

EC2001 Conference
San Francisco – Jan. 2001
Session: SU02

***Web-Based EDI and
Electronic Commerce
Workshop***

Dubos J. Masson, Ph.D. CCM, CertCM
The Resource Alliance, Inc.

Opening Discussion

- Class discussion:
 - What is EDI?
 - What is EC?
 - What is Web-EDI?
 - What is Web-EC?
 - Security Issues?
 - Implementation Issues?
 - What's Best for Your Company



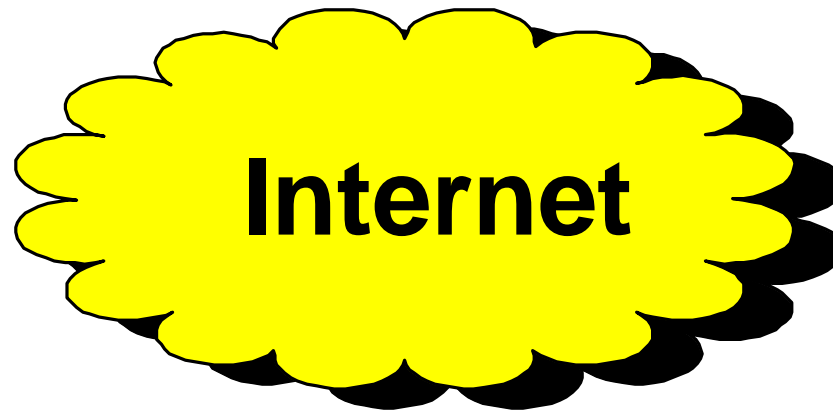
What is EC?

- In its broadest context, Electronic Commerce (EC) is the application of information and network technology to the conduct of business relationships among trading partners



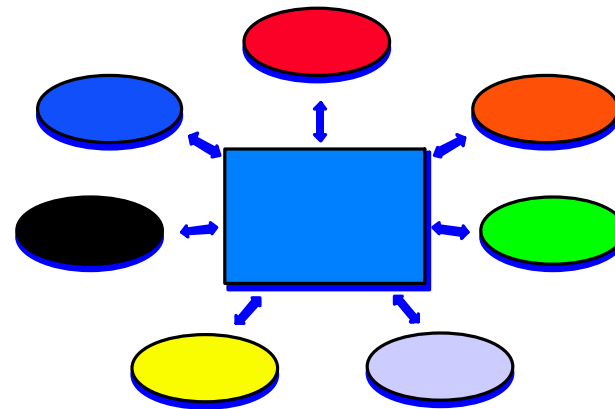
What is the Internet?

- The Internet is a world-wide collection of many servers, communication switches, and computer networks linked together to form an “internetwork”



What is the Web?

- The World Wide Web is one of the most popular methods of accessing the Internet through the use of browser technology. It has millions of sites and is growing at an astounding rate



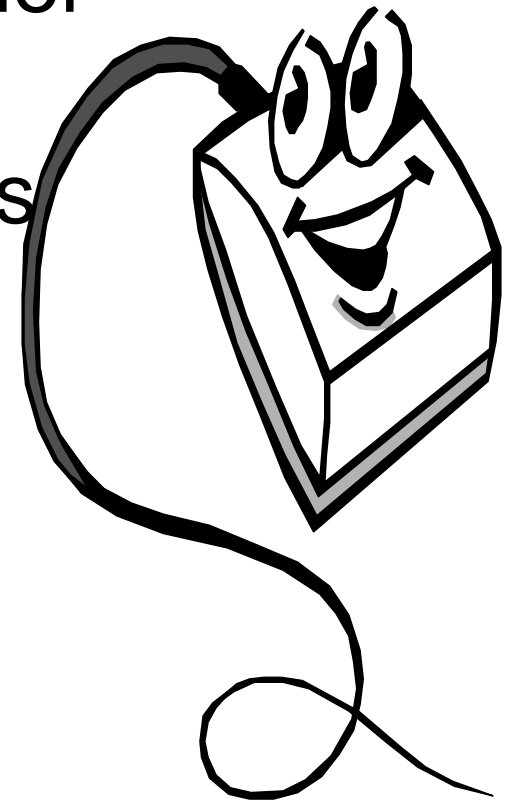
What is a Trading Community?

- The environment of business: suppliers, customers, distribution, logistics, employees, agents, etc.
- Vertical Communities (Supply Chains)
- Community of Interest
- Horizontal Communities



Different Flavors of EC

- B2C – Business to Consumer
 - “E-tailing”
- B2B – Business to Business
 - Purchasing from Suppliers
 - Logistics and Supply Chain Management
 - Selling to Customers
 - Billing and Payment
 - EDI and Web-EDI
 - Web-based EC



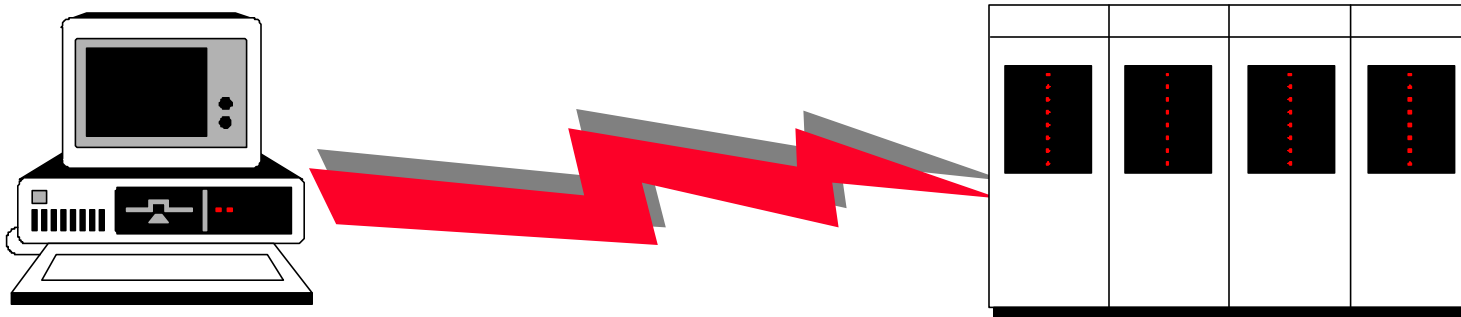


How is the Web/Internet Changing Treasury?

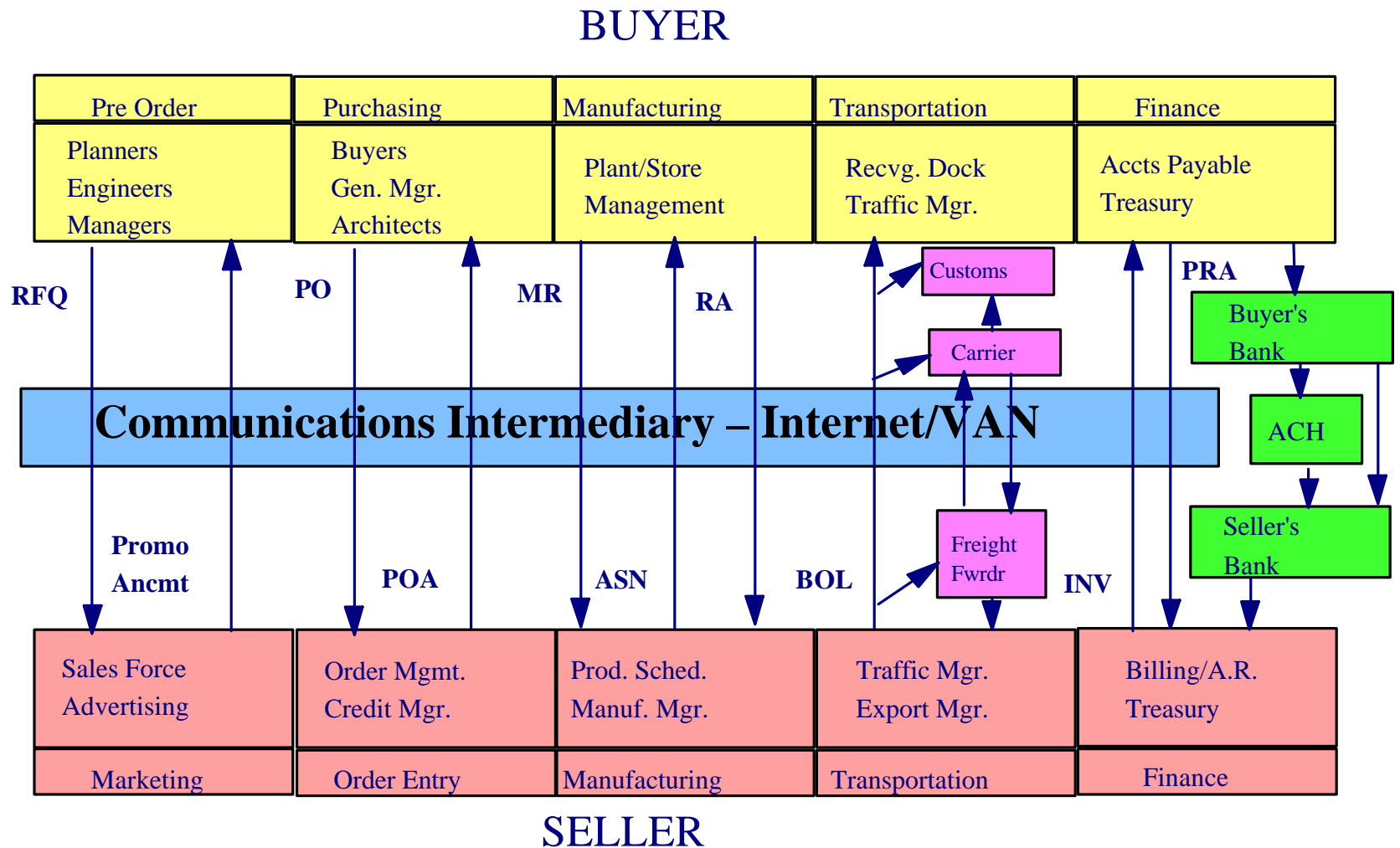
- Easy Accessibility to Services
- Cheap and Easy to Implement
- Easy to Use
- Cheaper Communications
- “Apps on Tap”
- Identity Problems – Counterparty Risk
- Security Issues

What is Traditional EDI?

