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INTERLINK  
AND  
THE NORTH  
TEXAS  
COMMISSION

# FUTURE TRENDS OF THE SUPPLY CHAIN MANAGEMENT AND LOGISTICS INDUSTRY



**Identified by North Texas Thought Leaders  
from the Supply Chain and Logistics Industry**

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# INTRODUCTION

Supply Chain Management and Logistics leaders express the need for qualified workers in this high demand industry. But there is a leak in the pipeline between the number of students who enter high school and college and the number who finish employment ready. This results in costly loss of the student's investments and the lack of skilled workers for employers.

Since 1987, North Central Texas InterLink has been the leader in labor market forecasting for the North Central Texas region about the types of Career and Technical Programs in secondary and post-secondary education, which can prepare students for the workforce.

The purpose of this report is relay the high demand opportunities in Supply Chain Management and the Logistics Industry. It is the fifth in a series of reports produced by InterLink to identify future trends and the next wave of technologies for inclusion in curriculum and development of future programs. Subsequent reports will be published identifying the future of other industries.

## **The Difference Between Logistics and Supply Chain Management:**

**Logistics** is known as the 'VALUE CHAIN' that begins and ends every Supply Chain. **Logistics Management** is that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverses flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirements. –

From Council of Supply Chain Management Professionals - CSCMP

**Supply Chain Management (SCM)** acknowledges all of traditional logistics and also includes activities such as marketing, new product development, finance, and customer service.” – From Essential of Supply Chain Management by Michael Hugos

Texas' location and diverse economy makes it a critical gateway to global business boasting 29 official ports of entry which facilitated nearly \$650 billion in international trade in 2015. Texas Trade supports an estimated 1.6 million Texas Jobs and adds \$224.3 billion to the economy.

The North Texas Commission Logistics Task Force brings together members of the supply chain which affects every part of our state, from our largest cities to rural counties to promote their benefits as important to a strong, diverse and growing regional economy.

The Dallas/Fort Worth Region is the primary truck, rail and air cargo hub in the southwestern United States with more than 600 motor carriers and 100 freight forwarders operating out of the area. According to the Texas Comptroller, in 2015, DFW ranked 11<sup>th</sup> in the nation and 40<sup>th</sup> in the world for air trade tonnage, handling more than 670,000 metric tons of freight.

The region is host to five ports of entry, three Class 1 railroads and, two intermodal logistics centers. Three

universities - The University of Texas at Arlington, University of North Texas, and Texas Christian University, are meeting an increasing demand in the area of logistics and supply chain undergraduate and Master's education.

Industry Thought Leaders from the Supply Chain Management and Logistics Industry were instrumental in the success of this endeavor. They help promote the dynamic industry to the global community and were partners in this initiative.

Thought Leaders want to highlight the following issues of importance:

- Student mastery of the soft skills mentioned in the report is imperative for the workforce they will enter.

- Educators should include methods of introducing the soft skills in their curricula because they are expected by all industries for employment.
- Security should be imbedded into each of the fourteen trends.
- Ethical behavior is required for this and all other industries.
- A new wave of digitization with artificial intelligence, autonomous vehicles, modular software, sensors and other innovations is changing supply chain management and will continue to evolve in the future.

## METHODOLOGY

The process used was advancing foresight methodologies, using multiple techniques to aggregate expert opinions into the discipline of forecasting. By utilizing multiple sources of data collection such as national, state, and regional forecast predictions, and InterLink's 29<sup>th</sup> Annual Regional Employment Survey providing a five year forecast, began the process by indicating high demand career opportunities in the Supply Chain Management and Logistics Industry such as pilots, truck drivers, and logistics support services.

The research was enhanced with a workshop with North Texas Supply Chain

Management and Logistics thought leaders from a diverse range of disciplines and professional backgrounds, engaging them in exercises to identify key drivers of change and how these will shape work skill requirements. They reviewed the results of their day through an online survey for additional thoughts and input. Finally, peer reviewers analyzed the results of the thought leader session to enrich and vet the research.

Through this structured and disciplined process, the Interlink task force was able to gather a comprehensive view of what industry leaders see as the future of the industry.



# THOUGHT LEADER PARTICIPANTS

*This report is possible with gratitude to the following workshop participants.*

## Thought Leaders

**Adel Chaveleh** – Crane Worldwide Logistics  
**Seth Clark** - UPS Import Brokerage  
**Landon Goins** - Goins Lumber Company  
**Tracy Goins** - Goins Lumber Company  
**Steven Kenneke** - UPS Red River District  
**Rob Lewin** - FlowServe  
**David Main** - Southeastern Freight Lines  
**M. Dave Malenfant** - Center for Supply Chain Innovation, TCU  
**David Meierotto** - Aviation Institute of Maintenance  
**Clayton Rath** - Samsung  
**Jade Rodysill** – Ernst & Young  
**Mark Wittte** - Dallas Fort Worth International Airport  
**Kathy Wilkins** – Alliance Operating Services

## Observer:

**Laura Collins** – George W. Bush Presidential Center

## Presenter on Drones:

**Alvin Brunner** - FAA

## Peer Reviewers:

**Brad Price** – ArcBest Logistics Co.  
**Bryan Severin** – SCL Cold Chain  
**Jay-Lynn Wallace** – Cagney Global Logistics

# 1. CUSTOMER SERVICE ~

*The process of ensuring customer satisfaction with a product or service. It often takes place while performing a transaction for the customer, such as making a sale or returning an item. It can take the form of an in-person interaction, a phone call, self-service systems, or by other means. Customer service is an extremely important part of maintaining ongoing client relationships, which are key to continuing revenue. For this reason, many companies have worked hard to increase their customer satisfaction levels. Although many people may work behind the scenes at a company, it is primarily the personnel that interact directly with customers that form customers' perceptions of the company as a whole.*

## **Skills and Knowledge for Customer Service Include:**

Analytics	Human Interaction
Anticipate Needs	Initiative
Attendance-showing up for work (a problem in our industry)	Language Skills
Basic Computer Skills (Microsoft Applications)	Multitasking
Collaboration	Problem Solving
Compassion	Professional Communications
Endurance	Prioritizing tasks
Ethics	Proper time management
Forward Thinking	Security
	Social Styles

***Logistics will continue to surge as an integral part of our daily lives as the 'Now Generation' continues to evolve.***

**Kathy Wilkins, Alliance Operating Services**

## 2. TECHNOLOGY DIGITIZATION ~

*Uses digital code to transmit signals and information between different devices. This can be done with things like television programs or human voices. The data is converted into strings of ones and zeros and moved quickly to the next machine, where it is converted back into media form. One of the most prolific uses of digital technology comes in the form of the popular cell phone market. Cellular phones utilize digital technology to transmit voices and other types of information; it also deals with the creation and practical use of other digital or computerized devices, methods, and other systems.*

### **Skills and Knowledge for Technology/Digitization Include:**

Augmented Reality/Virtual Reality

Project Management

Business Acumen

Quality Assurance

Cyber Security

Security

Data Analytics

Software Coding

Ethics

Software Engineering

Financial Acumen

System Integration

Optimization

Open-Ended Response

Process Focused

Radio Frequency Information Device (RFID )

Process Workers

Software Troubleshooting



### 3. REGULATION ~

*A rule of order having the force of law, prescribed by a superior or competent authority, relating to the actions of those under the authority's control. The rules issued by these authorities are designed to guide the activity of those regulated. Regulations also function to ensure uniform application of the law.*

#### **Skills and Knowledge for Regulation:**

Certifications: INCOTERMS; AEO,  
CTPAT; ISO Certifications

Compliance

Contract Law

Critical Reading

Critical Thinking

Cyber Security

Ethics

Export Administration Regulations  
(EAR)

Foreign Trade Zones

Global Awareness

Human Resources

Industry Specifics (FAA, TSA etc.)

International Law

International Traffic in Arms  
Regulations (ITAR)

Interpretation of information

Issue Spotting

Knowledge Application

Lawyers

Liability

Local, Federal, State Regulations

OSHA

Political Savvy

Product Liability

Research Capabilities

Risk Management

Safety

Trade Compliance

U. S. Department of Commerce  
Export Regulations

U.S. State Department Export  
Regulations

Workman's Compensation

Writing Skills

## 4. EDUCATION/CONTINUOUS IMPROVEMENT (CI) ~

*The general belief that improvement is not something that starts and stops, but it's something that requires an organizational or professional commitment to an ongoing process of learning, self-reflection, adaptation, and growth to improve products, services, or processes. These efforts can seek "incremental" improvement over time or "breakthrough" improvement all at once.*

### **Skills and Knowledge for Education/Continuous Improvement:**

Ability to Follow Processes	Global Logistics
Awareness of Other Industries - Best Practices	Globalization
Carbon imprint	Hazardous Material - Hazmat
Certifications including:	Industry Terminology
Certified Logistics Association - (CLA)	Ports Free Trade Agreements
Certified Logistics Technician - (CLT)	Quality Control including:
Forklift, etc.	Six Sigma, Certified
Critical Thinking	Quality Engineer - (CQE)
Cyber Security	Standardization
Ethics	Sustainability
EXIM Compliance	Terminology
FAA Terminology Changes	Transportation 101
Global Geography	Waterways

## 5. REAL ESTATE ~

*Real estate is the modern term for land and anything that is permanently affixed to it. Fixtures include buildings, fences, and things attached to buildings, such as plumbing, heating, and light fixtures. The sale and lease of real estate in the United States are major economic activities and are regulated by state and federal laws. The two major types of real estate are commercial and residential real estate. Commercial real estate involves the sale and lease of property for business purposes. Residential real estate involves the sale and rental of land and houses to individuals and families for daily living.*

### **Skills and Knowledge for Real Estate:**

Architecture	Green Energy Buildings
Budgeting	Incentives
Building Zoning Codes	Infrastructure
Civil Engineering	Inspections
Construction	Insurance Compliance
Construction Management	LEED Certification
Cost Estimating	Life Safety Requirements
Critical Reading Skills	Location Differential
Cyber Security	Negotiations
Economic Development	Project Scheduling
Effective Reading Skills	Property Acquisition
Effective Writing Skills	Risk Management
Environment Liability	Structural Engineering
Ethics	Sustainability
Facility Compliance	Taxes - Tax Abatements
Finance	Writing Skills
Free Trade Zone (FTZ)	Zoning Laws

## 6. WORK FORCE EFFICIENCY ~

*Doing the same with less. Companies most often improve labor efficiency by finding ways to reduce the number of labor hours required to produce the same level of output. This translates into savings because the company spends less on wages and other labor-related costs. Efficiency, then, is about shrinking the denominator — inputs (headcount, labor hours) — in an effort to improve profitability. By systematically removing obstacles to productivity, deploying talent strategically, and inspiring a larger percentage of their workforce, efficiency and productivity are increased.*

