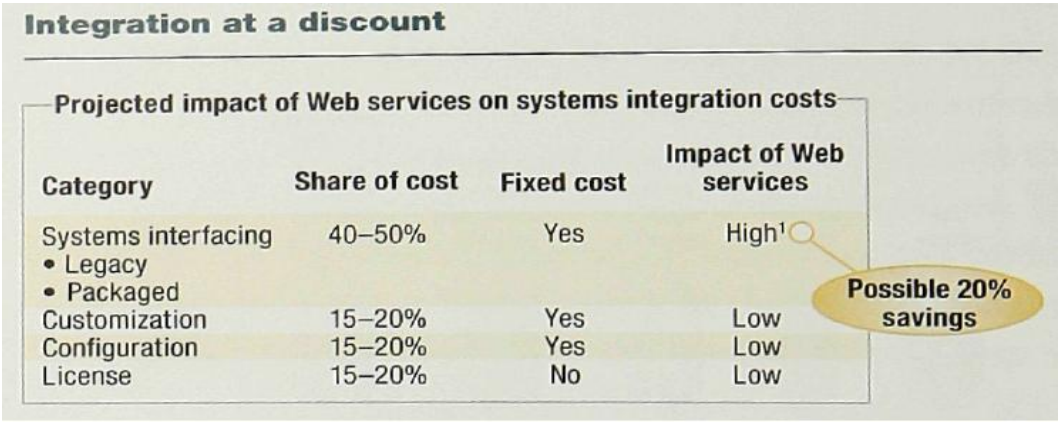
Chemistry XML

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



Integration at a discount

Projected impact of Web services on systems integration costs

Category	Share of cost	Fixed cost	Impact of Web services
Systems interfacing • Legacy • Packaged	40–50%	Yes	High[1]
Customization	15–20%	Yes	Low
Configuration	15–20%	Yes	Low
License	15–20%	No	Low

Possible 20% savings

- 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 ? />