

# CALS AND EDI: TWIN GATEWAYS TO AGILE MANUFACTURING AND THE VIRTUAL ENTERPRISE

## EDI/CALS Strategic Focus and Market Opportunity

DO YOU HAVE ANY OF THESE QUESTIONS?

- How does CALS strategy work within organizations?
- What are major implications for acquisition, design, manufacturing, administration?
- How will EDI systems impact commercial endeavors?
- What EDI technology and corporate infrastructure implications exist?
- What is the impact and import of CALS?
- How is EDI essential to those participating in the electronic commerce arena?

## IF YOU HAVE ANY OF THESE QUESTIONS

What strategies hold promise  
Where are the opportunities  
How will markets unfold  
Why will sets of software evolve  
Which service configurations position providers with competitive advantage

## You NEED this study

**EDI represents an industry segment positioned to provide effective generation, exchange, management, and use of digital data. The EDI industry supports product life cycles and electronic exchange of currency. Business process changes and advanced technology applications are creating the need for new EDI and CALS based services. The integration of computing systems has resulted in the evolution of the virtual corporation that supports direct communication with suppliers, sales personnel, distributors, dealers, strategic allies, and users. Enterprise integration is supported by CALS standardized business communication and functions within the context of EDI information technology.**

### Key Findings of Study

- EDI based products will be used to establish integrated data environments

### Key Market Directions and Opportunities

- EDI supports inter-industry collaboration
- CALS integrated data base design supports product design, development, manufacturing, distribution, and servicing

- EDI lowers product costs and shortens process cycle times
- CALS supports the virtual corporation
- CALS is accepted as the leading edge technology for global enterprise integration

- Electronic commerce depends on generating, modifying, and saving data across operating system and different computer hardware platforms
- Electronic commerce depends on generating,

- modifying, and saving data through the life cycle of a manufactured product or service offering
- EDI supports strategic alliances

## REPORT SUMMARY

Understanding the opportunity presented by EDI and CALS is essential to not only those involved in procurement, in commercial productivity improvement. Standards and techniques are emerging. They set the stage for widespread global implementation of electronic data interchange (EDI) and usher in the era of electronic commerce which has been long anticipated.

EDI implantation requires that organizations review and understand their infrastructure, learn to manage and use digital data; and undertake whatever business process improvement is required.

The study reviews and summarizes the importance of standards such as SGML

(Standard Generalized Markup Language) and the Standard for the Exchange of Product model data (STEP), and the Standards for CALS. The impact of concurrent engineering (CE) and Business Process Reengineering (BPR) are reviewed. The impact of the movement to EDI as it relates to electronic commerce on the Internet is discussed. In addition, examples of implementation of CALS technologies and approaches are described.

The study illustrates how EDI can be implemented to deliver new products to the market by reducing the development cycle time. The importance of using multi-disciplinary design teams, the need to resolve budget issues, and the

application of automated tools are described.

Management requires a clear understanding of the state of enterprise integration tools and technologies supporting CALS, business practices, and standards for virtual enterprises to be successful in the era of electronic commerce.

CALS security is also an important issue, and is addressed in a brief description of the need for security risk assessment and the key technologies available to provide security in the CALS environment. Among techniques discussed are encryption, firewalls, trusted databases and operating systems.

## COMPANY PROFILES

Companies supporting the implementation of EDI and the virtual corporation participate in a variety of industries. Profiles of selected market participants in this board new opportunity are provided

**American Software**  
**Apple**  
**AT&T**  
**Autodesk**  
**Bell South Business Systems**  
**CACI International**  
**CDS Inc.**  
**CGI Information**  
**Covia Technology**

**Delphi Packard Electric Systems**  
**Digital Equipment**  
**Dun & Bradstreet**  
**General Motors**  
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**Hughes Aircraft Company**  
**IBM**  
**Knowledge Based Systems, Inc.**  
**Litton Data Systems**  
**Lockheed Martin Energy Systems**  
**Loral Space & Range/ Defense**  
**Marcam**  
**McDonnell Douglas**