### **Skills and Knowledge for Work Force Efficiency:**

Basic Computer Skills -	Driving Skills	Language Skills
Microsoft	Email Communication	Mobile Technology
Collaboration	Employee Retention	Mobility
Critical Thinking Skills	Empowerment	Process Compliance
Cyber Security	Endurance	Reading Skills
Delegation skills	Ethics	Training
Desire to continue learning	Good Nutrition	Verbal Communication
Dependable	High Energy	Wellness
Diction	Human Factors	Writing Skills
	Industrial Engineering	

## 7. MAINTENANCE ~

*Providing support or upkeep by maintaining and repairing equipment, structures, and items.*

### **Skills and Knowledge for Maintenance:**

3D Printing	Maintenance Technicians
Automation Technicians	Mechanics
Aviation Technicians	Parts Management - Skills & Software
CAD Knowledge	Plant Engineers
Certifications (Appropriate)	Process LEED Control (PLL)
Cyber Security	Security
Ethics	Regulation Compliance
Electricians	Testing
Fabrication	Validation Process - ISO

## 8. AUTOMATION ~

*The technique, method, or system of operating or controlling a process by highly automatic means, as by electronic devices, reducing human intervention to a minimum.*

### *Skills and Knowledge for Automation*

Artificial Intelligence (AI)	The Internet of Things (IoT)
Aviation	Radio Frequency Information Device
Cloud Technology	(RFID)
Driverless Cars/Trucks	Return on Investment (ROI) Analysis
Drones	Robotics
Ethics	Security
Global Positioning Systems (GPS)	Sensors Infrared (IR) etc.
Industry 4.0	Software Automation

*Technology will continue to change how efficiently business is performed, but the ability to connect with customers and employees through interpersonal communication skills will never fall out of unmatched value.*

**Steven Kenneke, Division Manager, UPS**



# 9. COMMUNICATIONS TECHNOLOGY~

*Communications Technology is an extended term for information technology which stresses the role of unified communications and the integration of telecommunications, computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information.*

## **Skills and Knowledge for Communications Technology**

Application Programming Interface (API)	Machine to Machine (M2M)
Big Data	Marketplace Digital Platforms
Camera Technologies	Radio Frequency Information Device (RFID)
Change Management	Security
Customer Interaction	Search Engine Optimization Skills
Cyber Security	Situational Awareness
Data Mining	Social Media
End to End	Solution Design
Ethics	Telecommunications
Forward Looking	Telemetric
Global Positioning System (GPS)	Urbanization - (Immediate demand)
Just in Time	Web Design/Portal
Lean Agile	

# 10. SECURITY

*Security is the degree of resistance to, or protection from, harm. It applies to any vulnerable and/or valuable asset, such as a person, dwelling, community, item, nation, or organization. Of particular concern is security, in Information Technology and the defense of digital information and IT assets against internal and external, malicious and accidental threats.*

## **Skills and Knowledge for Security:**

Block Chain Database	Export/Import Compliance (EXIM)
Cargo Theft	Import Security
Contractor Security	Intellectual Property
Crisis Management	Internet of Things (IoT)
Cyber Security	Known Shipper
Data Information	Physical Security
Ethics	Risk Management;
Emergency Management	Security Management
Employee Ethics and Honesty	
Export Security	



# 11. WORKFORCE

*The workforce or labor force (also labor force in the United States) is the labor pool in employment. It is generally used to describe those working for a single company or industry, but can also apply to a geographic region like a city, state, or country. Within a company, its value can be labeled as its "Workforce in Place". The workforce of a country includes both the employed and the unemployed.*

## **Skills and Knowledge for Workforce:**

Adjust to Changing

Goal Setting and Reaching

Technologies

Pilots

Delegation Skills

Purpose

Diversity

Retention

Drivers

Training

Empowerment

Wellness - Physical and Mental

# 12. INFRASTRUCTURE

*The basic physical and organizational structures and facilities (e.g., buildings, roads, and power supplies) needed for the operation of a society or enterprise.*

## **Skills and Knowledge for Infrastructure:**

Automation	Intermodal
Capacity and Driver Shortage	Maintenance
Civil Engineering	Navigate Varied Infrastructures
Driverless Trucks	Network Optimization
Export friendly	Other Shippers using lanes
Geo Science	Planning
Geography	Public Roads and Bridges
Impact of Permian Basin Development	Strategic Thinking

*It is critical to have excellence in the Supply Chain and for all business decisions to be manifested in the Supply Chain - this is done thru a strong collaboration between the leadership of enterprise wide organizations.*

**Rob Lewin, Director Global Logistics, Flowserve**

# 13. INTEGRATION

*Integration is the act of bringing together smaller components into a single system that functions as one. In an IT context, integration refers to the end result of a process that aims to stitch together different, often disparate, subsystems so that the data contained in each becomes part of a larger, more comprehensive system that, ideally, quickly and easily shares data when needed. This often requires that companies build a customized architecture or structure of applications to combine new or existing hardware, software and other communications.*

## **Skills and Knowledge for Integration**

Application Programming Interface (API)	Financial Skills
Automation	Global Thinking
Business Acumen	Industry 4.0
Business Analysis	Lean Process
Business Process Automation	Requirements Gathering
Diverse Skill Sets Across Multiple Departments	Six Sigma
Driverless Cars	Software
Drones	Software Management Skills
Electronic Data Interchange (EDI)	Standardization
Enterprise Thinking	Systems Thinking

# 14. NEAR SHORING/DISTRIBUTION

*Nearshoring happens when an organization decides to transfer work to companies that are less expensive and geographically closer. Using this model allows businesses to move their operations to a closer, more cost-effective location. This closer proximity allows for fewer time zone differences, cultural discrepancies, and a greater level of control in decision-making processes.*

## **Skills and Knowledge for Near Shoring/Distribution:**

Demand Planning

Understanding

Financial Acumen

Network Planning

Free Trade Agreements

Rules of Origin

Free Trade Zones

Sourcing

Geopolitical Knowledge

Tax Laws

Hub and Spoke

Trade Compliance





# ASSUMED TIMELINES FOR THE FOURTEEN TRENDS

*These timelines were assumed for the trends and when they might emerge and evolve, with the caveat that new and potentially disruptive technologies could change everything.*

	0-3 years	3-5 years	5-7 years	10 years	Beyond 10 years
1 - CUSTOMER SERVICE				✓	
2 - TECHNOLOGY DIGIZITATION	✓				
3 - REGULATION				✓	
4 - EDUCATION/CONTINUOUS IMPROVEMENT	✓				
5 - REAL ESTATE				✓	
6 - WORK FORCE EFFICIENCY		✓			
7 - MAINTENANCE	✓				
8 - AUTOMATION					✓
9 - TECHNOLOGY/COMMUNICATIONS		✓			
10 - SECURITY	✓				
11 - WORKFORCE	✓			✓	
12 - INFRASTRUCTURE		✓ ←		→ ✓	
13 - INTEGRATION		✓			
14 - NEAR SHORING/DISTRIBUTION		✓			

# CERTIFICATIONS

*The following are preferred certifications and may not reflect all industry certifications available.*

CERTIFICATION	CERTIFYING ORGANIZATION
CIPP – Certified International Purchasing Professional?	International Purchasing and Supply Management Institute - IPSCMI
CISCM- Certified International Supply Chain Manager	International Purchasing and Supply Management Institute - IPSCMI
CLA – Certified Logistics Associate	Manufacturing Skills Standards -MSSC
CLT – Certified Logistics Technician	Manufacturing Skills Standards -MSSC
CMA – Certified Management Accountant	The Institute of Management Accountants - IMA
CPIM - Certificated Production and Inventory Management	The Association of Operations Management - APICS
CPPM – Certified Professional Purchasing Manager	American Purchasing Society - APS
CPSD - Certified Professional in Supplier Diversity	Institute of Supply Management - ISM
CPSM- Certified Professional in Supply Management	Institute for Supply Management ISM
CSCP - Chartered Supply Chain Professional	The Association of Operations Management - APICS
CSM – Certified Supply Manager?	Institute of Supply Management - ISM
CTL – Certification in Transportation and Logistics	American Society of Transportation and Logistics
HACCP - Hazard Analysis Critical Control Point	Hazard Analysis Critical Control Point - HACC
SC Pro™ Level One – Cornerstones of Supply Chain Management, Level Two – Analysis and Application of Supply Chain Challenges, Level Three – Initiation of Supply Chain Transformation	Council of Supply Chain Management Professionals - CSCMP
SCOR™ - Supply chain Operations Professional	The Association of Operations Management - APICS
USA PMP – Project Manager Professional	Project Management Institute - PMI
USACPP - Certified Purchasing Professionals	American Purchasing Society - APS
CIPM – Certified International Purchasing Manager	International Purchasing and Supply Management Institute - IPSCMI
<u>Lean Six Sigma Master Black Belt (LSSMBB)™</u> <u>Six Sigma Black Belt Professional (SSBBP)®</u> <u>Six Sigma Lean Black Belt Professional (LBBP)®</u> <u>Six Sigma Green Belt Certified (SSGBC)™</u> <u>Six Sigma Lean Green Belt Certified (LGBC)™</u> <u>Six Sigma Lean Professional (SSLP)™</u> <u>Design For Six Sigma Certified (DFSSC)™</u> <u>Six Sigma Yellow Belt Certified (SSYBC)™</u> <u>Certified Kaizen Facilitator (CKF)™</u> <u>Six Sigma Champion Certified (SSCC)™</u> <u>5S Concept Certified (5SC)™</u> <u>TPM Concept Certified (TPMC)™</u> <u>Lean Six Sigma White Belt Certified (LSSWB)™</u>	

# SKILLS AND APTITUDES

*The following skills and aptitudes were identified by Texas Employers as “Basic Skills Needed for Entry Level Workers.” These skills were validated by the Supply Chain Management / Logistics Thought Leaders and Peer Reviewers.*

<b>Skill/Aptitude</b>	<b>Responses (N=9)</b>	<b>%</b>
Oral Communication	9	100.0%
Time Management	9	100.0%
Written Communication	8	88.9%
Teamwork	8	88.9%
Work Ethic	8	88.9%
Following Directions	8	88.9%
Customer Service	7	77.8%
Initiative	7	77.8%
Integrity	7	77.8%
Willingness to continue learning	7	77.8%
Dedication	6	66.7%
Perseverance	6	66.7%
Numerical and Arithmetic Application	5	55.6%
Decision-making	5	55.6%
Creativity	5	55.6%
Pride in Work	5	55.6%

<b>Skill/Aptitude</b>	<b>Responses (N=9)</b>	<b>%</b>
Adaptability	5	55.6%
Attention to Detail	5	55.6%
Problem-solving	4	44.4%
Professionalism	4	44.4%
Organization	4	44.4%
Appreciation of Diversity	3	33.3%
Information Gathering	3	33.3%
Technology and Tool Usage	3	33.3%
Stress Management	3	33.3%
Leadership	2	22.2%
Conflict Management	2	22.2%
Intellectual Risk-taking	1	11.1%
Thoughtful Reflection	1	11.1%
Resource Allocation	1	11.1%
Conflict Management	1	11.1%

