Web Applications
for
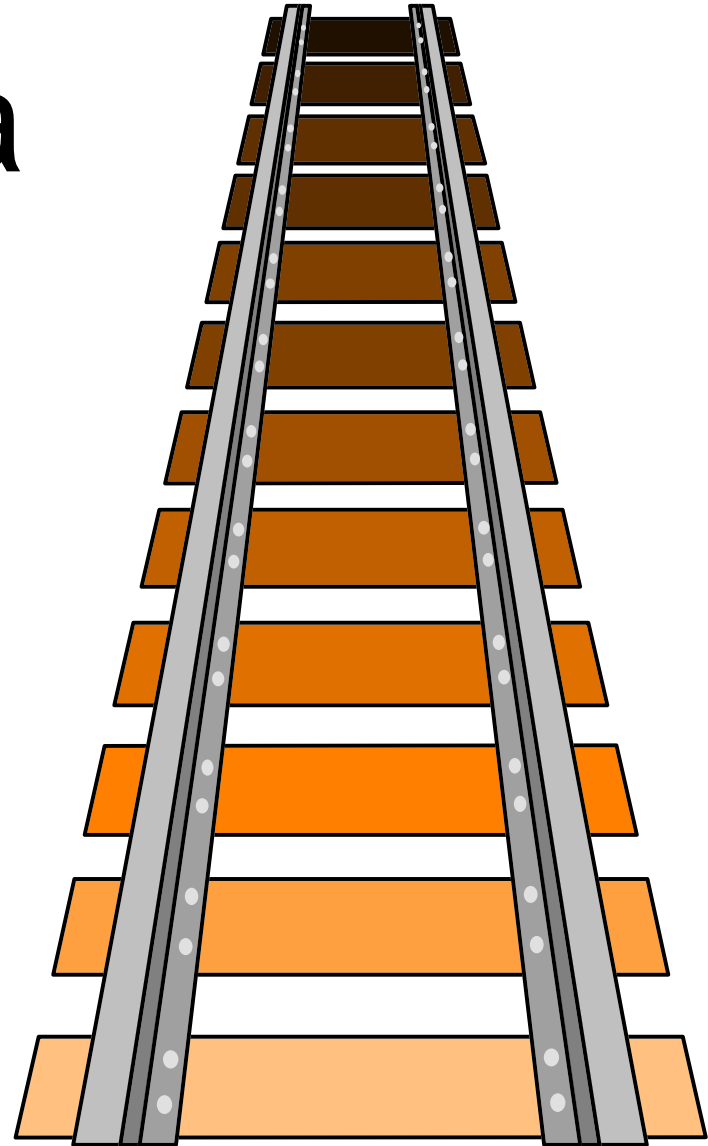## Supply Chain Management

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Agenda

◆Overview

◆Electronic Commerce

Overview

Overview

◆ Applying information services and technology expertise for business and government worldwide.

◆ To transform business and government by creatively helping them change the way they use information to meet expectations

◆

Strategy

- Client-driven.
- Services-led.
- Technology-based.

Business Problem - Integrated Electronic Commerce for Supply Chain Management

- Defining electronic commerce
- Planning Requirement for Supply Chain Management
- Integration with Transactional Systems

Electronic Commerce
Electronic Commerce Provides <u>Driver</u> for Supply Chain Management

- Provides the information basis for Distribution and Production Planning.
- Enables inventory optimization, reduced cycle times: <u>reduced costs.</u>
- Provides a competitive advantage in a changing marketplace.
- <u>From this knowledge comes power, position and market share.</u>

Supply-Chain Management

- Is the newest and most effective way to gain a competitive edge in today's marketplace.
- The functions inherent to supply-chain management are nothing new.
- Control the planning, sourcing, making and delivering of goods and services is as old as business itself.

Supply Chain Management
New Focus on Improving Supply-Chain Management?

- Not so long ago main concern -- and ultimately their competitive advantage -- was based primarily on producing a high-quality product at the lowest possible cost.
- The market was supply-driven.

An Emerging Management Trend.

- With improved supply-chain management, a company can increase its sales and revenue

- Inventory and become more flexible.