- Electronic Data Interchange is a form of EC that utilizes structured electronic transactions to exchange data from one company's application system to another company's application system



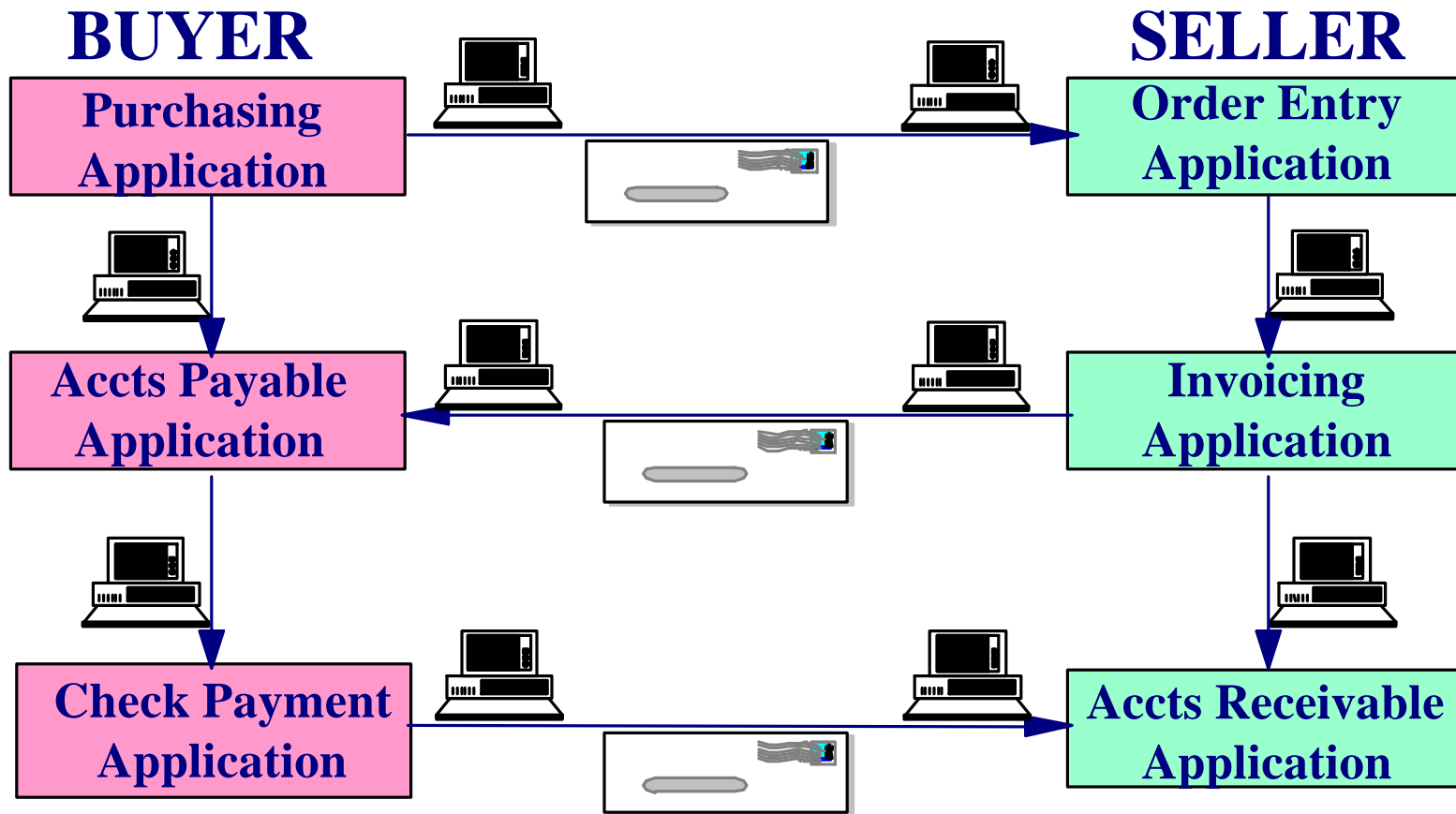
Integrating Corporate Functions



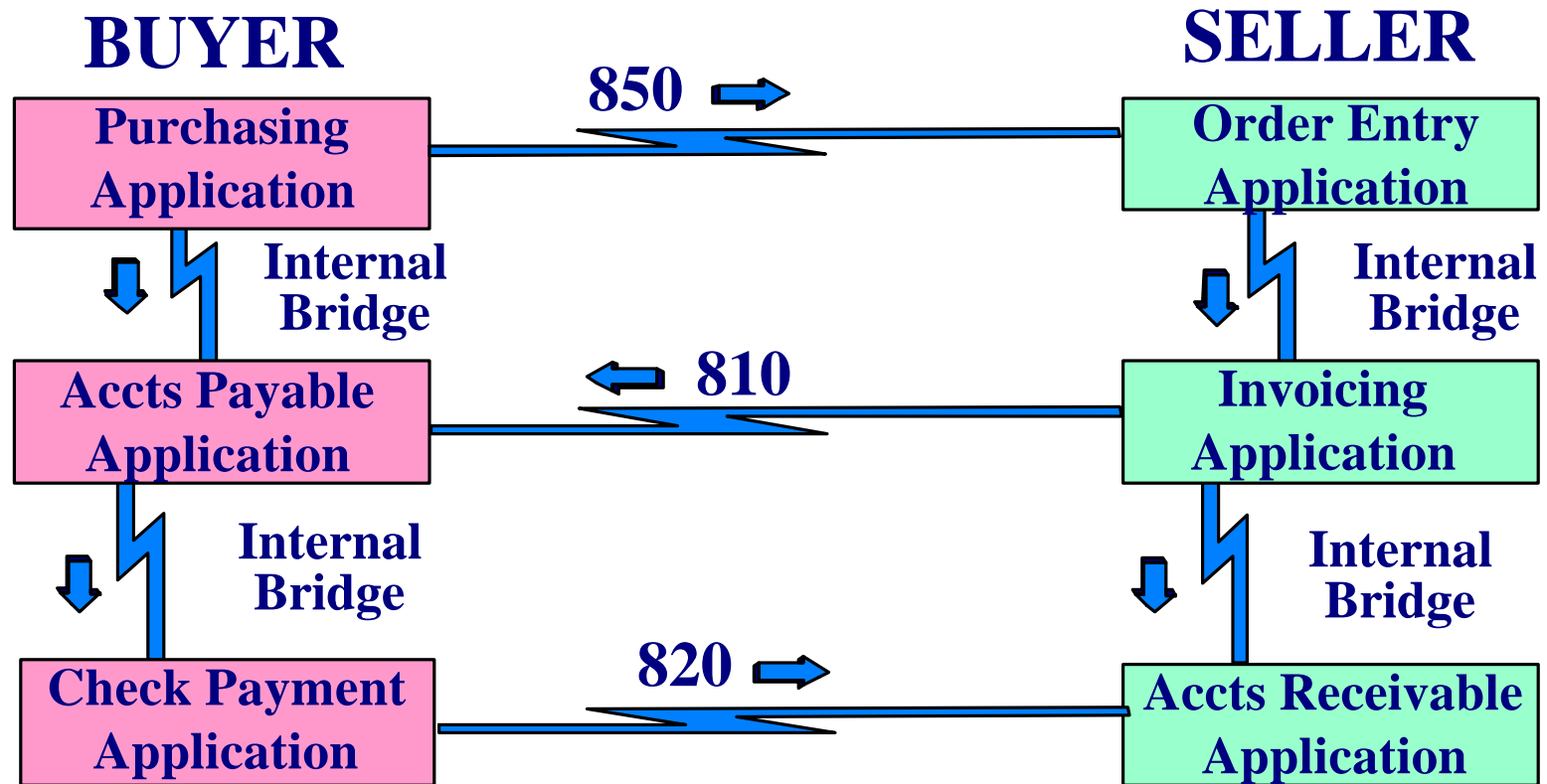
What is EDI?

EDI is the application system to application system transfer of business data from one organization to another in a structured data format. It includes all standards (public, industry-based or proprietary) and communication formats such as: VANs, Internet, direct transmission, tape exchange, enabled E-Mail or bar coding.