# SELECT CAREERS IN SUPPLY CHAIN MANAGEMENT & LOGISTICS

*Supply Chain Distribution & Logistics is in the Transportation and Warehousing sector and includes industries providing transportation of passengers and cargo, warehousing and storage for goods, and support activities related to modes of transportation. Establishments in these industries use transportation equipment or transportation related facilities as a productive asset. The type of equipment depends on the mode of transportation. The modes of transportation are air, rail, water, road, and pipeline.*

**Note: There may be occupations omitted from this list including upper management careers, professional support such as accountants and lawyers, and office support workers.**

Customer Service Representatives  
Forklift Driver  
Freight Agents  
Freight Brokers  
Inventory Analysis  
Logistics Agents  
Logistics Analysts  
Logistics Operations Managers  
Logistics Quality Managers  
Material Handling  
Material Recording  
Pick & Pack  
Packaging  
Scheduling,  
Dispatching  
Distributing  
Purchasing  
Sales Forecasting and Planning  
Supply Chain Information Systems  
Transportation Inspectors  
**Aviation Transportation:**  
Aircraft Mechanics and Service  
Technicians  
Airline Pilots, Copilots and Flight  
engineers  
Cargo and Freight Agents  
Transportation Agents and Clerks  
**Rail Transportation:**  
Locomotive Engineers  
Rail Car Repairers

Rail-track laying and Maintenance  
Equipment Operators  
Railroad Brake, Signal, and Switch  
Operators  
Railroad Conductors and Yardmasters  
**Truck Transportation:**  
Bus & Truck Mechanics and Diesel  
Engine Specialists  
Dispatchers  
First-Line Supervisors/Managers of  
Transportation and Material Moving  
and Vehicle Operators  
Laborers and Freight, Stock and Material  
Movers, hand  
Truck Drivers, Heavy and Tractor Trailer  
Truck Drivers, Light or Delivery Services  
**Water Transportation:**  
Captains, Mates and Pilots of Water  
vessels  
General and Operations Managers  
Laborers and Freight, Stock and Material  
Movers, hand  
Sailors and Marine Oilers  
Ship Engineers  
**Warehouse and Storage**  
Industrial Truck and Tractor Operators  
Shipping, Receiving, and Traffic Clerks  
Stock Clerks and Order Fillers  
Transportation, Storage and Distribution  
Managers

# INTERLINK RECOMMENDED EMERGING AND EVOLVING OCCUPATIONS

*Employers who participate with InterLink’s annual labor market survey provide their employment needs for five years in the future. The results of InterLink’s 30th Annual Survey indicate the following occupations are emerging (new) or evolving (changing), and could be considered as a guideline for new education programs and occupations.*

<b>SOC Code or ONET # EE = Emerging or Evolving Occupation</b>	<b>Occupation Title</b>
EE	Advanced Digital Mfg.(ADM)Tech.
EE	Bioinformatics Technicians
19-4021.00	Biological Technicians
EE	Cloud Architect
EE	Composite Tech. (Bond Assembler)
EE	Computer & Digital Forensics Tech.
EE	Computer Security Specialists
EE	Convergence Technology Spec./Tech.
EE	Data Mining Tech/Data Scientist
17-3024.00	Electro-Mechanical Technicians (MEMS)
17-3025.00	Environmental Engineering Technicians
17-3029.10	Fuel Cell Technicians
45-3021.00	Gaming/Computer Simulation Tech.
O*NET 17-3031.00	Geographic Information Systems (GIS) (includes Engineering & Mapping Technicians.)

<b>SOC Code or ONET # EE=Emerging or Evolving Occupation</b>	<b>Occupation Title</b>
EE	Global Positioning Systems (GPS) Technician
15-1122	Information Security Analysts
EE	Installer/Integrator/NOC/Network Associate/Engineer
EE	Materials Analyst
17-3029.12 /17/3029.11	Nanotechnology Engineering Technicians/Technologists
29-1171.00	Nurse Practitioners
EE	Patient Care Technician
17-2072.01	Radio Frequency Information Device Specialists
EE	Risk Managers
17-3024.01	Robotics Technicians
EE	Social Media Architects
EE	Social Networking Specialists
EE	Solar Photovoltaic Technicians (Electric) Installers
EE	Solar Thermal Installers & Techs.
49-9081.00	Wind Turbine Service Technicians
EE	Wireless Network Engineers/Technicians

# GLOSSARY OF TERMINOLOGY

**3-D Printing** - Also called **Additive Manufacturing (AM)**, is any of various processes for making a three-dimensional object of almost any shape from a 3D model or other electronic data source primarily through additive processes in which successive layers of material are laid down under computer control.

**3PL** - A third-party, or contract, logistics company. A firm to which logistics services are outsourced. Typically handles many of the following tasks: purchasing, inventory management/warehousing, transportation management, order management. *Example: Schneider Logistics, Ryder Logistics, UPS Logistics.*

**Ability to Follow Processes** - The fundamental capability for a worker to be clear about the outcomes they need to achieve and have the skill to achieve those outcomes. They don't have to follow instructions precisely, they just need to truly understand the outcome and have the skills to get there.

**Adaptation to changing environment** - Adaptation is a process of deliberate change in anticipation of or in reaction to external stimuli and stress. The dominant research tradition on adaptation to environmental change primarily takes an actor-centered view, focusing on the agency of social actors to respond to specific environmental stimuli and emphasizing the reduction of vulnerabilities.

**Adjust to Changing Technologies** - With the accelerating pace of technological change, many employees find themselves rushing to keep up with new software, programs and technological processes implemented in the workplace. By its very nature, technology evolves quickly, racing to address the new situations and problems created by the implementation of previous technologies, so that even young employees who enter the workplace with advanced technological skills can find themselves quickly falling behind the technological curve making regular and continuous technological training is the only solution to getting left behind.

**Alliance** - Group of airlines or ocean carriers who coordinate and cross list schedules, and sell capacity on each other's flights/voyages.

**Analytics** - The discovery and communication of meaningful patterns in data. Especially valuable in areas rich with recorded information, analytics relies on the simultaneous application of statistics, computer programming and operations research to quantify performance. Analytics often favors data visualization to communicate insight.

**Anticipate Needs** - Anticipating needs of others is an important skill in life. It is one thing to be able to react to someone's needs, but if you can address someone's needs before that person vocalizes it, you will stand apart from the crowd. It also should help deepen that relationship.

**Application Programming Interface (API)** - In computer programming, an application programming interface (API) is a set of routines, protocols, and tools for building software applications. An API expresses a software component in terms of its operations, inputs, outputs, and underlying types.

**Architecture** - Architecture is both the process and the product of planning, designing, and constructing buildings and other physical structures. Architectural works, in the material form of buildings, are often perceived as cultural symbols and as works of art. Historical civilizations are often identified with their surviving architectural achievements.

**Artificial Intelligence (AI)** - The intelligence of machines or software, and is also a branch of computer science (Applied logic) that studies and develops intelligent machines and software. Major AI researchers and textbooks define the field as "the study and design of intelligent agents" where an intelligent agent is a system that perceives its environment and takes actions that maximize its chances of success.

**Attendance** - Showing up for work. It's a real problem in our industry.

**Augmented Reality** - A live, direct or indirect, view of a physical, real-world environment whose elements are *augmented* by computer-generated sensory input such as sound, video, graphics or GPS data. It is related to a more general concept called mediated reality, in which a view of reality is modified (possibly even diminished rather than augmented), by a computer.

**Augmented Reality/Virtual Reality** - Augmented reality (AR) refers to devices that combine elements of the real world with virtual aspects laid over it. This often manifests itself in using your phone's camera to display the "real world" with a virtual overlay, though not always. VR essentially boils down to: creating an entire world within virtual space. Whereas augmented reality relies on input from the "real world", virtual reality aims to create its own distinct and separate world.



**Automation** - The use of machines, control systems and information technologies to optimize productivity in the production of goods and delivery of services. The correct incentive for applying automation is to increase productivity, and/or quality beyond that possible with current human labor levels so as to realize economies of scale, and/or realize predictable quality levels.

**Automation Technicians** - Automation technicians troubleshoot, service and fix the computerized systems and robotic devices that are designed to reduce human interaction, such as robotic assembly devices and computer-controlled building air-conditioning systems.

**Aviation** - Aviation is the practical aspect or art of aeronautics, being the design, development, production, operation and use of aircraft, especially heavier than air aircraft.

**Aviation Technicians** - Aircraft Maintenance Technician (AMT), refers to a licensed qualification for carrying out aircraft maintenance. Aircraft Maintenance Technicians (AMTs) inspect and perform or supervise maintenance, preventive maintenance, and alteration of aircraft and aircraft systems. In the USA, for a person who holds a mechanic certificate issued by the Federal Aviation Administration; the rules for certification, and for certificate-holders, are detailed in Subpart D of Part 65 of the Federal Aviation Regulations (FARs), which are part of Title 14 of the Code of Federal Regulations. The US licensed qualification is sometimes referred to by the FAA as the Aviation Maintenance Technician and is commonly referred to as the Airframe and Powerplant (A&P). In many countries the equivalent license to an AMT is the Aircraft Maintenance Engineer (AME).

**Awareness of Other Industries (Best Practices)** - A method or technique that has consistently shown results superior to those achieved with other means, and that is used as a benchmark. In addition, a "best" practice can evolve to become better as improvements are discovered.

**Backhaul** - A freight movement in a direction (or lane) of secondary importance or light demand. Backhauls are preferable to deadheads by transportation companies, since revenue is generated. In order to entice shippers to move goods in backhaul markets, carriers may offer lower rates.

**Basic Computer Skills** - "Basic computer skills" is a term that is used to identify the essential skills needed in order to make use of a computer. The scope of skills that are considered basic will vary from one situation to another. For example, one employer may consider the ability to make use of a specific type of word processing software to be among the basic skills required, while a different employer will place more emphasis on the ability to work with electronic spreadsheets. Trade schools and some colleges offer courses that introduce students to basic computer skills most commonly required by employers, making it easy to secure the knowledge needed to identify and hone these skills. As a basis for making use of a computer, basic computer skills will often start with understanding how a particular operating system functions in terms of the creation and placement of taskbars on the computer desktop, how to make use of a computer mouse to utilize the programs housed on the hard drive, and even how to go about using an email program to create, send, and receive emails. Tasks such as searching for files on a hard drive are often also considered basic skills that any user should know and be able to perform with relative ease. In some cases, training in how to conduct searches using an Internet browser will also come under the heading of basic operational skills, especially if the job position requires frequent research.

**Big Data - Data Collection** - A collection of data sets so large and complex that it becomes difficult to process using on-hand database management tools or traditional data processing applications. The challenges include capture, curation, storage and search.

**Break-bulk Cargo** - Cargo in-between bulk and containerized, that must be handled piece-by-piece by terminal workers (stevedores). Often stored in bags or boxes and stacked onto pallets. Smaller lift equipment (forklifts, small cranes) used than for containerized cargo, but more labor intensive.