The Customer is King

- Companies need to manage effectively the efficiency of activities to design.
- Companies need to manufacture, distribute, service.
- Companies need to recycle their products or services to their customers.

Definition

- To deal with the management of materials, information and financial flows in a network consisting of suppliers, manufacturers, distributors, and customers.

- To coordination and integration of these flows within and across companies are critical in effective supply chain management.

Definition
Architecture - Coordination

◆ Information, material and financial flows are coordinated effectively in a supply chain.

◆ Material flows involve both physical product flows from suppliers to customers through the chain, as well as the reverse flows via product returns, servicing, recycling and disposal.

Architecture Focus for Supply Chain

- Information flows involve order transmission and delivery status.

- Financial flows involve credit terms, payment schedules, and consignment and title ownership arrangements.

Architectural Flows for Supply Chain

- These flows cut across multiple organizations within a company as well as across companies and sometimes industries.

- Flow of marketplace is changing from pushing into the market to being "pulled" by the market demand.

Islands of Information

Manufacturing

Distribution

Accounting

Trends

- Trends of vertical disintegration, international procurements......
- New information technologies and increasing pressure from customers on responsiveness and reliability.
- The Globalization of operations and markets has made supply chain management from a challenge to an opportunity.
- Best Practices: we can now viewed supply chain management as the core of their business strategy.

Supply Chain Evolution

- Through the 80s and early 90s companies focused aggressively on areas like quality and manufacturing throughput.

- Buyers purchased products in large lots and assumed the responsibility for transporting them and warehousing them until they were needed.

More Recently the Market Has Become Demand-Driven.

- Buyers now want "just-in-time" delivery of high quality products
- That are more diverse and often custom made.

New Sets of Demands

- Responding to these new sets of demands has landed supply-chain management
- Starting a chain reaction that reverberates through the entire supply chain.

Many companies that have recently begun to re-evaluate their supply chain process as part of their business process reengineering efforts.

- Many users experimented with it in some of its business units and has seen "major reductions" in costs. (WalMart)

Flexibility

- Flexibility is key to successful manufacturing in today's market.
- Companies must be able to meet the continuously changing demands of their customers in order to survive.
- Improved supply-chain management is emerging as the fastest, best way to do that.

Focus for Supply Chain

- Focus within many companies has shifted away from individual business functions and toward business processes that go across many functions.

- New cross-functional perspective is what many experts believe will help improve supply-chain management and gain competitive advantage.

Movement Away - Supply Chain

- You now have to look outside of your own four walls.
- You have to look at your suppliers and at how your supplies come to you.
- You have to look at your customers and at how your customers come to you.

The Quest to Better Manage the Supply Chain Has been prompted

- A host of new software solutions aimed at monitoring and solving supply chain issues from the planning stage through the delivery.

- Several companies are offering software packages that link directly with existing enterprise resource planning (ERP) and MES systems to offer an end-to-end, cross-functional management solution.

FOCUS - Supply Chain

♦ **The new focus on supply chain management is really a function of the packaging of the idea.**

♦ **The ideas are being repackaged more comprehensively and software solutions are being developed.**

Supply Chain Management

- It's all about cost, flexibility, speed and quality

- It's all based on the customer and the need to be customer focused, customer driven and responsive.

- It's the on-demand mentality of the customer that says my business-needs change, and you need to respond to us."

Supply Chain Management
and
Electronic Commerce

Electronic Commerce Is

- The process of being proactive.

- The process of assembling disparate data.

- The process of transforming information to a consistent state for business decision making.

- The process of distributing information to the people who need it and of empowering users by providing access to planning analysis information in the format they require.

Requirements: Electronic Commerce

- It should be business oriented.

- It should be integrated.

- It should be time orientated.

- It should be nonvolatile.

Commerce on the Net

- The Internet is becoming a vehicle for deploying many client based business transactions

- Enterprise electronic commerce is simply more than paying for goods with a virtual credit card

Supply Chain Electronic Commerce

- It enables lower costs through increased competition as business enterprises compete in the marketplace with no physical boundaries and reduces costs to suppliers by providing on-line , publicly accessible databases.
- Clients can enter markets that were previously unavailable.
- Electronic commerce provides the fastest interaction in today's dynamic environment for clients to drive up their business process.