Traditional Paper-Based Business & Data Flow



Business & Data Flow With Electronic Data Interchange



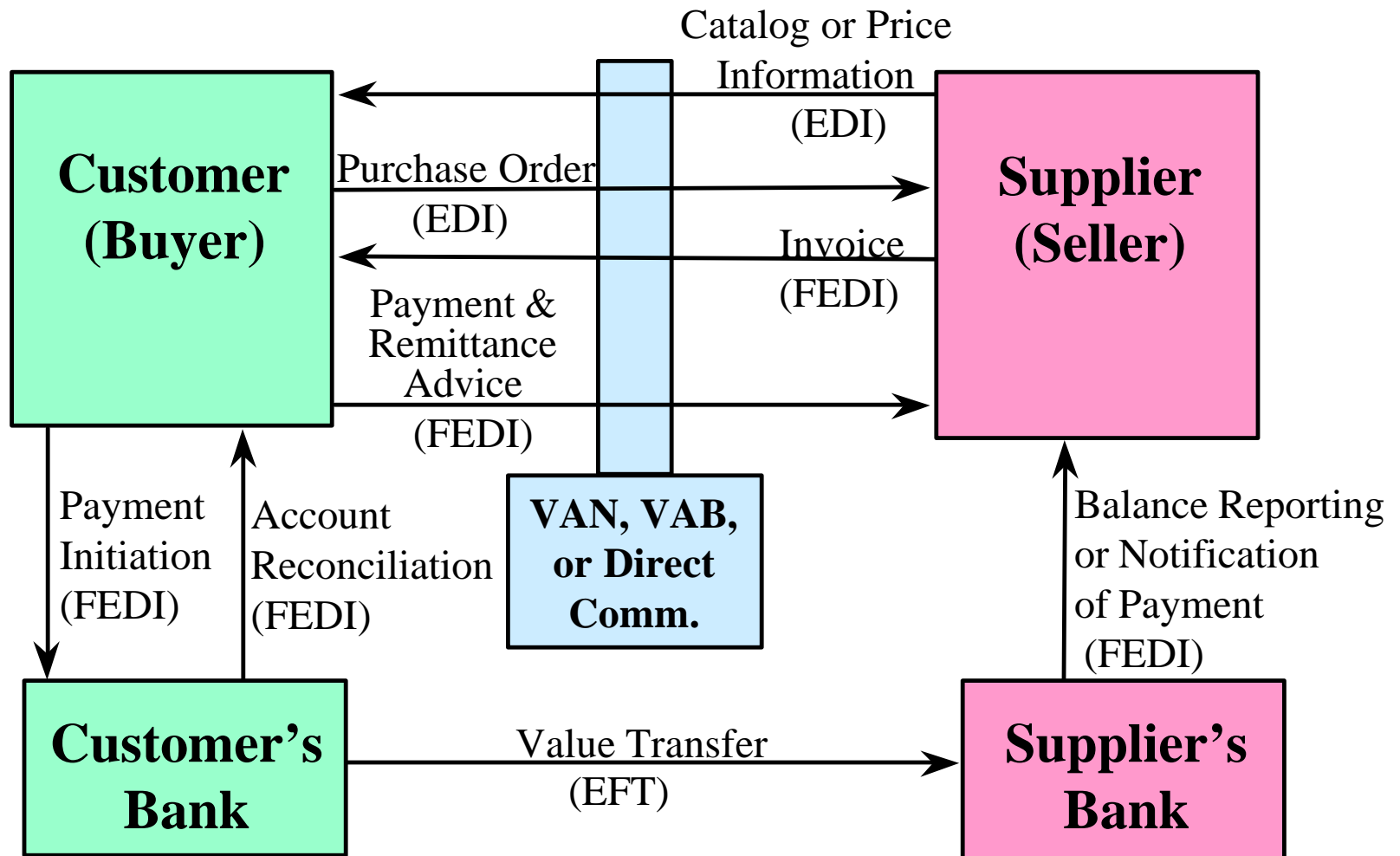
Most information is keyed only once, with small changes entered for different application system needs.



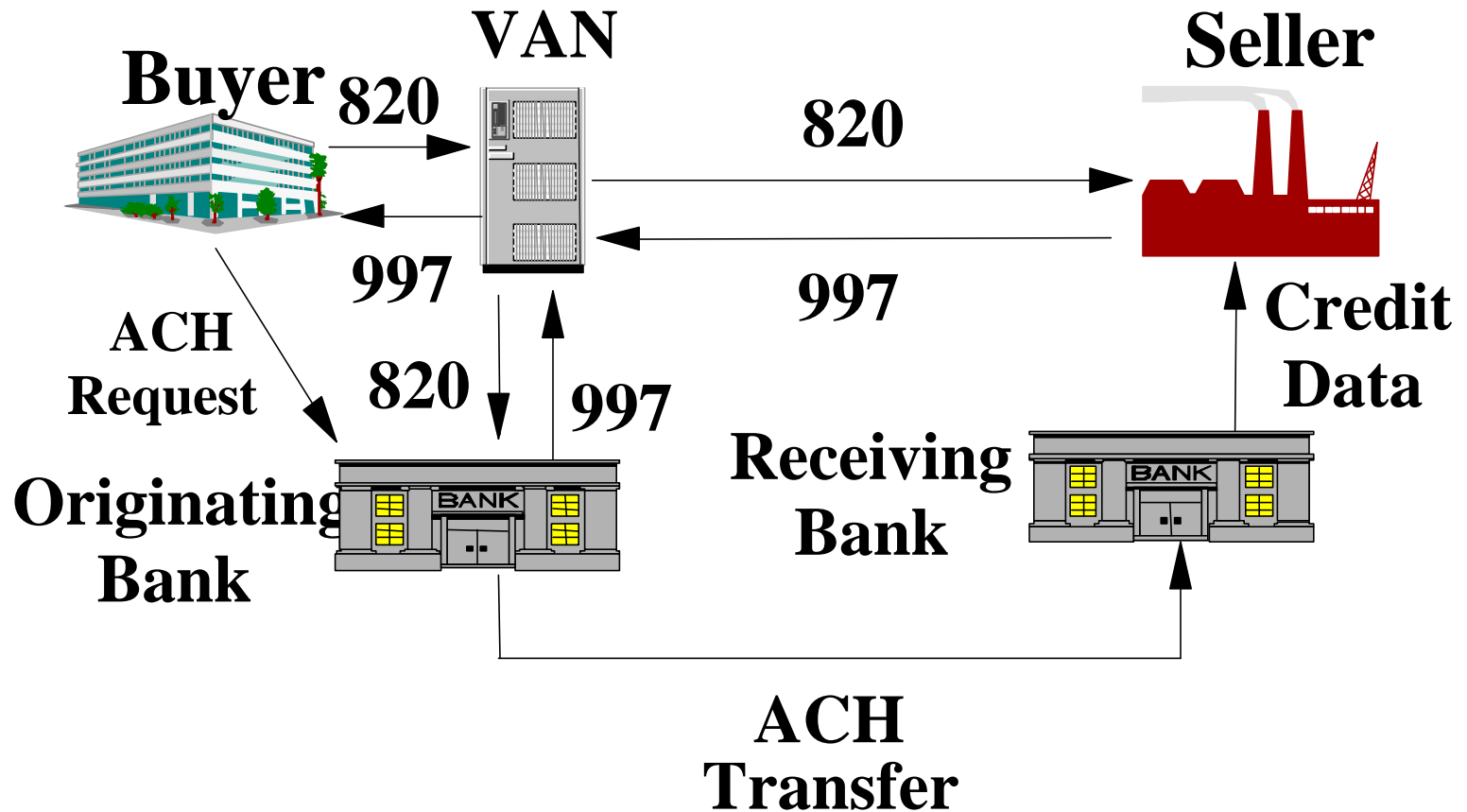
EDI in the Finance Area

- EDI use is still low in the treasury or financial areas of most firms
- The primary transaction set in finance is the invoice (ASC 810)
- The future of EDI in finance hinges on the acceptance of the ASC 820 - Payment Order & Remittance Advice
- Banks are still figuring out how to best support EDI for financial managers

EDI, FEDI, & EFT

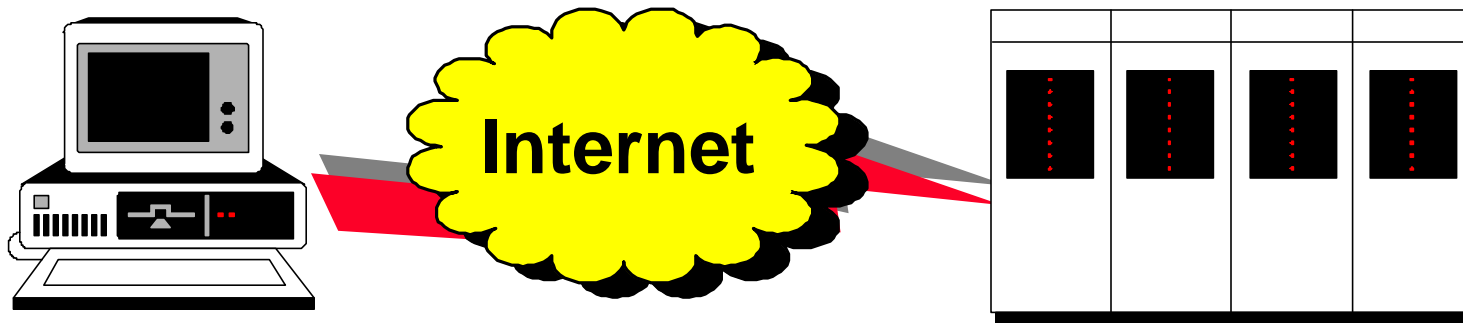


Role of Banks & VANs in FEDDI



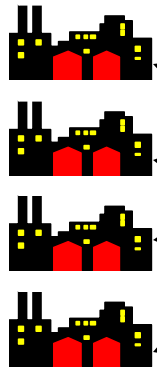
What is Web-EDI?

- Used by large EDI hubs to bring smaller trading partners into the EDI world
- Web-based for the small TPs, but sends or receives an EDI transaction set to/from the EDI hub
- Low transaction volumes in limited trading communities



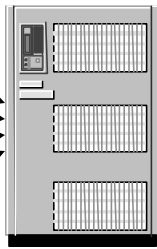
Web-EDI Example

EDI Trading Partners



EDI

**EDI Server
Or VAN**



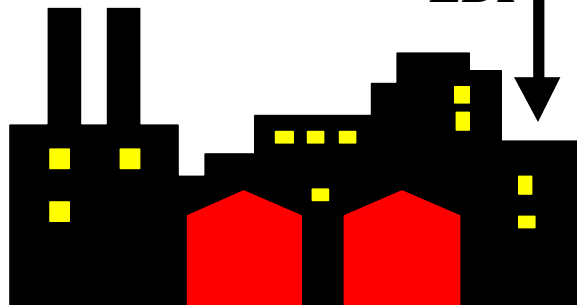
EDI

Web-EDI Internet Site

Catalog
Price
List

Purchase
Order

Invoice



EDI

Seller – Large EDI Hub

Internet
Access
w/Browser



Buyer – Non-EDI

Why Web EDI?