**Budgeting** - A quantified financial plan for a forthcoming accounting period.

**Building Zoning Codes** - When choosing a business location, it's never too late to start thinking about how zoning laws and building codes will affect the purchase and future renovations of an existing property. While zoning and building codes are closely related, they both serve different functions. In a nutshell, zoning codes regulate how a given section of land can be used and what type of businesses can utilize the land and its structures; on the other hand, building codes regulate the details of the structures themselves. Prior to construction or renovation, you must first get a zoning permit before obtaining a building permit through your local planning agency.

**Bulk Cargo** - Cargo that is stowed loose on transportation vehicles, in a tank or hold without specific packaging, and handled by pump, scoop, conveyor, or shovel. Examples: grain, coal, petroleum, chemicals.

**Business Acumen** - Keenness and quickness in understanding and dealing with a business situation in a manner that is likely to lead to a good outcome.

**Business Analysis** - A research discipline of identifying business needs and determining solutions to business problems. Solutions often include a software-systems development component, but may also consist of process improvement, organizational change or strategic planning and policy development. The person who carries out this task is called a business analyst or BA.

**Business Analytics (BA)** - The skills, technologies, applications and practices for continuous iterative exploration and investigation of past business performance to gain insight and drive business planning. Business analytics focuses on developing new insights and understanding of business performance based on data and statistical methods.

**Camera Technologies** - It wasn't long ago that a good photograph required experience and a camera bag full of specialist lenses, films and equipment. Now most people get by with the camera on their smartphone. Digital cameras can be used for many business purposes, including taking photos and videos to include in presentations and proposals, to document change, to capture people and ideas and to promote products or services. Most smartphones have digital cameras built right into them, and smartphones can be great to snap quick pictures as reminders. It's possible that the next generation of photographers will think nothing of releasing their cameras to the skies taking high-quality panoramic images using the cheapest cameras attached to the smallest and lightest remote-control drones or helicopters. Cameras are used for interior and exterior building security, inventory and vehicle security. Facial recognition is becoming more prevalent. These technologies depict a future that will look much more clear, colorful, and life-like with the help of future camera technology.

**Capacity** - Capacity is the maximum level of output that a company can sustain to make a product or provide a service. Planning for capacity requires management to accept limitations on the production process. No system can operate at full capacity for a prolonged period; inefficiencies and delays make it impossible to reach a theoretical level of output over the long run.

**Carbon Imprint** - The sum of all emissions of greenhouse gases like CO<sub>2</sub> (carbon dioxide), which were induced by your activities in a given time frame. Usually a carbon footprint is calculated for the time period of a year.

**Carrier** - A firm that provides transportation services, typically owning and operating transportation equipment. Examples include: trucking company, railroad, airline, steamship line, parcel/express company.

**Certifications** - Professional certification, trade certification, or professional designation, often called simply certification or qualification, is a designation earned by a person to assure qualification to perform a job or task. Not all certifications that use post-nominal letters are an acknowledgement of educational achievement, or an agency appointed to safeguard the public interest.

**Certified Logistics Association (CLA)** - A foundational-level credential and is a prerequisite for the Certified Logistics Technician (CLTAE) Certification.

**Certified Logistics Technician (CLT)** - Individuals are assessed for two credentials: the foundational-level Certified Logistics Associate (CLA) certificate and mid-level Certified Logistics Technician (CLT) Certification. CLA is a prerequisite for CLT

**Certified Quality Engineer (CQE)** - A certification given by the American Society for Quality. These engineers are professionally educated in quality engineering and quality control.

**Change Management (CM)** - Any approach to transitioning individuals, teams, and organizations using methods intended to re-direct the use of resources, business process, budget allocations, or other modes of operation that significantly reshape a company or organization. Organizational Change Management (OCM) considers the full organization and what needs to change.

**Civil Engineers** - Design, construct, supervise, operate, and maintain large construction projects and systems, including roads, buildings, airports, tunnels, dams, bridges, and systems for water supply and sewage treatment.

**Cloud Computing Technology** - Also on-demand computing, is a kind of Internet-based computing that provides shared processing resources and data to computers and other devices on demand.

**Cloud Storage** - A model of networked online storage where data is stored in virtualized pools of storage which are generally hosted by third parties.

**COFC** - Container-On-Flatcar. A term used in intermodal transportation in which containers are stacked onto rail flatcars for rail transportation. No truck chassis is used, and double stack cars are possible, thus more containers can be carried by a shorter, lighter train.

**Collaboration** - A working practice whereby individuals work together to a common purpose to achieve business benefit.

**Common Carrier** - A for-hire carrier providing transportation services to the general public. Obligations: to serve, to deliver, to charge reasonable rates, to avoid discrimination. Previously regulated in the United States; most are now deregulated. *Examples: Parcel/express carriers (DHL, FedEx, UPS), LTL trucking (Yellow, Consolidated Freightways, Roadway), TL trucking (Hunt, Schneider), Rail carrier (Norfolk Southern), Air carriers (Delta, Flying Tigers), Ocean carrier (Sea Land, American President Lines (APL)).*

**Compliance** - The act or process of doing what you have been asked or ordered to do : the act or process of complying; the act or process of complying to a desire, demand, proposal, or regimen or to coercion

**Computer aided design (CAD)** - Knowledge - Interactive graphic programs that automate the methodologies of drafting and design layouts. A few programs are successful enough so that it is difficult to justify designing layouts manually. Applications include integrated circuits and printed circuit boards.

**Consignee** - An individual or firm to whom freight is shipped. A freight receiver.

**Consolidation** - Bringing together many small shipments, often from different shippers, into large shipment quantities, in order to take advantage of economies of scale in transportation costs. In-vehicle consolidation is when a vehicle makes pickups from many customers and consolidates freight inside the vehicle. Out-of-vehicle consolidation occurs at a terminal facility; shipments to a single customer/region are consolidated before shipment.

**Construction** - Generally buildings and structures built into or fixed to the land. It can involve building from the ground up, additions, alterations, conversions, expansions, reconstruction, renovations, rehabilitations, and maintaining or major replacements (such as the complete replacement of a roof or heating system).

**Construction ability knowledge** - Complex skills and abilities that can be used in real life are the true goal of learning. Being able to construct complex buildings shows an understanding of mathematical concepts and complex engineering concepts.

**Container** - A single, rigid, sealed, reusable metal box in which merchandise is shipped by vessel, truck, or rail. Container types include standard, high cube, hardtop, open top, flat, platform, ventilated, insulated, refrigerated, or bulk. Usually 8 ft x 8 ft in width and height, 20 to 55 ft long. Specialized containers also exist for air transportation modes, but are much smaller and cannot be directly transferred to truck or rail.

**Container Leasing / Railcar Leasing** - Some companies specialize in the business of owning transportation equipment (containers or railcars), and renting them out to shippers or carriers. These companies often face significant equipment management problems.

**Containers, Chassis, and Vans (Trailers)** - Standard trucking companies use vans (or trailers) to move standard dry goods. These trailers consist of a storage box that is permanently attached to a set of wheels (the set of wheels is often known as a truck). Intermodal ocean containers are moved on the road by attaching them to a separate piece of equipment, a chassis, which is essentially a set of wheels on a lightweight frame.

**Continual improvement process (CI or CIP)** - A broader term preferred by W. Edwards Deming to refer to general processes of improvement and encompassing "discontinuous" improvements—that is, many different approaches, covering different areas.

**Continuous improvement (CI or CIP)**: a subset of continual improvement, with a more specific focus on linear, incremental improvement within an existing process. Some practitioners also associate continuous improvement more closely with techniques of statistical process control.

**Contract Law** - The knowledge, skills and ability to understand formal and legally binding agreements and the ability to negotiate the terms and conditions of the agreement.

**Cost Estimating** - The cost estimate is the product of the cost estimating process. The cost estimate has a single total value and may have identifiable component values. A problem with a cost overrun can be avoided with a credible, reliable, and accurate cost estimate. An estimator is the professional who prepares cost estimates.

**Critical Reading Skills** - Critical reading generally refers to reading and evaluating in a scholarly context, with an eye toward identifying a text or author's viewpoints, arguments, evidence, potential biases, and conclusions.

**Critical thinking** - The intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.

**Cross-dock** - Transportation terminal in which received items transferred directly from inbound to the outbound shipping dock, with storage only occurring temporarily during unloading and loading. No long-term storage is provided. Usually used only for vehicle transfers. Often owned and operated by large shippers.

**Cultural Differences** - The cultural variety and cultural differences that exist in the world, a society, or an institution; the inclusion of diverse people in a group or organization.

**Customer Interaction** - Communication between a company and its customers. It can occur throughout the supply chain in marketing, sales, product, customer service/product support, and resale. Some customers may prefer paper less communication like email or phone call, some may prefer face-to-face interaction or physical letter.

**Customer Service** - A business's ability to satisfy its customers by providing assistance and advice to those who buy or use its products or services.

**Cyber Security** - Techniques generally set forth in published materials that attempt to protect the cyber environment of a user or organization. This environment includes users themselves, networks, devices, all software, processes, information in storage or transit, applications, services, and systems that can be connected directly or indirectly to networks.

**Data Analysis** - The process of systematically applying statistical and/or logical techniques to describe and illustrate, condense and recap, and evaluate.

**Data Analytics (DA)** - The science of examining raw data with the purpose of drawing conclusions about that information. Data analytics is used in many industries to allow companies and organization to make better business decisions and in the sciences to verify or disprove existing models or theories.

**Data Mining** – Searching through gigabytes of information for unanticipated information.

**Dead-head** - A portion of a transportation trip in which no freight is conveyed; an empty move. Transportation equipment is often dead-headed because of imbalances in supply and demand. For example, many more containers are shipped from Asia to North America than in reverse; empty containers are therefore dead-headed back to Asia.

**Deadweight** - The number of long tons that a vessel can transport of cargo, supplies and fuel. It is the difference between the number of tons of water a vessel displaces "light" (empty) and the number of tons it displaces when submerged to the "load line".

**Delegation Skills** - The ability to effectively assign task responsibility and authority to others. Or, in other words, delegation skill is your ability to get things done by using work and time of other people.

**Demand Planning** - Also known as Customer Demand Planning (CDP), a business-planning process that enables sales teams to develop demand forecasts as input to service-planning processes, production, inventory planning and revenue planning.

**Dependable** - Being trustworthy and reliable.

**Desire to continue learning** - Also known as Continuous Learning, is the constant expansion of skills and skill-sets through learning and increasing knowledge. As life changes the need to adapt both professionally and personally is as real as the changes themselves.

**Detention/demurrage** - Penalty charges assessed by a carrier to a shipper or consignee for holding transportation equipment, i.e. trailers, containers, railcars, longer than a stipulated time for loading or unloading.

**Diction** - The choice and use of words and phrases in speech or writing. Can also be the enunciation and clarity in speaking.

**Diverse Skill Sets Across Multiple Departments** - There are multiple types of skill sets which may be needed in different areas of a company. For example, skill sets can be considered soft or hard. Soft skills are interpersonal, or people, skills. They are difficult to quantify, and relate to a person's personality and ability to work with others. Soft skills include communication, critical thinking, and conflict resolution, among others. Hard skills are quantifiable and teachable; they include specific knowledge and abilities required for a job. Examples of hard skills include computer programming, accounting, mathematics, and data analysis. There are also job specific and transferable skill sets. Transferable skills and skill sets are those that can apply to many different career fields. These include soft skills like critical thinking and problem solving. Job specific skill sets are those necessary for a particular job.

