



EDI: CONCEPTS AND APPLICATIONS

The purpose of this publication is to make available to industry the results of research conducted by the Construction Industry Institute (CII). The publication does not necessarily represent the views of CII member companies, but is offered as a contribution to the industry.

CII was founded in 1983 to improve the cost effectiveness of the nation's largest industry. The members, who represent a broad cross-section of owners and contractors, believe that many of the problems that limit cost effectiveness are common ones, and that real improvements can be best accomplished in a cooperative environment with the benefits being shared by the construction industry at large.

CII uses the acronym TOPICS to describe the research effort. TOPICS signifies the six research thrust areas: Technology, Organization, People, Information, Controls, and Sigma (meaning others). The current task forces for each area are listed below.

Technology

- Advanced Technological Systems
- Computer Integrated Design & Construction
- Design for Safety
- Environmental Remediation Technology
- Technology Strategy
- Technology Survey

Organization

- Partnering II
- Project Change Management
- Pre-Project Planning
- Project Organization II
- Project Team Building

People

- ADA Impacts
- Continuing Supervisory Education
- Drug-Free Workplace
- Multi-Skilling
- Zero Accidents

Information

- 3D CAD Link
- International Construction
- International Standards
- Owner Engineering Organization
- Project Team Communications

Controls

- Change Order Impacts
- Contracting, Phase II
- Dispute Prevention and Resolution
- International Standards
- Predictive Tools
- Quality Performance Measurement
- Schedule Reduction
- Total Quality Management

Sigma

- Barriers to Implementation
- Insurance
- Piping Function
- Retrofit Projects
- U.S. Navy Demonstration Project
- Utility Pilot Projects
- Workers Compensation

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EDI: Concepts and Applications

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Electronic Data Management Task Force**

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Executive Summary

The construction industry has a need to electronically transmit standard documents between designers, owners, contractors, and material suppliers. These documents include purchase orders, requests for quotations, invoices, shipping notifications, material lists, and payment transfers. Electronic data interchange (EDI) is a technology that permits the transfer of these documents, and others, from one computer application to another. EDI differs from electronic mail in that the documents are transmitted in an industry standard format, checked for errors, and imported directly into the receiving computer application without rekeying.

EDI technology is generally credited with reducing paperwork and data transmission costs, improving data accuracy, reducing material inventories, and enhancing the planning of activities that depend on accurate, timely material shipping notifications. EDI can, therefore, play a significant role in achieving U.S. construction industry goals related to reducing project costs and improving project schedules.

National and international data exchange standards have been developed to facilitate EDI document exchange in other industries. Although these standards can be utilized by the construction industry, the industry itself must play a more active role in data standards development and approval. The CII Electronic Data Management Task Force has been instrumental in CII's establishment of the Construction Industry Action Group (CIAG). The purpose of CIAG is to promote EDI in the construction industry and to represent the industry in various national and international data standards organizations.

Introduction

Approximately 6,000 companies worldwide are currently saving millions of dollars through the use of electronic data interchange. Some are implementing aggressive EDI programs involving business partners, suppliers, and distributors. A few are conducting all of their business transactions via EDI. Industry consultants consider EDI one of the key inter-enterprise communications technologies essential for a business to remain competitive. While the early implementors of EDI were perceived as gaining a competitive advantage, EDI is now considered to be a standard business practice in many industries. It is most assuredly a necessary part of the just in time (JIT) system used in the automotive industry.

This same technology could be used in the construction industry to exchange standard business documents between designers, owners, contractors, and material suppliers. These documents include purchase orders, requests for quotations, invoices, shipping notifications, and materials lists.

Recently completed research performed by the CII Electronic Data Management Task Force indicates implementation of EDI technology in the construction industry should be accelerated. This implementation effort should produce significant benefits in information processing efficiency for our industry.

This publication provides an overview of EDI concepts and terminology and reports on the costs and benefits associated with the implementation efforts of two CII member companies. Recommendations for pilot project implementation and industry actions are also presented.

Two companion reports have been prepared by the task force. CII Publication 20-2, *An Introduction to Integrated Database Systems*, provides examples of approaches used in the construction industry. CII Publication 20-3, *Achieving an Integrated Data Environment: A Strategic Initiative*, focuses on implementation strategies, management commitment, and organizational changes needed to improve electronic data management within the construction industry, including the use of EDI. Readers are encouraged to consult these additional CII publications when considering implementation of EDI.