- Less expensive to implement
- Allows small-medium companies to take advantage of EDI benefits
- Drives processing costs as low as 12-22¢ per order
- Based on ubiquitous browser technology and formats

Costs of EDI

- Historically small suppliers have spent roughly \$10,000 per year to do EDI
- Web-Based EDI costs average \$1,000 or less per year





Difficulties of EDI

- While EDI is technically simple, implementations are usually complex and time-consuming
- The barrier to full-EDI implementation for a large trading partner is often the 20% of their trading partner base who will not or cannot get EDI up and running

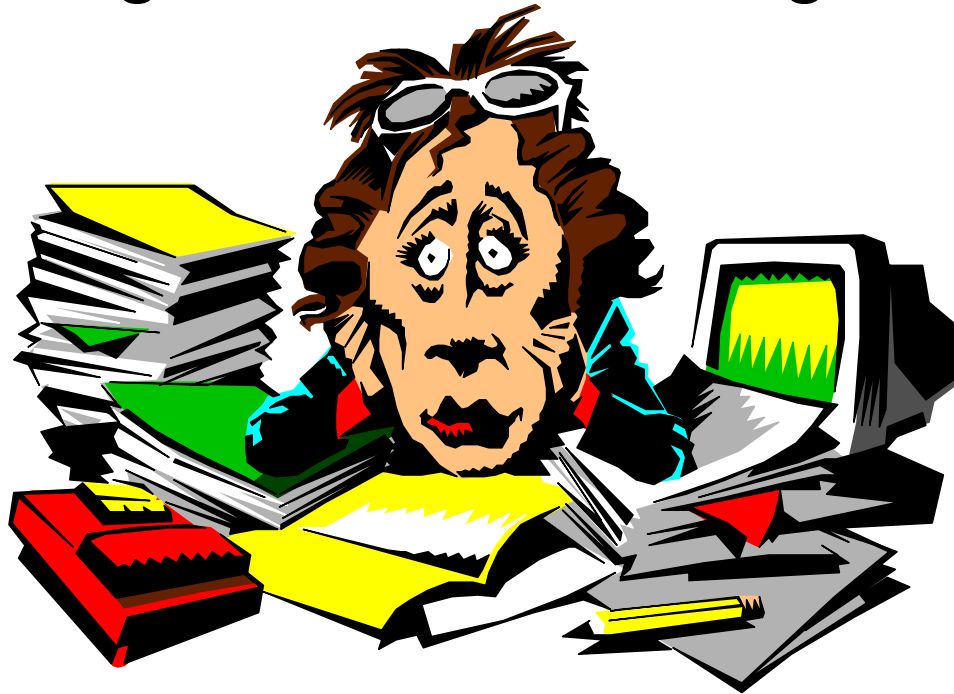
Traditional EDI vs. Web-EDI

- Large transaction volumes
- Low transaction volume



Traditional EDI vs. Web-EDI

- High level of system resources and integration
- Limited system resources and integration



Traditional EDI vs. Web-EDI

- Many trading partners
- Few trading partners



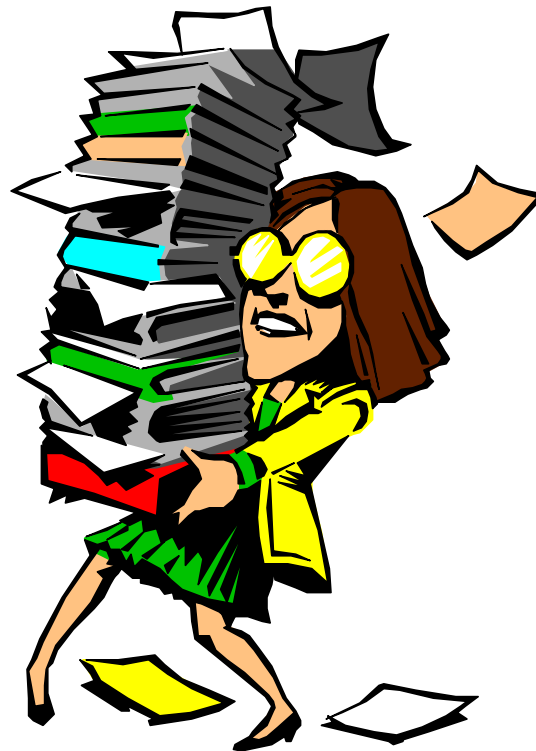
Traditional EDI vs. Web-EDI

- Open trading partner community
- Relatively closed trading partner community



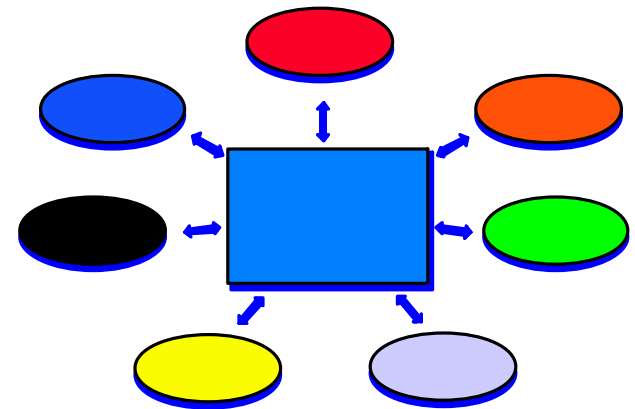
Traditional EDI vs. Web-EDI

- Broad set of transactions
- Limited set of transactions



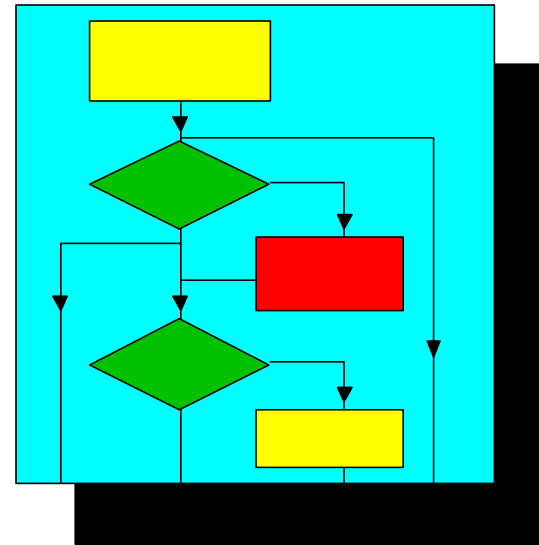
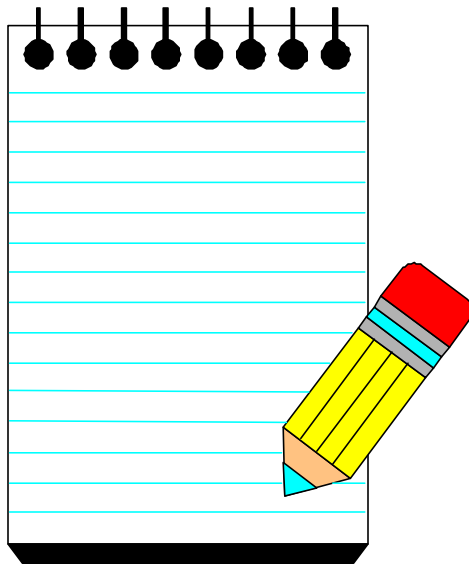
Web-Based EC

- Uses the internet and web-technology to link business process applications between trading partners
- Content-rich and results in an electronic transaction
- Data entry tasks may be pushed towards trading partners



Web EDI vs. Web EC

- E-forms oriented
- Process oriented



Web EDI vs. Web EC

- Results in an EDI transaction
- Results in an electronic transaction



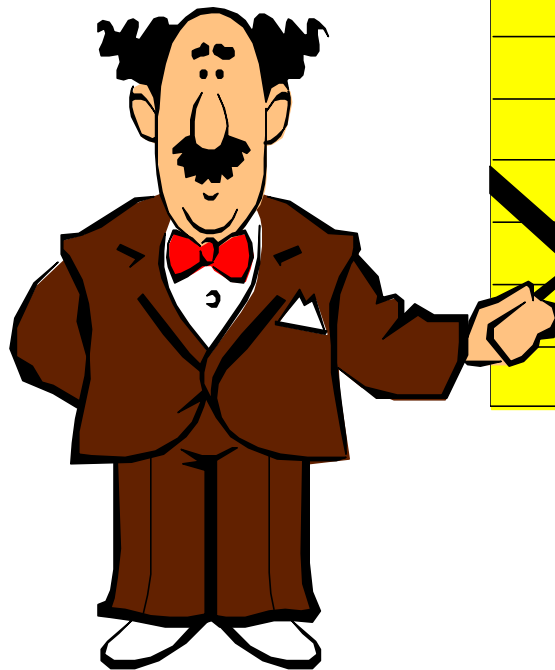
Web EDI vs. Web EC

- Limited content
- Content-rich



Web EDI vs. Web EC

- Leverages EDI investment
- Expands EDI investment



3 Key Issues for EC Development

- Technology Deployment – Things are technologically possible before they attain the following:
- Legislative Evolution
 - Digital signature legislation
 - Cultural differences
- Social Acceptance
 - Consumers often first adopters
 - Business lags behind
 - From Mellon Financial Corp



How Will EC Evolve?

- Early trading communities will emphasize the purchase of indirect materials (office supplies) and direct materials (raw materials for manufacturing)
- Direct materials require greater expertise and integration with ERP systems and supply chain planning and execution

– From Goldman, Sachs, & Co.