**Diversion / Reconsignment** - Diversion is a tactic used by shippers to change the destination (consignee) of freight while the goods are in transit. The shipper will notify the carrier prior to the arrival of freight at the destination of the new consignee, and the carrier will adjust the freight routing accordingly. Reconsignment is a similar concept, except that the shipper notifies the carrier of the new consignee after the freight arrives at the destination, but (obviously) before delivery/unpacking. Carriers impose extra charges for these services typically, but they provide flexibility to the shipper.

**Diversity** - The condition of having or being composed of differing elements: variety; especially: the inclusion of different types of people (as people of different races or cultures) in a group or organization.

**Door-to-Door** - Transportation service arrangement in which freight is moved from origin (shipper) through to ultimate destination (consignee) for a given rate. Trucking companies typically offer door-to-door service. Railroads do not, unless the shipper and consignee both have rail sidings. Brokers, forwarders, NVOCCs etc. often package together door-to-door service through contracts with multiple carriers.

**Drayage** - Local trucking, typically describing truck movement of containers and trailers to and from rail intermodal yards and to and from port facilities.

**Driver Shortage** - Truck drivers are the basic unit of transportation capacity and the glue that holds supply chains together. No container or straight truck or trailer moves without, at some point, a truck driver. Even so, trucking companies, especially truckload carriers, often have great difficulty finding, hiring and keeping drivers. Nearly every period of economic growth is accompanied by a driver shortage. Trucks with a high level of autonomy, could change the nature of the driver's job making the work environment more productive and retaining the drivers we have because trucks are more user-friendly and the learning curve isn't so steep.

**Driverless Cars** - An autonomous car (driverless car, self-driving car, robotic car) is a vehicle that is capable of sensing its environment and navigating without human input. Autonomous vehicles detect surroundings using radar, Lidar, GPS, Odometry, and computer vision. Advanced control systems interpret sensory information to identify appropriate navigation paths, as well as obstacles and relevant signage.

**Driverless Trucks** - Also known as autonomous, self driving, robotic-driving, is a vehicle that is capable of sensing its environment and navigating without human input. Autonomous vehicles detect surroundings using radar, Lidar, GPS, Odometry, and computer vision. Advanced control systems interpret sensory information to identify appropriate navigation paths, as well as obstacles and relevant signage.

**Drivers** - A person who drives a vehicle. It can also be an autonomous driver operated by a special type of software that lets the operating system communicate properly with the hardware to drives a vehicle.

**Driving Skills** - The specific driving skills on which one is tested vary by the class of driver's license that you requested. Good driving skills include the ability to concentrate and keep one's mind on driving; anticipating and reading into things that are happening around you; defensive driving by taking precautions before they happen in the interest of your well being and other road users; attitude by staying calm and tolerant in all situations; and being knowledgeable of the HIGHWAY CODE.

**Drones** - "Drones" are probably the most advanced equipment in the field of robotics, aeronautics and electronics. The technical name of drones is "Unmanned Aerial Vehicles" (UAVs). They are aerial vehicles which come in wide varieties of sizes, shapes and functions, which are controlled either by remote or control systems from the ground. They are generally used to carry out tasks in which manned flight is considered to be risky. In the future drones could be used by the construction industry to survey properties, and deliver packages.

**Dunnage - Wood and packaging materials used to keep cargo in place inside a container or transportation vehicle.**

**Economic Development** - A branch of economics that focuses on improving the economies of developing countries. Development economics considers how to promote economic growth by improving factors such as health, education, working conditions, domestic and international policies, and market conditions in developing countries.

**Effective Writing Skills** - Is about expressing ideas concisely and effectively by making persuasive arguments, and marshalling evidence following a logical design and with clear sentences and coherent paragraphs.

**Effects of external and internal variables** - Power to bring about a result.

**Electricians** - Tradesperson specializing in electrical wiring of buildings, stationary machines, and related equipment. Electricians may be employed in the installation of new electrical components or the maintenance and repair of existing electrical infrastructure. Electricians may also specialize in wiring ships, airplanes, and other mobile platforms, as well as data and cable.

**Electronic Data Interchange (EDI)** - An electronic communication method that provides standards for exchanging data via any electronic means. By adhering to the same standard, two different companies or organizations, even in two different countries, can electronically exchange documents (such as purchase orders, invoices, shipping notices, and many others).



**Email Communication** - Electronic mail, or email, is a method of exchanging digital messages between people using digital devices such as computers, tablets and mobile phones. Email first entered substantial use in the 1960s and by the mid-1970s had taken the form now recognized as email. Email operates across computer networks, which today is primarily the Internet. Some early email systems required the author and the recipient to both be online at the same time, in common with instant messaging. Today's email systems are based on a store-and-forward model. Email servers accept, forward, deliver, and store messages. Neither the users nor their computers are required to be online simultaneously; they need to connect only briefly, typically to a mail server or a webmail interface, for as long as it takes to send or receive messages.

**Employee Retention** - The ability of an organization to retain its employees. Employee retention can be represented by a simple statistic (for example, a retention rate of 80% usually indicates that an organization kept 80% of its employees in a given period).

**Empowerment** - Measures designed to increase the degree of autonomy and self-determination in people and in communities in order to enable them to represent their interests in a responsible and self-determined way, acting on their own authority.

**End to end** - A classic design of computer networking in which application-specific functions ought to reside in the *end hosts* of a network rather than in *intermediary nodes*.

**Enterprise Thinking** - The practice of considering the entire enterprise in decision-making, not just a given group or department.

**Environmental Liability Regulations** - The U.S. Environmental Protection Agency (EPA) and state environmental agencies regulate the impact of businesses on the environment. The EPA develops and enforces regulations that implement environmental laws enacted by Congress. [www.sba.gov](http://www.sba.gov)

**Ethics** - Moral principles that govern a person's or group's behavior

**EXIM Compliance** - EXIM Bank's Credit Administration staff developed the Medium-Term Electronic Compliance Program (ECP) to greatly improve the efficiency and turnaround time in approving medium-term guarantee disbursements. The ECP is a web-based certification system for EXIM Bank approval of disbursements.

**Export Administration Regulations (EAR) and the International Traffic Arms Regulations (ITAR)** – Two important United States export control laws that affect the manufacturing, sales and distribution of technology. The legislation seeks to control access to specific types of technology and the associated data. Its goal is to prevent the disclosure or transfer of sensitive information to foreign nationals.

**Export Friendly** - The advent of e-commerce allows any company of any size to instantly become an exporter to anywhere on the planet. Export friendly includes several methods of doing international business including: expertly translating your brand into other languages, having a clear and easy-to-find shipping policy and localizing your site for different countries eases the transaction for shoppers, it also says that you're friendly to international business.

**FAA Terminology Changes** - Staying up to date with changes in the vocabulary of technical terms used by the Federal Aviation Administration (FAA).

**Fabrication** - The action or process of manufacturing or inventing something. It is a value added process that involves the construction of machines and structures from various raw materials. A fabrication shop will bid on a job, usually based on the engineering drawings, and if awarded the contract will build the product.

**Facility Compliance** - Detailed study based on environmental assessment (EA) to determine the type and level of effects an existing facility is having, or a proposed project would have on the facility.

**FCL (Full Container-Load)** - An ocean-shipping and intermodal industry term; a full container-load shipment is when a shipper contracts for the transportation of an entire container. The vast majority of intermodal and ocean freight is contracted in this manner. Historically, FCL also stands for full carload which is the primary business of all modern railroads, and is the railroad equivalent of TL trucking.

**FEU - Forty-foot equivalent unit.** Method of measuring vessel load or capacity, in units of forty-foot long containers.

**Finance** - The system that includes the circulation of money, the granting of credit, the making of investments, and the provision of banking facilities.

**Financial Acumen** - Answers specific business questions and forecast possible future financial scenarios. <http://searchfinancialapplications.techtarget.com/definition/financial-analytics>.

**Fitness** - The condition of being physically fit, healthy, and being suitable to fulfill a particular role or task.

**FOB (Free-on-Board) Point** - Point at which ownership of freight changes hands from shipper to consignee. FOB origin indicates that consignee owns the goods in transit; FOB-destination indicates that shipper owns goods in transit. Owner of goods in transit is liable for loss and damage to freight, and thus should provide insurance.

**Follow-up Skills** - After completing a task or receiving business it is customary to confirm the receiver is pleased with the result and has everything they need or needed and also address any future needs.

**Foreign Trade Zones (FTZ)** - Sometimes known as Free Trade Zones, are neutral secured areas that for legal purposes are considered outside of U.S. Customs territory. FTZs offer several economic advantages for businesses involved in international trade.

**Forklift** - A powered industrial truck used to lift and move materials short distances. Following World War II the use and development of the forklift truck has greatly expanded worldwide. Forklifts have become an indispensable piece of equipment in manufacturing and warehousing operations.

**Forward Looking** - Favoring innovation and development; progressive.

**Forward Thinking** - Thinking in a manner that takes the future into account; progressive.

**Free Trade Agreements** - The United States is party to many free-trade agreements worldwide. Beginning with the Theodore Roosevelt administration, the United States became a major player in international trade, especially with its neighboring territories in the Caribbean and Latin America. Today, the United States has become a leader of the free trade movement, standing behind groups such as the General Agreement on Tariffs and Trade.

**Free Trade Zone (FTZ)** - Neutral secured areas that for legal purposes are considered outside of U.S. Customs territory. FTZs offer several economic advantages for businesses involved in international trade.

**Freight Bill-of-Lading (Freight Bill, BL or BoL)** - A document providing a binding contract between a shipper and a carrier for the transportation of freight, specifying the obligations of both parties. Serves as a receipt of freight by the carrier for the shipper. Usually designates the consignee, and the FOB point.

**Freight FOB Terms-of-Sale** - Indicates (1) Who arranges for transport and carrier, (2) Who pays for transport, (3) Where/when does title (ownership) of goods transfer from seller to buyer (FOB point). Freight charges: collect, prepaid, prepaid and charged back. Collect: Buyer pays the freight charges. Prepaid: seller pays. Prepaid and charged back: seller prepays (bears), bills buyer for the charges. Examples: 1. FOB-origin, freight collect: consignee pays freight charges and owns goods in transit. 2. FOB-destination, freight prepaid: shipper pays freight charges and owns goods in transit. 3. FOB-destination, freight prepaid and charged back: shipper owns goods in transit, pays for freight but bills consignee for the charges.

**Freight Forwarder** - An agency that receives freight from a shipper and then arranges for transportation with one or more carriers for transport to the consignee. Often used for international shipping. Will usually consolidate freight from many shippers to obtain low, large volume transportation rates from carriers (through a contract). Often owns some pickup and delivery equipment; uses to transport freight to/from consolidation facilities. Also provide other shipping services: packaging, temporary freight storage, customs clearing.