McDonnell Douglas Helicopter  
Company  
Microsoft  
Novell  
Oracle  
SAP AG  
Siemens Nixdorf  
Sirius Systems Corporation

St Paul Software  
Step Tools, Inc.  
Sterling Software  
STI Manufacturing Group  
Supply Tech, Inc.  
TSI International  
XChange Software

## REPORT OUTLINE

MARKET PROFILE	SECURITY/ENCRYPTIO N/ACCESS CONTROL	CALS PROTOCOLS/ CALS STANDARDS
MARKET SHIFTS	INTERNET	MARKET FORECASTS
IMPLEMENTATION OF VIRTUAL CORPORATION	INVENTORY CONTROL	ELECTRONIC COMMERCE/EDI
CALS INDUSTRY STRUCTURE	SALES MANAGEMENT	MESSAGING AND QUEUEING
MARKET STRUCTURE	CALS MILITARY	SECURITY/ENCRYPTIO N/ACCESS CONTROL
BUSINESS PROCESS	OPERATING SYSTEM PLATFORMS	INTERNET
REENGINEERING	IMPACT OF TECHNOLOGY	INVENTORY CONTROL
EXISTING MARKET	SOFTWARE CORE OF PRODUCTS	SALES MANAGEMENT
CONVERSION	WIRELESS	CALS MILITARY
POSITIONING IN STRONG MARKETS	DIGITAL	MARKET STRATEGIES
PRODUCT AND TECHNOLOGY DESCRIPTIONS	COMPRESSION	STRATEGIC OPTIONS
ELECTRONIC COMMERCE/EDI	CONVERGENCE OF COMPUTERS/TV	STRATEGIC POSITIONING
MESSAGING AND QUEUEING	FIBER OPTIC	MARKETING/ ORGANIZATIONAL STRATEGY
	WORLD WIDE WEB	
	INTERNET	
	CD ROM DEVICES	

## LIST OF TABLES AND FIGURES

### 1994-2000 FORECASTS

ELECTRONIC COMMERCE/EDI  
MESSAGING AND QUEUEING  
SECURITY/ENCRYPTION/ACCESS  
CONTROL  
INTERNET  
INVENTORY CONTROL  
SALES MANAGEMENT  
CALS MILITARY

### REPORT METHODOLOGY

This is the tenth in a series of market forecasts of messaging, interactive video, and information services businesses. The project leaders have significant experience preparing industry studies. Forecasts are based on primary research and proprietary data bases. In-depth interviews are conducted with a broad range of key participants in the market.

**WINTERGREEN RESEARCH, INC.**

**ABOUT THE COMPANY**

WinterGreen Research, founded in 1985, provides strategic market assessments in telecommunications, communications equipment, health care and advanced computer technology. Industry reports focus on opportunities that will expand existing markets or develop major new markets. The reports assess new product and service positioning strategies; new and evolving technologies; and technological impacts on products, services, and markets. Market shares are estimated. Leading market participants are profiled, and their marketing strategies, acquisitions, and strategic alliances are discussed. The principals of WinterGreen Research have been involved in analysis and forecasting of international business opportunities in telecommunications and advanced computer technology markets for over 30 years.

**ABOUT THE PRINCIPALS**

**Ellen T. Curtiss**, President, co-founder of WinterGreen Research, conducts strategic and market assessments in technology-based industries. Previously she was a member of the staff of Arthur D. Little, Inc., for 23 years, most recently as Vice President of Arthur D. Little Decision Resources, specializing in strategic planning and market development services. She is summa cum laude graduate of Boston University. She was the first woman in her company to attend the Program for Management Development at Harvard Graduate School of Business Administration. She is a Chartered Financial Analyst.

**Susan Eustis**, Vice President, co-founder of WinterGreen Research, has done research in communications and computer markets and applications. She holds several patents in microcomputing and parallel processing. She is the author of recent studies of the Regional Bell Operating Companies' marketing strategies and of a study of telecommunications company positioning in the European market. Ms. Eustis is a graduate of Barnard College.

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