Development of “E-Markets”

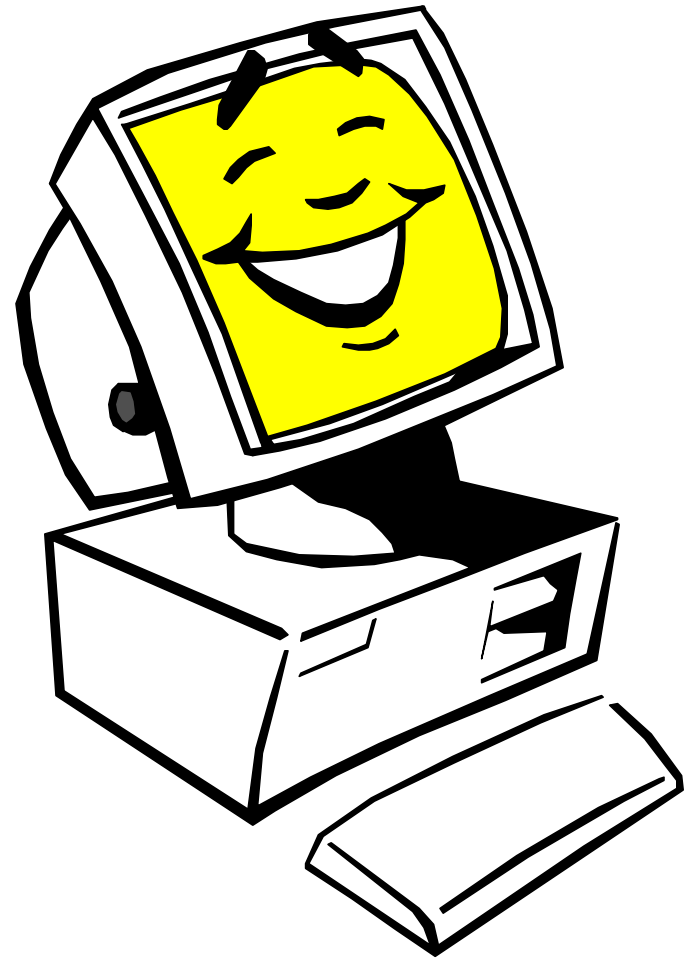


“The movers and shakers behind B2B Electronic Commerce will be the ‘e-market makers’, or companies that first develop internet-based e-marketplaces for buyers and sellers within industries.”

Gartner Group Research

Who are the Current EC Technical Providers?

- Ariba
- Commerce One
- i2
- Oracle
- SAP
- PeopleSoft
- JD Edwards
- Lots of Others



Critical Issues to Consider

- Security
- Connectivity
- Lack of Standards
- Current Trading Partner Base
- Transaction Sets Needed



Security Issues

- Security: The assurance that transactions are safe from intrusion, detection, and modification
- Security is Needed to Provide:
 - Privacy
 - Authentication
 - Integrity
 - Non-repudiation



A Little About Security

- ***Privacy*** is the assurance that the message is readable only to the intended recipient and that data will not be used for unintended purposes
- ***Authentication*** is the ability to know with a reasonable amount of certainty who sent or received a message

SECRET!

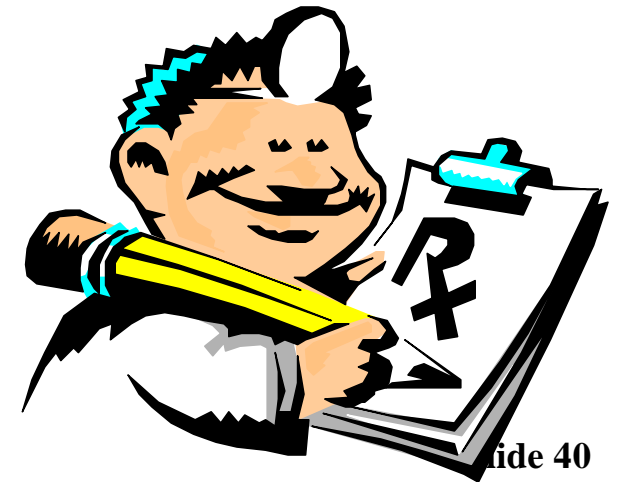
A Little About Security

- ***Integrity*** is the ability to ensure that a message was not modified in transit – especially important for financial transactions
- ***Non-repudiation*** is the inability of the sender or receiver of a message to deny having sent or received the message

APPROVED!

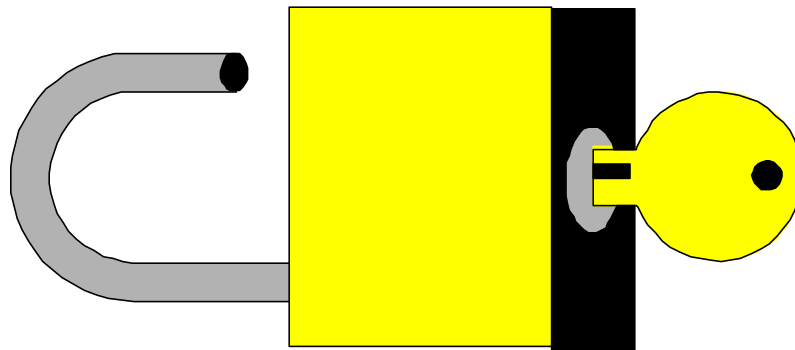
Solving Security Issues

- The use of encryption technology with public/private keys can help to resolve many of the security issues
- Many EC Web sites have already implemented SSL – (Secure Sockets Layer) technology to ensure privacy, integrity and authentication of data moving between clients and servers



Shared-Secret Key System

- Both sending and receiving party have private key to encrypt/read messages
- Key distribution and management may be difficult and complex
- Most useful between two regular trading partners





PKI Security

- PKI = Public Key Infrastructure
- Enables EC and file exchange over a public network
- Encryption technology used on virtually all secure Web transactions for most EDI exchanges
- Based on X.500 and X.509 ANSI standards for Public Key Certificates and Directory Services

How PKI Works

- Uses public/private key pairs based on DES standard encryption technology
- Private key is held in a secret, secure file that is protected with password/PIN
- Corresponding public key is freely distributed to trading partners
- Anyone can use public key to encrypt a message, only receive with proper private key can open and read message

Benefits of PKI for Bankers and Treasurers

- It definitely identifies a person or organization
- It allows for privacy
- Most often used in the form of digital signatures and digital certificates



Digital Signatures



- Encoded message based on the sender's secret private key
- Receiver can identify its source using the sender's public key
- As long as private key is never shared with anyone, it is impossible for others to forge a digital signature

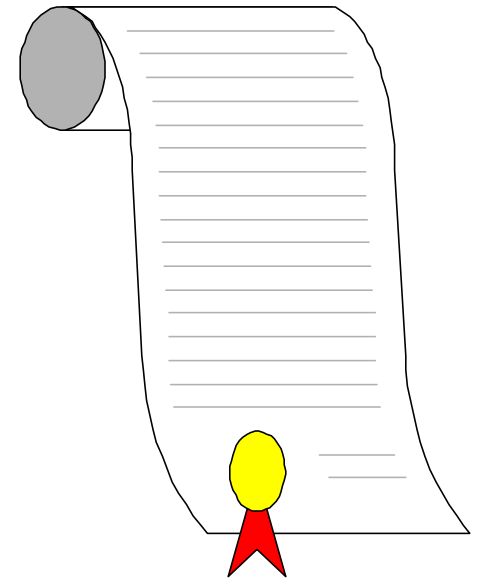


More on Digital Signatures

- Digital signature is tied to document as well as to signer
- Signer's digital signature will be different for each document signed
- Serves four purposes:
 - Data integrity
 - Origin authentication
 - User authentication
 - Non-repudiation

Digital Certificates

- Consists of user's public key and ties the identity of the user (private key) to the user's public key
- Identification information is secured by a trusted party's digital signature on the certificate
- Trusted party (often a bank) is known as a Certificate Authority





Financial Institutions Internet Initiatives for Security

- Banks are forming “dream teams” of security companies, Certificate Authorities, software providers, and other technology firms
- These authorities administer the public/private key infrastructure and issue electronic certificates that serve as virtual passports to subscribers

Identrus

- Bank consortium providing authentication by digital certification for users conducting transactions across open networks
- Helps corporations trust the identity of their digital partners through real-time authentication and validation of the transmission under legally binding contracts





More on Identrus

- Allows seller to verify unknown buyer through a trusted financial institution
- Establishes multilateral trust through a single bilateral customer agreement
- Certificates can be stored in smart cards and use two-factor authentication
 - Individual smart card
 - Assigned PIN to “unlock” card

Security Summary

- Technology is important, but EC requires knowing with whom you are dealing
- A bank or other trusted third-party can help in this area

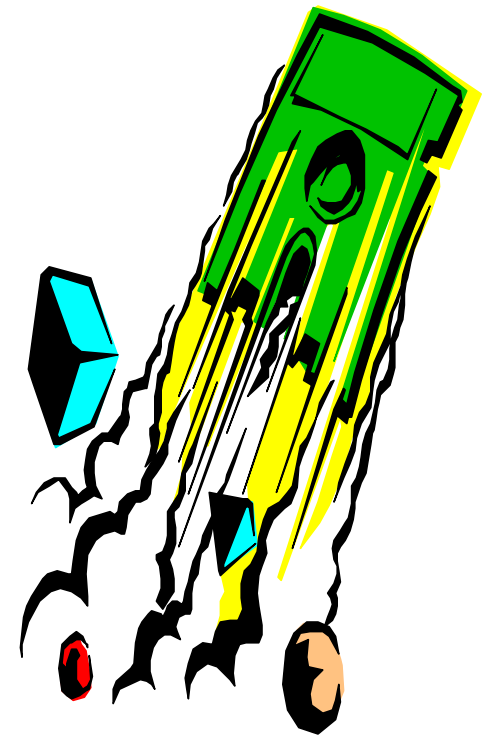


Additional Information

- The information in this section on PKI, digital signatures, and digital certificates comes from “Internet Security for Corporate Cash Management Transactions”, by Lisa Burghardt, Chase Manhattan Bank, as printed in Global Treasury News, (April 6, 2000) – www.gtnews.com

Emerging Technology and Standards

- Integrated Voice and Data
- Unified Messaging (E-mail, callbacks, etc.)
- Multiple Media Interactive Formats
- Web/Computer Telephony
- XML and other emerging standards