**Freight Size** - Freight is most often measured by its weight, and transportation vehicles of varying sizes typically have weight capacities that cannot be exceeded due to engineering or regulatory reasons. Freight may also be measured by cube, which generally refers to the volume of the freight. A vehicle is said to cube-out if it does not exceed its weight capacity, but its volume is completely full.

**Freight Weight Measures** - Short ton (American) 2000 lbs. Long ton (English) 2240 lbs. Metric ton (1000 kg.) 2204.6 lbs.

**Geo Science** - Studying the geology and geochemistry of the natural world, physical and human geography, and challenges faced by communities and cities and their solutions. Scientific training in geosciences provides the tools for employment or further study in the world around us, such as in environmental, energy, or other industries.

**Geography** - The physical features of the earth and its atmosphere, and of human activity as it affects and is affected by these, including the distribution of populations and resources, land use, and industries.

**Geopolitical Knowledge** - Understanding the effects of geography (human and physical) on international politics and international relations. Geopolitics is a method of studying foreign policy to understand, explain and predict international political behavior through geographical variables.

**Global Awareness** - A conceptual understanding based upon an applicable knowledge of global and cultural perspectives. The understanding of concepts that impact the world encompasses, but is not limited to, environmental, social, cultural, political, and economic relations.

**Global Geography** - The study of the world around us. It explains how we as people live and learn from it, what condition it's in and what impact we can and could have on the environment.

**Global Logistics** - The flow of resources and information between a business or source and the consumer. It is a management process that analyzes how resources are acquired, stored and transported. To be effective, the process requires detailed analysis of a company's entire supply chain.

**Global Positional System (GPS)** - A space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites.

**Global Thinking** - Consider the health of the entire planet to protect habitats and the organisms that live within them.

**Globalization** - The process of international integration arising from the interchange of world views, products, ideas and other aspects of culture.

**Goal Setting and Reaching** - Setting Goals is the process of deciding what you want to accomplish and devising a plan to achieve the result you desire. If your goal is measurable, you should know when the goal is reached.

**Good Nutrition** - To eat at right meal time and maintain those foods or diet that are of great health importance and also balanced, which means that one's meal must contain all the classes of food in the right proportion.

**Green Energy Buildings** - Are generally healthier, more comfortable, more durable, and more energy efficient and have a much smaller environmental footprint than conventional buildings. Sustainable properties are the future and demand, residential builders, federal government incentives, and local government policy are making driving the initiative for green environments.

**Hazardous Materials (Hazmat)** - Any substance or material could adversely affect the safety of the public, handlers or carriers during transportation. The Department of Transportation identified nine classes of hazardous materials: Explosives, Compressed Gases, Flammable Liquids, Flammable Solids, Oxidizers and Organic Peroxides, Toxic Materials, Radioactive Material, Corrosive Material, Miscellaneous.

**High Energy** - The physical capacity of seemingly tireless activity.

**Hi-lo** - Container yard jargon for a forklift truck used for heavy lifting of containers.

**Hub and Spoke Understanding** - Denoting a system of air transportation in which local airports offer flights to a central airport where international or long-distance flights are available.

**Hub-and-Spoke** - A transportation system design in which large hub terminals are used for freight consolidation. Medium-volume services serve the spoke-to-hub collection and hub-to-spoke distribution tasks. Large-volume services are operated in the hub-top-hub markets. In most systems, all outbound/inbound freight for a spoke uses the same hub, and thus larger shipment sizes are realized. Many transportation systems oriented in this way. *Examples: Delta airlines, FedEx, LTL, and now ocean shipping. Not TL, however.*

**Human Factors** - In industry, human factors (also known as ergonomics) is the study of how humans behave physically and psychologically in relation to particular environments, products, or services.

**Human Interaction** - Relationship between two or more individuals.

**Human Interaction and Expectations (HCI)** - An automated system designed to recognize a user's affective states in order to become more human-like, more effective, and more efficient by modulating nonverbal communicative cues (facial expressions, body movements, and vocal and physiological reactions).

**Human Resources** - A division of an organization concerned with personnel or the knowledge capital within an organization.

**Hundredweight / CWT** - 100 pounds. A common shipping weight unit.



**Incentives** - Something that motivates an individual to perform an action. The study of incentive structures is central to the study of all economic activities (both in terms of individual decision-making and in terms of co-operation and competition within a larger institutional structure).

**INCOTERMS** - One of the standardized abbreviated terms established by the International Chamber of Commerce used in export contracts to designate which party should pay costs such as insurance and transport.

**Industrial Engineering** - Industrial engineering is a branch of engineering which deals with the optimization of complex processes or systems. Industrial engineers work to eliminate waste of time, money, materials, man-hours, machine time, energy and other resources that do not generate value.

**Industry 4.0** - The fourth industrial revolution. The revolution, is a collective term embracing a number of contemporary automation, data exchange and manufacturing technologies. It had been defined as 'a collective term for technologies and concepts of value chain organization' which draws together Cyber-Physical Systems, the Internet of Things and the Internet of Services.

**Industry Specifics** - Restricted to a particular industry, individual, situation, product, or effect. Example: The Federal Aviation Administration (FAA) and Transportation Security Association (TSA) are specific to the transportation industry.

**Industry Terminology** - Expressions, language, certifications and practices that refers to a group of companies that are related in terms of their primary business activities. In modern economies, there are dozens of different industry classifications, which are typically grouped into larger categories called sectors.

**Infrastructure** - The basic physical and organizational structures and facilities (e.g., buildings, roads, and power supplies) needed for the operation of a society or enterprise.

**Initiative** - The power or ability to begin or to follow through energetically with a plan or task; enterprise and determination.

**Inspections**- Look at closely, typically to assess a condition or to discover any shortcomings and/or ensure that an official standard is obtained.

**Insurance Compliance** - Compliance is a prevalent business concern, partly because of an ever-increasing number of regulations that require companies to be vigilant about maintaining a full understanding of their regulatory compliance requirements in areas of insurance, government, law, etc.

**Integrators** - Companies that provide door-to-door domestic and international air freight service. Own and operate aircraft, as well as ground delivery fleets of trucks. In contrast, freight-hauling airlines (e.g., Delta, Lufthansa) typically do not provide door-to-door service. Example: UPS, FedEx, BAX Global, Emery Worldwide.

**Interline Shipment** - Shipment moving from origin to destination via two or more carriers. Occurs frequently in rail transportation: for example, each rail container moving from Atlanta to Los Angeles is moved interline, using for example CSX and Union Pacific with an interline junction in New Orleans.

**Intermodal** - Transportation that uses a specialized container involving two or more different modes of transportation in conveying goods that can be transferred from the vehicle of one mode to the vehicle of another. A single freight bill is used for the shipment. *Example: Ocean shipping containers which can be hauled by trucks on chassis, railcars, ocean vessels, and barges. Also: UPS line-haul vans (these vans can be stacked onto railcars for long distance moves).*

**International** - Existing, occurring, or carried on between two or more nations.

**International Traffic in Arms Regulation** - For a company involved in the manufacture, sale or distribution of goods or services covered under the United States Munitions List (USML), or a component supplier to goods covered under the USML, the stipulation or requirement of being "ITAR certified (compliant)" means that the company must be registered with the State Department's Director of Defense Trade Controls (DDTC) and the company must understand and abide by the ITAR as it applies to their USML linked goods or services. The company themselves is certifying that they operate in accordance with the ITAR when they accept being a supplier for the USML prime exporter.

**Internet of Things (IoT)** - The network of physical objects—devices, vehicles, buildings and other items—embedded with electronics, software, sensors, and network connectivity that enables these objects to collect and exchange data.

**Interpretation of information** - An explanation of the meaning of another's work or definition.

**Issue Spotting** - The ability to identify issues derived from facts, which may be situational, spoken, written, product quality, behavioral, etc.

**Just in Time** - Denoting a system in which materials or components are delivered immediately before they are required in order to minimize inventory costs.

**Knowledge Application** - Comprises a range of strategies and practices used in an organization to identify, create, represent, distribute, and enable adoption of insights and experiences. Source: Merriam Webster Medical Dictionary

**Knowledge of product or service** - A familiarity, awareness or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning.

**Language Skills** - Language is the ability to acquire and use complex systems of communication, particularly the human ability to do so, and a language is any specific example of such a system. Language is absolutely central to learning: without it, one cannot make sense or communicate the understanding of a subject.

**Lawyers** - One whose profession is to advise as to legal rights and obligations in matters and conduct lawsuits for clients to establish legal rights.

**LCL (Less-than-Container-Load)** - An ocean-shipping and intermodal industry term; LTL equivalent in container shipping. Container freight stations at ports serve as consolidation and deconsolidation terminals. Historically, LCL also stands for less-than-carload. Before the prominence of interstate trucking, railroads offered less-than-carload (LCL) service but this business has largely disappeared.

**Lean Agile** -Lean is the 'What' and Agile is the 'How.' Lean evolved from process improvement efforts of manufacturing organizations. Initial improvement efforts focused on operations but later included 'Services' as found in the 'office' (e.g., HR, Order Delivery) and R&D (e.g., Product Development and Software Development). Lean Thinking helps us understand what our customer truly values and establishes metrics designed to provide evidence of our ability to satisfy their needs.

**LEED Certification** - The LEED Professional Credentials were developed to encourage green building professionals to maintain and advance their knowledge and expertise. A LEED Professional Credential provides employers, policymakers, and other stakeholders with assurances of an individual's current level of competence and is the mark of the most qualified, educated, and influential green building professionals in the marketplace.[1] All LEED Professional Credentials require adherence to the LEED Professional Disciplinary and Exam Appeals Policy and require ongoing credential maintenance requirements either through continuing education and practical experience or through biennial retesting. Starting in 2009, newly credentialed individuals must maintain their credential on a two-year cycles; if not, they expire. There are three tiers in the LEED Professional Credentialing program: Tier 1: LEED Green Associate; Tier 2: LEED AP with specialty; Tier 3: LEED Fellow.

**Liability** - The state of being responsible for something, especially by law.

**Life Safety Proficiency Requirements** - As the built environment and risks evolve throughout the life cycle of a building, so do the challenges to protect people from fire and related hazards. Life Safety Code provides a flexible approach that adapts to nontraditional use of buildings; innovative designs; and new technologies, materials, and construction practices in both new and existing structures with strategies for occupant safety. Source: NFPA.org

**Liner Shipping** - Liners are vessels sailing between specified ports on a regular schedule; schedule is published and available to the public. Most large container shipping companies operate liner services.

**Location Differential** - The value or amount of adjustment to a location, it may be higher or lower. The premium or discount of the physical product, the differential, represents the value the market attaches to the location, plus or minus, depending on price/quality. A price differential is not always due to a commodity's grade and quality but may also be reflective of physical locations for supply and demand.

**Logistics** - Logistics is generally the detailed organization and implementation of a complex operation. In a general business sense, logistics is the management of the flow of things between the point of origin and the point of consumption in order to meet requirements of customers or corporations.