Get ready, there's an electronic market coming to a screen near you.

Examples

- Browsing an electronic catalog, the customer clicks on items to purchase. A computer sends the order directly to the merchant's machine.
- The merchant's computer checks the customer's credit and determines that the goods wanted are indeed available.
- The warehouse and shipping departments are notified and goods readied for delivery.
- The accounting department bills the customer electronically.

EC BEST Practices for Supply Chain

- Support the creation of a pull oriented demand driven business vs. traditional supply driven Push orientation.

- Support business reality where the business benefits are both internal and external with the Internet as a dynamic web environment.

- Reduce costs and increase access to the on-line applications and databases.

Applications

- Electronic Commerce infrastructure and business transaction interface
- WEB/Internet design and development (directories, electronic catalogs and integration).
- Interfaces to existing business systems(Access to order/entry and purchasing facilities).
- Intranet/Groupware replacement
- Internet/Intranet-based E-Mail
- Internet-based EDI
- Network interface

Applications

- Firewall design & installation
- Electronic commerce with pull-oriented & demand driven interface.
- Electronic storefronts
- Electronic catalogs
- Security facilitation (authentication and encryption) and secure transition integration with payment switch option.
- Payment switch methodology
- Integrated Operations Environment
- Enterprise Management

Scope for Requirements

- Goal: enterprise wide electronic commerce (can't swallow the entire project in one step).

- Tactical success : provide early benefit to the business (measured ROI).

- Strategy success: expand the electronic commerce as sound business application for supply chain management.

Steps for Developing electronic commerce

- Educate the end user department.
- Use IT personnel.
- Define business issues and related information requirements--
  - Business model
  - Business processes

Base for Electronic Commerce Supply Chain

- Core competency focused on the enterprise
  - As defined by the market
- Web-enabled applications
  - Object oriented with frames, Smalltalk, C++, Java Script and VRML
- Distributed computing
  - Multiple clients talking to multiple servers
  - Load balancing
  - High volume server
- Components

- **Parts for Java**
- **Java ORB access to DST**
- **OLE, database connectivity**

Electronic Commerce Implementation

- **Frenzy surrounding Internet, intranets, the Web**
  - **Client/server has taken a back seat**
  - **Media hype**
  - **New players**
- **New & traditional OO languages and tools**
  - **C++, Smalltalk, Java, Java Script, J++**
  - **Unisys Object Database**
- **New enterprise architectures**
  - **Growing importance of middleware**

- **New generation of solutions based on:**
  - **Objects**
  - **Components**
  - **Distributed computing**

Electronic Commerce Basic Architecture
Basic Architecture Construction

- Driver 1: Objects
- Driver 2: Components
- Driver 3: Distributed Computing
- Driver 4: The Web

Enterprise EC Architecture

Enterprise EC Architecture

An application development and delivery system for business software that runs in a client/server environment, and on an Intranet or over the Internet

- Server-centric focus on application deployment
- Distributed applications as the core of delivery
- Support for multiple client tools

Architecture

- Frenzy surrounding Internet, intranets, the Web
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- New enterprise architectures
  - Growing importance of middleware
- New generation of solutions based on:
  - Objects
  - Components

- **Distributed computing**
- **Web-enabled applications**

Driver 1: Objects

- Objects are important
- At least three languages in play
    - Smalltalk, Java, C++
- To help you respond quickly, we deliver:
    - VisualWorks
    - Visual Smalltalk Enterprise
    - Parts for Java
    - CORBA compliant ORB

Driver 2: Components

- The producer-assembler model works
- Frameworks provide leverage to "jump starting" projects

Driver 3: Distributed Computing

- It is critical to successful applications going forward
- Language independence
- Ability to scale
- Open, non-proprietary solutions

Driver 4: The Web

- It's everywhere. And it's:
  - Changing the face of business
  - Taking developers by storm
  - Critical to explosive growth
  - Required to keep pace...
- To help you respond quickly we deliver:
  - Server-centric delivery of applications