The Language of The Web

- HTML (Hypertext Markup Language)
 - A language used to create web pages independent of software used to view the pages
- XML (eXtensible Markup Language)
 - A extension of HTML – a set of rules for defining content and structure
- FSML (Financial Services Markup Lng.)
 - Developed to implement e-checks and other secure financial documents

A Little About XML

- XML is an open-standard, which does not imply ease-of-interoperability
- These are all equal
 - `<name><first>Homer</first></name>`
 - `<name type="first">Homer</name>`
 - `<firstname>Homer</firstname>`
 - Europeans use 'given' instead of 'first'
- XML is not a panacea for application integration



A Little More about XML

- XML is human-readable and machine-readable at the same time
- There are tools for importing data from an XML message into business application systems
- XML is also natively viewable (as HTML) in advanced browsers
- XML can be transformed additionally for mobiles or hand-helds

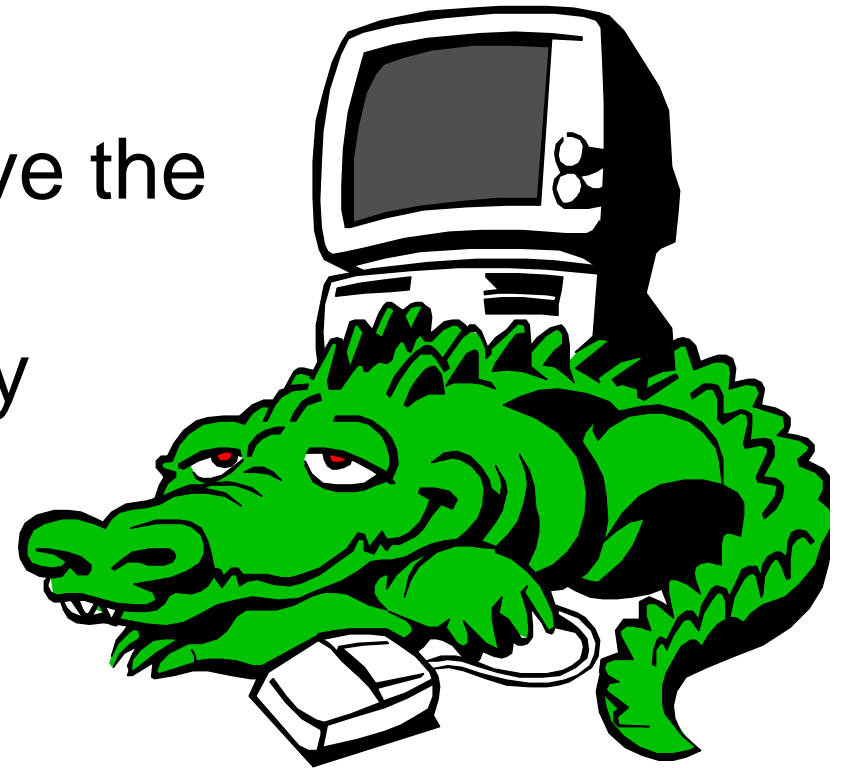
Some Strategic Obstacles

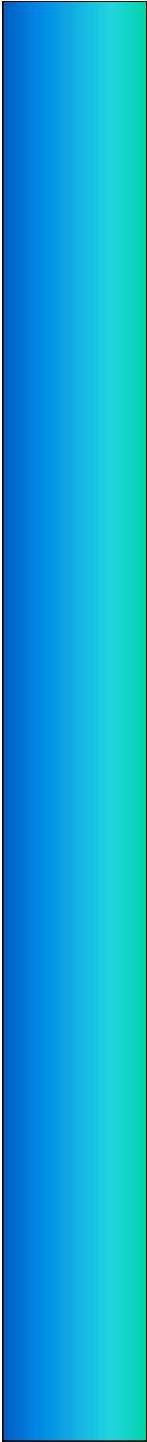


- Substantial Investment in Traditional EDI
- Uneven Service Levels
- Integration to Back-End Applications

Web EDI Pitfalls to Avoid

- Establish a Realistic Plan
- Maximize Your Investment
- Make Sure you Have the Right Skill Set
- Gain Broad Industry Knowledge
- Enlist Management Support





Is Web EDI a Killer App?

- Industries who have already taken an aggressive position on Web EDI
 - Distributor and manufacturing business process automation
 - Retail sales and services
- Companies with Web EDI Operations
 - Mobil Oil
 - Sears Roebuck and Co.



Impact of EC on Treasury

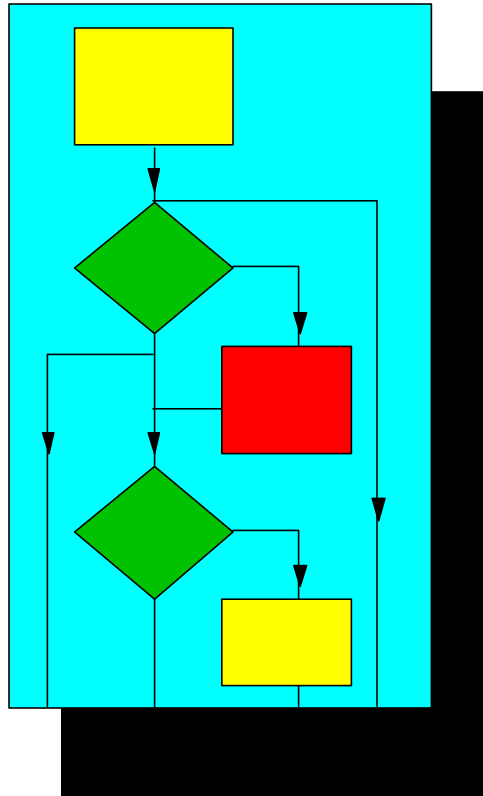
- Business processes in the core purchase-to-pay and quote-to-cash cycles are becoming much more concentrated and integrated in the IT environment.
- Many “mission critical” treasury tasks are handled on a decentralized basis or even outsourced completely



Impact of EC on Treasury

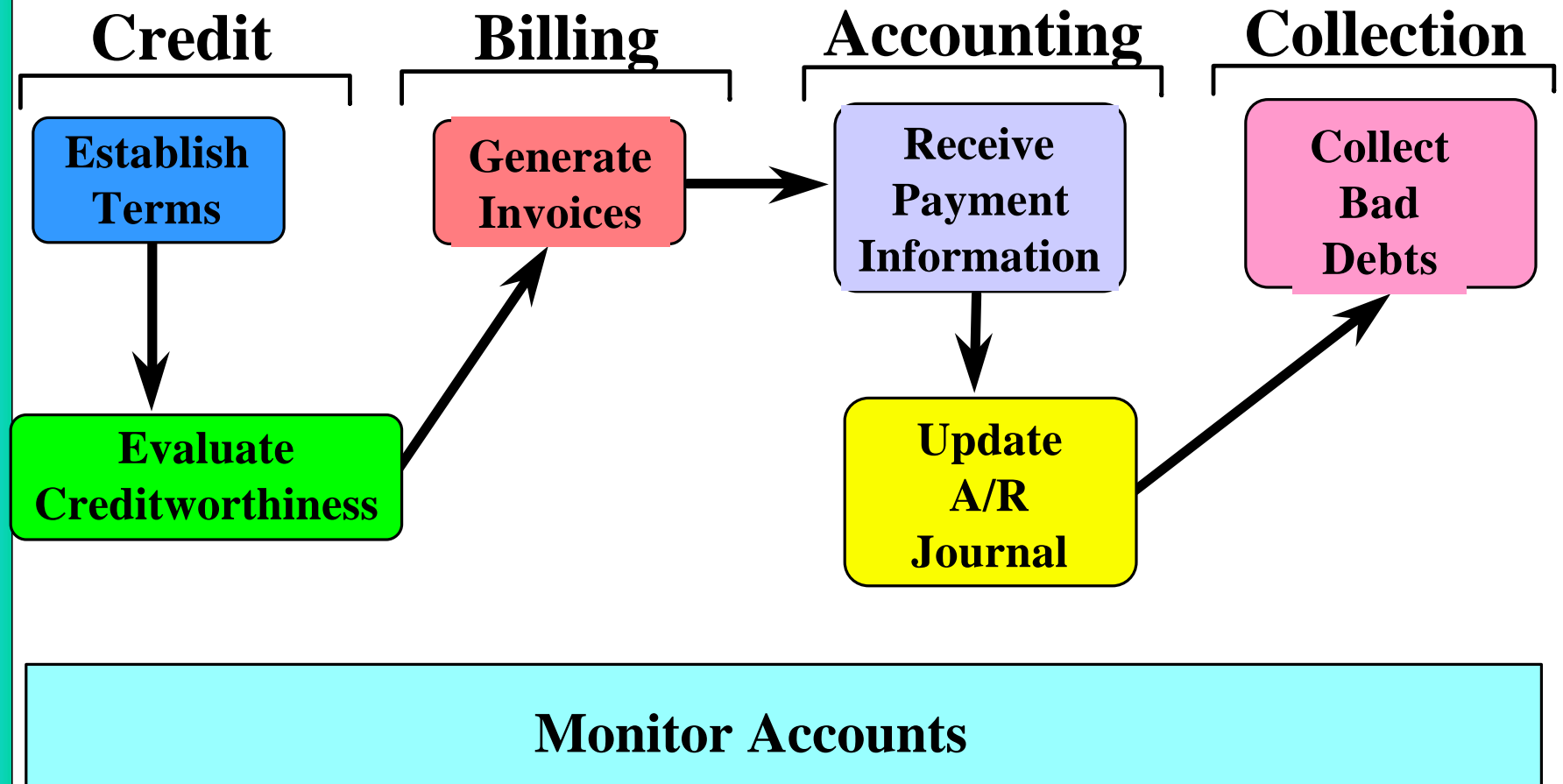
- The new IT environment is transforming the speed at which information on treasury can be provided (especially for liquidity and risk information).
- Decision-making is based on shortened timescales.
- The success of treasury in adding value to the business is becoming much more transparent as a consequence of the above.