**Lo-lo** - "Lift-on, lift-off" Conventional container or cargo ships, in which quay cranes are used to load and unload containers or generalized cargo.

**Longhaul** - Sometimes, linehaul. Terminal-to-terminal freight movements in transportation. Such long distance moves are distinguished from local freight movements.

**Loss and Damage** - Loss or damage of freight shipments while in transit or in a carrier-operated warehouse. Terms for the handling of claims are usually stipulated in the freight bill. Shippers/consignees usually take out insurance against L&D with premiums a function of the value of goods shipped, and the likelihood of L&D.

**LTL (Less-Than-Truckload)** - A trucking industry term; a less-than-truckload (LTL) shipment is when a shipper contracts for the transportation of freight that will not require an entire truck. LTL shipments are priced according to the weight of the freight, its commodity class (which generally determines its cube/weight ratio), and mileage within designated lanes. An LTL carrier specializes in LTL shipments, and therefore typically operates a complex hub-and-spoke network with consolidation/deconsolidation points; LTL carriers carry multiple shipments for different customers in single trucks.

**Machine to machine communication (M2M)** - Is used for automated data transmission and measurement between mechanical or electronic devices. The key components of an M2M system are: Field-deployed wireless devices with embedded sensors or RFID-Wireless communication networks with complementary wireline access includes, but is not limited to cellular communication, Wi-Fi, ZigBee, WiMAX, wireless LAN (WLAN), generic DSL (xDSL) and fiber to the x (FTTx).

**Maintenance and Repair** - Experts who combine extensive training with experience spent maintaining and repairing equipment, structures, and items.

**Maintenance Technicians** -Inspect, maintain, repair, and replace building mechanical and electrical systems. They might work with access control systems, building heating and refrigeration systems, fire detection and protection systems, and other building mechanical and electrical systems.

**Marketplace Digital Platforms** - Multimedia platforms that perform various business functions such as service, technology or product that lets two or more customer or participant groups have direct interactions. It may connect application developers and users and retail and consumers or function is collecting and analyzing marketing trends and patterns.

**Mechanics** - Concerned with the behavior of physical bodies when subjected to forces or displacements, and the subsequent effects of the bodies on their environment.

**Mechanics** - Mechanics are those who repair and maintain machinery.

**Mobile technology** - Technology that is portable; it refers to any device that you can carry with you to perform a wide variety of "tasks". It is technology that allows those tasks to be performed via cellular phone, PDA, vehicles, laptops, etc. It can be a cellular phone, a GPS navigation system, a web browser, and instant messenger system, a video gaming system, and much more. It includes the use of a variety of transmission media such as: radio wave, microwave, infra-red, GPS and Bluetooth to allow for the transfer of data via voice, text, video, 2-dimensional barcodes and more.

**Mobility** - Held devices such as smartphones or tablets can be repurposed to access enterprise services. Organizations may experience challenges with the bring-your-own-devices (BYOD) method including: which devices, what carrier, and who will support the solution. It also includes the organization's policy whether it includes standardization of operating systems, handheld devices, and streamlined operations for a wireless broadband environment, Source:

**Multitasking - Perform** more than one task, or activity, at the same time.

**Navigate Varied Infrastructures** - Plan and direct the route or course of a ship, aircraft, or other form of transportation, especially by using instruments or maps: through the basic physical and organizational structures and facilities (e.g., buildings, roads, and power supplies) needed for the operation of a society or enterprise.

**Negotiations** - A dialogue between two or more people or parties, intended to reach an understanding, resolve point of difference, or gain advantage in outcome of dialogue, to produce an agreement upon courses of action, to bargain for individual or collective advantage, to craft outcomes to satisfy various interests of two people/parties involved in negotiation process.

**Network Optimization** - Technology used for improving network performance for a given environment. It is considered an important component of effective information systems management.

**Network Planning** - The construction, design, and use of a network, including the physical (cabling, hub, bridge, switch, router, and so forth), the selection and use of telecommunication protocol and computer software for using and managing the network, and the establishment of operation policies and procedures related to the network.  
<http://searchnetworking.techtarget.com/definition/networking>.

**NVOCC** - Non Vessel-Operating Common Carrier. Owns no vessels (ships), but provides ocean shipping freight-forwarding services. Provides consolidated, negotiated-rate services for ocean and inland water carriers. Often will affiliate with freight forwarders to provide pickup/delivery, other services.

**Ocean Conference** - Cartel of vessel operators operating between specific trade areas. Set cargo rates for liners between ports.

**Open-Ended Response (OER)** - Permitting or designed to permit spontaneous and unguided responses.

**Optimization** - The action of making the best or most effective use of a situation or resource.

**OSHA** - The Occupational Safety and Health Administration is an agency of the United States Department of Labor. OSHA's mission is to "assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance". The agency is also charged with enforcing a variety of whistleblower statutes and regulations. OSHA's workplace safety inspections have been shown to reduce injury rates and injury costs without adverse effects to employment, sales, credit ratings, or firm survival.

**Other Shippers using lanes** - The general flow of merchant shipping between two departure/terminal areas. The type of goods, time of year, and ultimate destination of your cargo are just some factors to consider

**Other Shippers using lanes (Maritime)** - There are potentially an infinite number of maritime shipping routes that can be used for commercial circulation, but the configuration of the global system is relatively simple. The main axis is a circum-equatorial corridor linking North America, Europe and Pacific Asia through the Suez Canal, the Strait of Malacca and the Panama Canal. Maritime routes are a function of obligatory points of passage, which are strategic locations, of physical constraints (coasts, winds, marine currents, depth, reefs, ice) and of political borders.

**Pallet / Skid** - A small platform, 40x48 inches usually, on which goods are placed for handling within a warehouse or a transportation vehicle such as a ship. Good for grouping break-bulk cargo for handling.

**Parts Management - Software** - Comprehensive parts inventory software system that maintains parts inventory as well as databases in the most cost effective and suitable way. The primary functionality is stock control and caters to reorders and parts management.

**Parts Management Skills** - Include good product knowledge, capable of managing inventory and effective systems, purchasing and negotiation skills. Often responsible for sales and require good customer service skills to deal with customers' problems and build loyalty.

**Permian Basin** - A sedimentary basin largely contained in the western part of the U.S. state of Texas and the southeastern part of the U.S. state of New Mexico. It reaches from just south of Lubbock, to just south of Midland and Odessa, extending westward into the southeastern part of New Mexico. It is so named because it has one of the world's thickest deposits of rocks from the Permian geologic period. The greater Permian Basin comprises several component basins: of these, Midland Basin is the largest, Delaware Basin is the second largest, and Marfa Basin is the smallest. The Permian Basin extends beneath an area approximately 250 miles wide and 300 miles long.

**Pickup and Delivery (Cartage)** - Local hauling of freight. Often the trucking service used for transferring freight from the shipper to a terminal, or from a terminal to a consignee.

**Pilots** - A pilot or aviator is a person who controls the flight of an aircraft by operating its directional flight controls. They may be private or commercial pilots who fly varying size aircraft with different training levels and licensing and certification requirements.

**Planning** - Planning (also called forethought) is the process of thinking about and organizing the activities required to achieve a desired goal. It involves the creation and maintenance of a plan, such as psychological aspects that require conceptual skills. There are even a couple of tests to measure someone's capability of planning well. As such, planning is a fundamental property of intelligent behavior.

**Plant Engineers** - Plant Engineering is the function responsible for planning, designing, specifying, installing, modifying and maintaining plant facilities, systems and equipment.

**Ports Free Trade Agreements** - A town or city with a harbor where ships load or unload, especially one where customs officers are stationed. Free trade is a policy followed by some international markets in which countries' governments do not restrict imports from, or exports to, other countries. Free trade is exemplified by the European Economic Area and the North American Free Trade Agreement, which have established open markets. Most nations are today members of the World Trade Organization (WTO) multilateral trade agreements.

**Postponement** - A deliberate delay in committing inventory to shipment by a shipper. Usually, shippers utilize postponement in order to consolidate freight into larger shipments that have a lower unit transportation cost.

**Prioritizing tasks** - To prioritize is to organize or complete things in order of their importance. When you do the most important tasks first and then continue on to tasks of lesser importance, this is an example of a situation where you prioritize.

**Private Carrier** - Owned and operated by a shipper. Usually refers to private trucking fleets. Components include: vehicle fleet, drivers, maintenance equipment. Often more expensive than contracting out, but not always. Can serve special needs: fast, high- on time-reliability delivery; special equipment; special handling; availability.

**Problem solving** - Consists of using generic or ad hoc methods, in an orderly manner, for finding solutions to problems. Some of the problem-solving techniques developed and used in artificial intelligence, computer science, engineering, mathematics, or medicine are related to mental problem-solving techniques studied in psychology.

**Process Automation** - Business process automation (BPA) is defined as the automation of complex business processes and functions beyond conventional data manipulation and record-keeping activities, usually through the use of advanced technologies.

**Process Compliance** - The process which ensures that a set of people are following a given set of rules. The rules are referred to as the compliance standard or compliance benchmark, while the process is what manages their compliance.

**Process Focused** - The purpose of Organizational Process Focus (OPF) is to plan, implement, and deploy organizational process improvements based on a thorough understanding of current strengths and weaknesses of the organization's processes and process assets.

**Process LEED Control (PLL)** - LEED, or Leadership in Energy and Environmental Design, is changing the way we think about how buildings and communities are planned, constructed, maintained and operated. LEED works for all buildings—from homes to corporate headquarters—at all phases of development. Projects pursuing LEED certification are resource efficient. They use less water and energy and reduce greenhouse gas emissions.

**Process Workers** - An orchestrated and repeatable pattern of business activity enabled by the systematic organization of resources into processes that transform materials, provide services, or process information. It can be depicted as a sequence of operations, declared as work of a person or group, an organization of staff, or one or more simple or complex mechanisms.

**Product Liability** - The legal liability a manufacturer or trader incurs for producing or selling a faulty product.

**Professional Communications** - Professional communication encompasses written, oral, visual and digital communication within a workplace context. This discipline blends together pedagogical principles of rhetoric, technology, software, and learning theory to improve and deliver communication in a variety of settings ranging from technical writing to usability and digital media design.

**Project Scheduling** - In project management, a schedule is a listing of a project's milestones, activities, and deliverables, usually with intended start and finish dates. Those items are often estimated by other information included in the project schedule of resource allocation, budget, task duration, and linkages of dependencies and scheduled events.

**Proper Time Management** - The act or process of planning and exercising conscious control over the amount of time spent on specific activities, especially to increase effectiveness, efficiency or productivity.

**Property Acquisition** - A person or other entity acquiring title to real property by a deed. A deed is the legal instrument used to transfer ownership in real estate.

**Public Roads and Bridges** -Any road, street or thoroughfare , bridge, or any other place (whether a thoroughfare or not) which is commonly used by the public or any section thereof or to which the public or any section thereof has a right of access.

**Purpose** - The reason for which something is done or created or for which something exists.

**Quality Control (QC)** - A system of maintaining standards in manufactured products by testing a sample of the output against the specification.