Client/Server/Web

◆ Definition:

◆ An application development and delivery system for business software that runs in a client/server environment, and on an intranet or over the Internet

Client/Server/Web

♦ Consists of:
- An integrated suite of development tools
- Database and legacy connectivity
- Visual application construction
- GUI development system
- Web and GUI delivery system
- Distribution of objects
- Support for multiple "languages"

Development Tools

- There are many tool choices available
  - Smalltalk

  - Java, C++, Scripts, Pearl

- A CORBA-centric server that connects with many clients

Market Driven Strategy

- Server-centric focus on application deployment
- Distributed applications as the core of delivery
- Support for multiple client tools

Enterprise Delivery Today

EC Tools

- Architecture design Toolset
- Development & deployment Toolset
- Programming Tools (Object orientation: C++, Java, SmallTalk)
- Scripting(HTML, CGI, Pearl, UNIX scripting)
- Integration (Middleware, Browsers, Server Engine, Sockets)

- Database (UNISYS OSOMOS, Oracle)
- Network integration
  - Audit and analysis (Checklist, Traffic analysis, modeling)
  - Capability and bandwidth (Checklist, Traffic analysis, modeling)
  - Firewall construction (Checkmate)
  - Router & switch installation

Developing Electronic Commerce Applications

Steps for Developing Electronic Commerce

- Define initial architecture--
  - Develop logical architectures
  - Develop physical architecture model
  - Determine appropriate sources for needed information
  - Validate accuracy and consistency of information (as it now exists)
- Assemble the relevant identified data--
  - Legacy and enterprise servers
  - Tools

Electronic Commerce Deployment Steps

- Transform information to a user-focused view.
- Distribute information where it is needed in the organization.
- Provide users access to data for intelligent queries and business decision making.
- Test, refine and expand the initial electronic commerce application.

Electronic Commerce Phases

- Phase 1: Education
- Phase 2: Define Business Issues
- Phase 3: Develop Models
- Phase 4: Assemble Relevant Information
- Phase 5: Transform the Source Information
- Phase 6: Provide Users with Information Access
- Phase 7: Test, Refine and Expand the Electronic Commerce Process

Phase 1: Define Education Needs

- Explain electronic commerce concept and terms to different business groups.
- Emphasize the end users focus of electronic commerce.
- Identify electronic commerce opportunities.
- Assess commitment level of different departments.

Phase 2: Define Business Issues

- Identify and gain support from relevant departments/business groups.
- Identify business issues and related information requirements.
- Develop and prioritize high-level business questions.

Phase 2: Define Business Issues

- **Finish initial business tasks--**
  - **Estimate costs**
  - **Estimate benefits to the business**
  - **Establish ROI**
  - **Make the business case**

Phase 3: Develop Models

- Develop (or expand) an existing logical planning model and determine data sources.

- Decide important information issues.

- Develop solid architectural foundations.

Phase 4: Assemble Relevant Information

- Leverage existing systems and information stores whenever possible.
- Information currency is an important factor.
- Access many "heterogeneous" sources of relational and non-relational data.
- Information sources may change over time.

Phase 5: Transform the Source Information into Planning Information

- Use physical information models.
- Define transformation mappings.
- Validate accuracy of source and transformed data.
- Determine information reporting.
- Determine most cost-effective distribution model.

Phase 6: Provide Users with Efficient Information Access

- Develop client applications.

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- Plan for unpredictable requirements.

- Expect rapid growth in user population.

- Provide users with the best of support tailored to the client implementation.

Phase 7: Test, Refine and Expand the electronic commerce

- Expand the process.
- Learn from mistakes.
- Disseminate the knowledge.
- Non-traditional data.

Conclusion

- Coupling IT and Business Needs--
  - Use enabling technology as important end user component
  - Business issues, critically important, will be more difficult to resolve
- Plan to ensure that you don't outgrow the Architecture--
  - Allow for growth
  - Allow for management added skills & knowledge base
- Indirect costs--

- Understanding the business needs
- Understanding the business data

Avoiding Risks

- Risk 1: Wasted project
- Risk 2: A tactical fix
- Risk 3: Delay in addressing real business issues