Effective Treasury Infrastructure

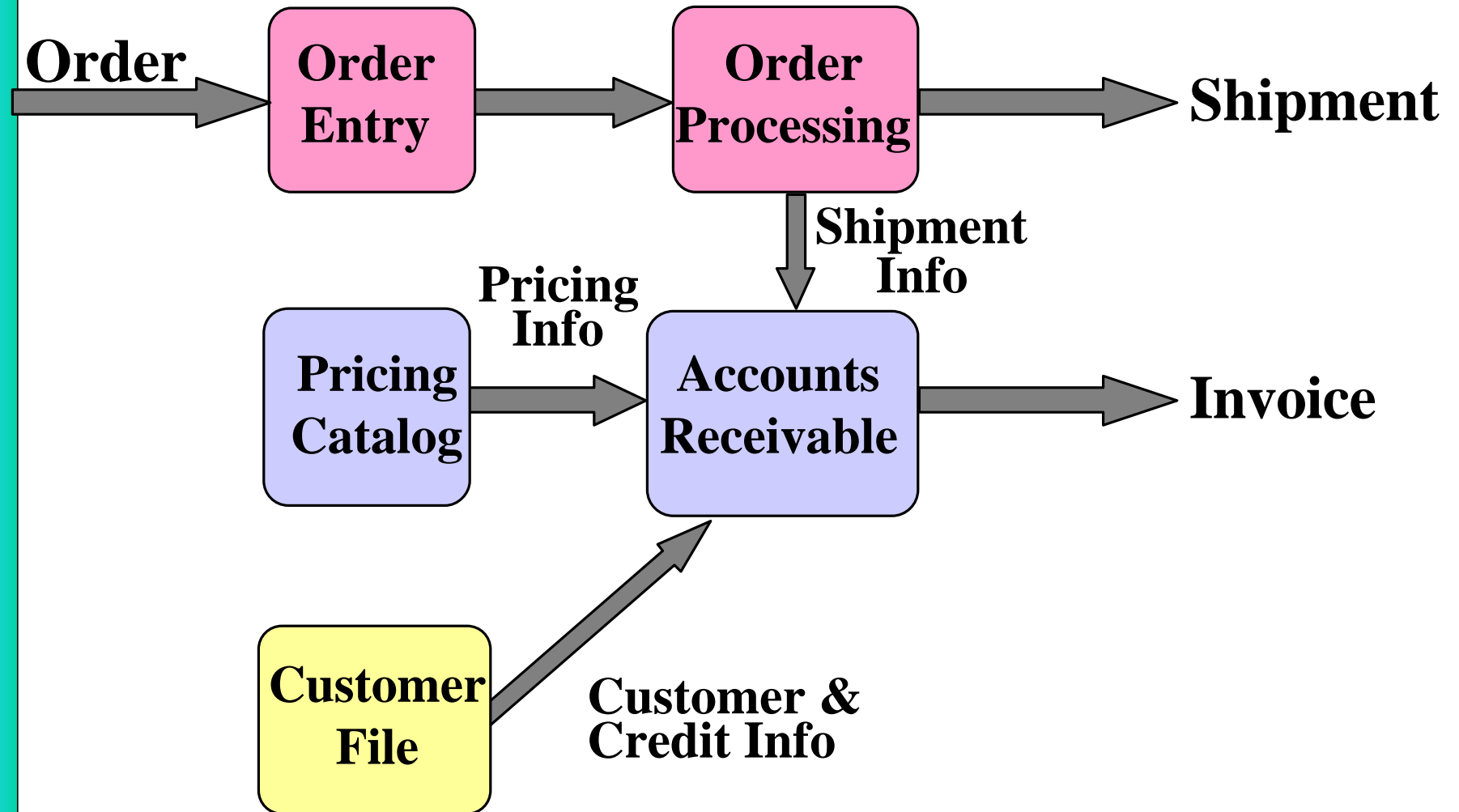


- Accounts Receivable
- Collection and Concentration Systems
- Accounts Payable
- Payments System
- Supply Chain Management
- Integrating Corporate Functions

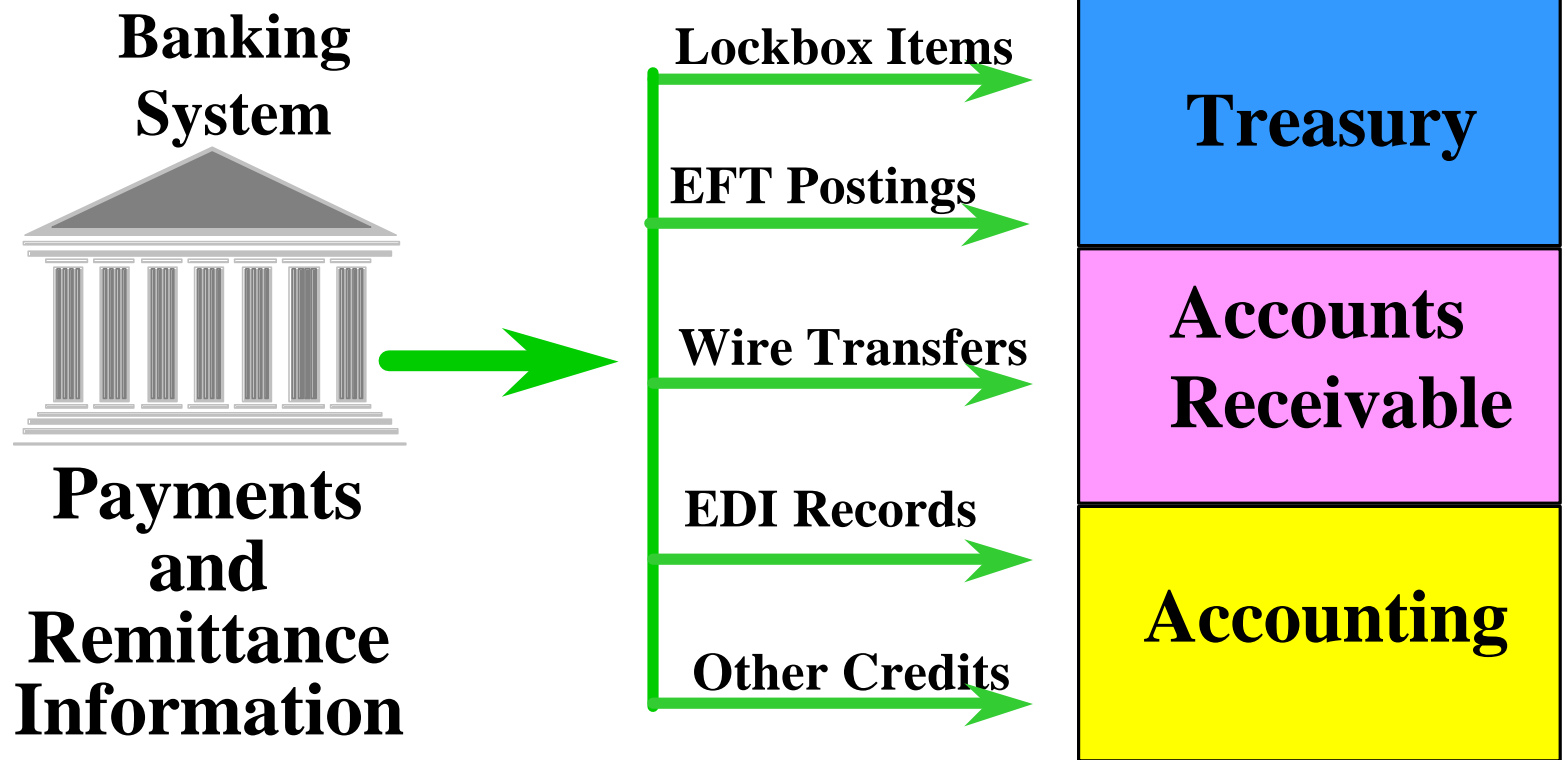
A/R Process Flow Chart



Generating Invoices

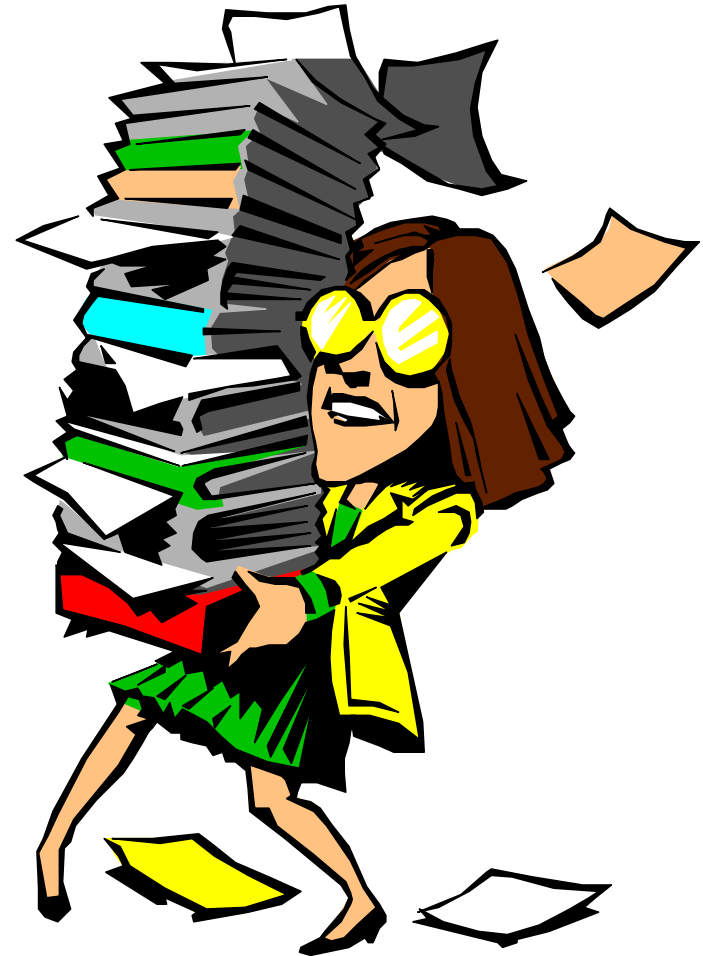


Receiving Payment Info



Update A/R Journal

- Match to Payment Notification
- Match to Remittance Detail
- Close Receivable





Objectives of a Collections System

- **Mobilize Funds**
 - Move funds collected from a customer into the bank as quickly and cost effectively as possible
- **Access Information**
 - Provide accurate and timely info on cash flows, balances and availability
- **Update Accounts Receivable**
 - Prompt & accurate update of records
- **Support Audit Trails**

Objectives of a Cash Concentration System

- Simplify Cash Management
- Improve Control
- Pool Funds
- Minimize Excess Balances
- Reduce Transfer Expenses



Objectives of A/P Management

- Establish Controls
- Prevent Fraud
- Maintain Payee Relationships
- Minimize A/P Costs



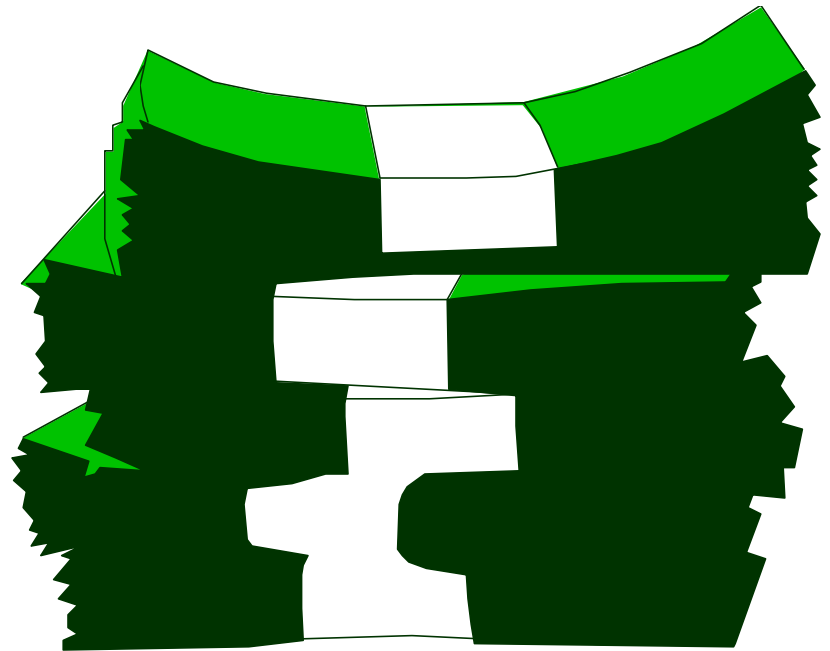
Key A/P Processes

- **Process Incoming Invoice**
- **Match Incoming Invoice to Purchase Order**
- **Obtain Approval**
- **Update Cost Accounting**
- **Generate Voucher**
- **Generate Payment**
- **Resolve Disputes and Errors**
- **Reconciliation (issue file)**



Accounts Payable Issues

- Systems
- Security
- Reporting
- Special Payments
- Tax Issues
- Maintaining Vendor Database



Disbursement Products and Methods



- Zero Balance Account (ZBA)
- Imprest Account
- Electronic Disbursement Methods
- Positive Pay
- Procurement Cards



Supply Chain Management

- A modern IT challenge that cuts across business relationships, application infrastructures, and corporate cultures
- Transforms the way companies deal with both suppliers and customers
- Having the right product in the right place, at the right price, at the right time, and in the right condition



Centralized/Decentralized Treasury Operations

- **Decentralized Treasury**
 - Each sub manages own treasury ops
- **Central Responsibility**
 - Group treasury sets guidelines and instructs local staff to carry out tasks
- **In-House Bank**
 - Group treasury is the primary source of all banking services
- **Full Centralization**
 - All decisions and most actions taken centrally



What's Happening in Electronic Banking Systems?

- Changing Nature of Treasury
 - Increasing globalization/centralization
 - Increasing information requirements
- Year 2000
 - Replacement of legacy systems
- Technology
 - Better, faster, cheaper
- Shift from EDI to E-Commerce
- Expanded Use of Internet

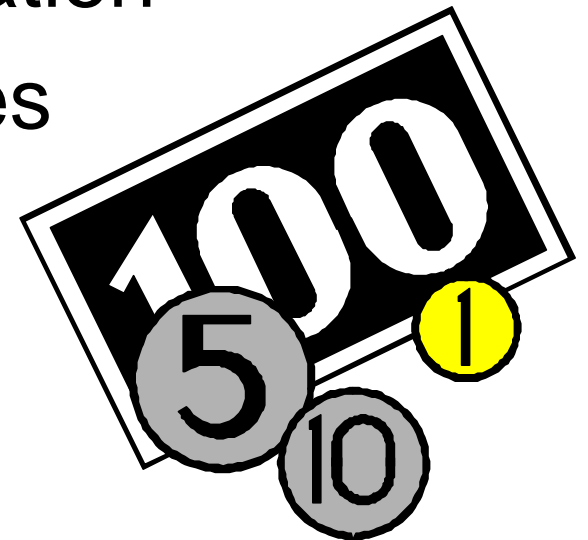
Types of Electronic Banking Systems

- Electronic Payment Services
- Electronic Collection Services
- Electronic Information Services



Electronic Payment Services

- Single Gateways and Multiple Formats
- Consolidated Payments
- Complete Payables Outsourcing
- Real-time FX Rate Information
- Electronic Broker Interfaces
- Purchasing Cards



Electronic Collection Services

- Consolidated Receivables
- CyberCash
- Electronic Bill Presentment
- Global Collection Services



Electronic Bill Presentment

- Biller Direct Model
- Consolidator Model
 - Thick Model
 - Thin Model
- Invited Pull Model





Biller Direct Model

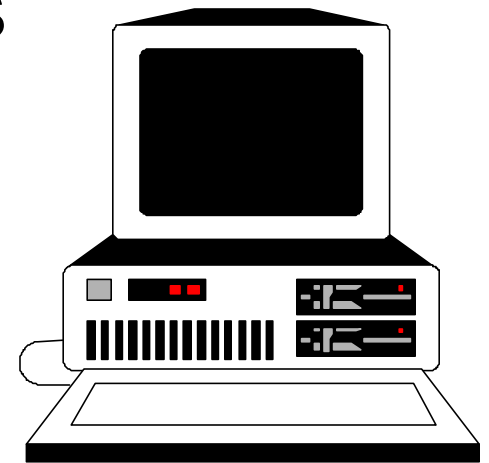
- Consumer enrolls to receive and pay bills through a biller's web site
- Consumer returns to site to receive detailed bill
- Consumer authorizes bill payment (hit pay button on bill)
- Biller sends payment transaction to bill-payment provider and through banking system
- Biller updates A/R system to reflect remittance

Consolidator Model

- Consumer enrolls with single consolidator to receive and pay bills from multiple billers
- Consolidator forwards sign-up information to each of the designated billers
- Billers forward bill information to consolidator
 - Thin: Only summary information
 - Thick: Detailed information
- Consumer logs onto to consolidator's site to view, select, and pay bills
- Consolidator executes payment processing and provides biller with info for A/R posting

Electronic Information Services

- Internet Reporting and “Push”
- Foreign Exchange
- Imaging
- Linkage to Business Systems
 - Treasury Workstations
 - ERP Systems
 - Use of Internet
 - Use of Extranets and VPNs



Web-EDI Research Results

- From survey of EDI and Web/Internet users in Fall 1999 by Faulkner and Gray – Chicago (formerly EDI Group Research)
- EDI survey
 - 1,200 EDI respondents
- Web/Internet survey
 - 1,700 respondents
(merged sample of Web/Internet and EDI)

EDI Research Conclusions

- Web-EDI has had a major impact on the overall EDI market, primarily affecting direct-EDI communications
- The typical Web-EDI Company
 - Older EDI Hub Co
 - High volume of monthly EDI transactions (2.5 X the average VAN user)
 - Lots of trading partners (685 vs. 435)



Web/Internet Research Conclusions

- A competitive, transaction-based Web site is rapidly becoming a business necessity.
 - 2/3 of survey respondents had a home page on the Web
 - Half of those who had Web sites were doing web commerce (buying from suppliers or selling to customers)



Web/Internet Research Conclusions

- Web-Commerce is a key factor in companies' strategic plans
 - Expenditures for web development has senior management support
 - Driven by desire for competitive advantage and error reductions
 - Improving customer service and reducing costs are also key considerations



Web/Internet Research Conclusions

- Companies are spending “big bucks” on their Web sites
 - 80% report Web site expenditures as part of their e-business budget
 - Avg company spent \$32,000 and 8 weeks to develop their home page
 - Annual host expense = \$7,000
 - Annual maint/update = \$10,000



Web/Internet Research Conclusions

- Most Web-Commerce is business-to-business (on a \$ volume basis)
 - B2B Sales = 60%
 - Suppliers = 17%
 - B2C Sales = 23%
- Business-to-business transactions
 - 7% of total B2B sales via web site
 - Avg B2B transaction = \$3,100



Web/Internet Research Conclusions

- **Driving Forces**
 - Sense of Urgency (“everybody is doing it”)
 - Upper management decision
 - Customer trading partner requirement
- **Major Challenges**
 - Application integration
(especially among large companies)
 - Identifying customer expectations

Workshop Summary

- Questions?
- Discussion?

For More Information:

D.J. Masson, The Resource Alliance

8084 N. Davis Hwy, Suite #120

Pensacola, FL 32514

Ph: 850-995-1247 Fax: 850-995-1257

E-Mail: djmasson@aol.com