**Quay crane/portainer crane** - A quay is the dock. The portainer cranes are the large cranes used to lift containers from truck chassis (or rail flatcar, or from the quay) and load onto a ship.



**Radio Frequency Information Device (RFID)** - An automated data collection technology that uses radio frequency waves to transfer data between a reader and a tag to identify, track and locate the tagged item.  
<http://www.gartner.com/it-glossary/radio-frequency-identification-rfid/>

**Reading Skills** - Include skills acquired through reading, such as comprehension, fluency and independence. Overall, these skills give students the ability to turn words on a page into a clear meaning.

**Reefer** - A refrigerated container. For long storage in transit (or in ports) must be plugged into a ship's power system (or ports). Temporary power units can be attached that last for 18-36 hours.

**Regulation - Local, Federal, State:** - Laws that a business must obey, or risk , sanctions, up to and including prison for its officers. For instance, in December 2016, National Highway Transportation Safety Agency (NHTSA) proposed requiring light-duty vehicles be equipped with vehicle-to-vehicle (V2V) communications technology by 2023. The Department of Transportation released its Federal Automated Vehicles Policy and guidelines for developers in September 2016. In January 2016, the Department of Transportation (DOT) announced a 10-year, \$4 billion plan to accelerate vehicle automation.

**Regulation compliance** - Describe the goal that corporations or public agencies aspire to achieve in their efforts to ensure that personnel are aware of and take steps to comply with relevant laws and regulations. Due to the increasing number of regulations and need for operational transparency, organizations are increasingly adopting the use of consolidated and harmonized sets of compliance controls. This approach is used to ensure that all necessary governance requirements can be met without the unnecessary duplication of effort and activity from resources.

**Requirements Gathering** - An essential part of any project and project management. Understanding fully what a project will deliver is critical to its success. Requirements gathering sounds like common sense, but surprisingly, it's an area that is given far too little attention.

**Research Capabilities** - The systematic, rigorous investigation of a situation or problem in order to generate new knowledge or validate existing knowledge. Areas may include professional practice, environmental issues; theory development, economics, and many others. Research can be conducted by one group of professionals for generation of knowledge specific to that group, or by a diverse group of researchers collaborating on a given problem.

**Retention** - The act of keeping someone or something as in retaining employers or customers.

**Return on Investment Analysis** - A performance measure used to evaluate the efficiency of an investment or to compare the efficiency of different investments. A traditional financial measure to determine benefit to the business such as: benefit of training, benefit of asset purchase decisions (computer systems or a fleet of vehicles), or marketing, recruiting programs. It is also is a metric that yields some insights into how to improve business results in the future.

**Risk Management** - Risk management is the identification, assessment, and prioritization of risks (defined in ISO 31000 as the effect of uncertainty on objectives) followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities.

**Robotics** - Robotics is the branch of mechanical engineering, electrical engineering and computer science that deals with the design, construction, operation, and application of robots, as well as computer systems for their control, sensory feedback, and information processing. These technologies deal with automated machines that can take the place of humans in dangerous environments or manufacturing processes, or resemble humans in appearance, behavior, and/or cognition. Many of today's robots are inspired by nature contributing to the field of bio-inspired robotics.

**Ro-ro** - "Roll On/Roll Off" A method of ocean cargo service using a vessel with ramps which allows wheeled vehicles to be loaded and discharged without cranes.

**Rules of Origin** - Are used to determine the country of origin of a product for purposes of international trade. There are two common types of rules of origin depending upon application, the preferential and non-preferential rules of origin (19 CFR 102). The exact rules vary from country to country, from agreement to agreement.

**Search Engine Optimization Skills** -The methods used to boost the ranking or frequency of a website in results returned by a search engine, in an effort to maximize user traffic to the site: The first step in SEO is to generate keywords that are relevant to your site's content.

**Sensors** – A device that responds to a physical stimulus (as heat, light, infrared (IR) sound, pressure, magnetism, or a particular motion) and transmits a resulting impulse (as for measurement or operating a control).

**Shipper / Consignor** - An individual or firm that sends freight. A freight originator.

**Shippers Association**- Not-for-profit association of shippers using collective bargaining and freight consolidation to obtain lower, high-volume transportation rates; similar to freight forwarding w/o profit motive. Avoids premium charges paid to forwarders. Only non-competitive shippers may associate, due to monopoly restrictions.

**Situational Awareness** - Or situation awareness (SA) is the perception of environmental elements with respect to time or space, the comprehension of their meaning, and the projection of their status after some variable has changed, such as time, or some other variable, such as a predetermined event.

**Six Sigma/LEEN** - Seeks to improve the quality of process outputs by identifying and removing the causes of defects (errors) and minimizing variability in manufacturing and business processes.

**Six Sigma Certification** - Sometimes stylized as  $6\sigma$ , is a set of techniques and tools for process improvement. A business management strategy aimed at improving the quality of process outputs by identifying and removing the causes of defects and minimizing variability.

**SKU** - Stock-keeping unit. A line-item of inventory, that is a different type or size of good.

**Slot** - A place for a container onboard a container ship; typically, one TEU fits in a slot.

**Social Media Networking**- The practice of expanding the number of one's business and/or social contacts by making connections through individuals. <http://whatis.techtarget.com/definition/social-networking>

**Software** - A general term for the various kinds of programs used to operate computers and related devices. <http://searchsoa.techtarget.com/definition/software>

**Software Automation** - Or automatic control, is the use of various control systems for operating equipment such as machinery, processes in factories, boilers and heat treating ovens, switching on telephone networks, steering and stabilization of ships, aircraft and other applications with minimal or reduced human intervention. Some processes have been completely automated.

**Software Coding** - Written by a programmer in a high-level language and readable by people but not computers. Source code must be converted to object code or machine language before a computer can read or execute the program.

**Software Engineering** - The application of mathematics and technology to the design, implementation, and testing of computer programs to optimize their production and support

**Software Management Skills** -Process of managing software that is built and implemented as a product, taking into account life-cycle considerations and generally with a wide audience. It is the discipline and business process which governs a product from its inception to the market or customer delivery and service in order to maximize revenue.[1] This is in contrast to software that is delivered in an ad hoc manner, typically to a limited clientele, e.g. service.

**Software Troubleshooting** -A systematic approach to problem solving that is often used to find and correct issues with complex machines, electronics, computers and software systems. The first step in troubleshooting is gathering information on the issue, such as an undesired behavior or a lack of expected functionality.

**Standardization** - The process of implementing and developing technical standards. Standardization can help to maximize compatibility, interoperability, safety, repeatability, or quality. It can also facilitate commoditization of formerly custom processes.

**Straddle Carrier** - Mobile truck equipment with the capacity for lifting a container within its own framework, and transporting containers around yards. Containers stacked in rows one across.

**Strategic Thinking** - A mental or thinking process applied by an individual in the context of achieving success in a game or other endeavor. As a cognitive activity, it produces thought.

**Structural Engineering** - Trained to understand and calculate the stability, strength and rigidity of built structures for buildings and nonbuilding structures, to develop designs and integrate their design with that of other designers, and to supervise construction of projects on site.

**Supply Chain Management (SCM)** - The management of the flow of goods and services. It includes the oversight of materials, information, finances and movement and storage of raw materials, work-in-process inventory, and finished goods from point of origin to point of consumption. Interconnected or interlinked networks, channels and node businesses are involved in the provision of products and services required by end customers in a supply chain.

**Sustainability** - Of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged.

**Switching** - Switching is a railroad term denoting the local movement of freight rail cars. Rail cars are switched from the private siding of a shipper to the terminal, or switched from the terminal to the private siding of the consignee. (Note: a siding is a section of rail line that runs from a railroad's line into an industrial facility. If an industry using rail shipping does not have a siding, they will likely use (1) intermodal containers, or (2) use a cartage service to transfer goods to/from a rail terminal.)

**System Integration** - In engineering, system integration is defined as the process of bringing together the component subsystems into one system and ensuring that the subsystems function together as a system. In information technology, systems integration is the process of linking together different computing systems and software applications physically or functionally, to act as a coordinated whole.

**Systems Thinking** - Can refer to material objects of use to humanity, such as machines, hardware or utensils, but can also encompass broader themes, including systems, methods of organization, and techniques. The term can either be applied generally or to specific areas such as "state-of-the-art technology". Source: Business Directory.com

**Tax Abatements** - A reduction in the level of taxation faced by an individual or company. Examples of an abatement include a tax decrease, a reduction in penalties or a rebate. If an individual or business overpays its taxes or receives a tax bill that is too high, it can request an abatement from the tax authorities.

**Tax Laws** - Tax law is an area of legal study dealing with the constitutional, common-law, statutory, tax treaty, and regulatory rules that constitute the law applicable to taxation.

**Tax Rate Optimization** - The logical analysis of a financial situation or plan from a tax perspective to align financial goals with tax-efficiency planning. It encompasses many different aspects, including the timing of both income and purchases (and other expenditures), selection of investments and types of retirement plans, as well as filing status and common deductions.

**Taxes** - A compulsory contribution to state revenue, levied by the government on workers' income and business profits or added to the cost of some goods, services, and transactions.

**Telecommunications** - According to Article 1.3 of the International Telecommunication Union's (ITU) Radio Regulations (RR) – defined as "Any transmission, emission or reception of signs, signals, writings, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems."

**Telemetric** - Or Telemetry is an automated communications process by which measurements are made and other data collected at remote or inaccessible points and transmitted to receiving equipment for monitoring. The word is derived from Greek roots: tele = remote, and metron = measure. Systems that need external instructions and data to operate require the counterpart of telemetry, telecommand.

**Terminal** - Transportation facility with one or more of the following roles: 1. System access: terminals are points at which freight enters and leaves the transportation system. 2. Freight consolidation/distribution. 3. Mode transfer: freight may change from one mode to another, for example, rail to truck. 4. Vehicle transfer: within a single mode, freight may transfer from one vehicle to another. 5. Storage and warehousing 6. Fleet maintenance.

**Terminology** - The system of terms belonging or peculiar to a science, art, or specialized subject.

**Testing** - Take measures to check the quality, performance, or reliability of (something), especially before putting it into widespread use or practice:

**TEU** - Twenty-foot equivalent unit. Method of measuring vessel load or capacity, in units of containers that are twenty feet long. A 40' long container measures 2 TEUs.

**TL / FTL (Truckload, Full Truckload)** - A trucking industry term; a truckload shipment is when the shipper contracts an entire truck for direct point-to-point service. Truckload shipments are priced per mile within designated lanes, regardless of the size of the shipment provided it fits (weight, cube) within the vehicle. Less expensive per unit weight shipped than LTL. A truckload carrier is a trucking company specializing in point-to-point truckload shipments.



**TOFC / Piggyback** - Trailer-on-flatcar. A term used in intermodal transportation in which truck trailers or container/chassis combinations are placed directly onto rail flatcars for the rail portion of the trip. TOFC trains are generally heavier and longer per unit ton shipped, but have the advantage that unloaded trailers can be moved out of the intermodal terminal without worrying about finding a chassis; thus, the equipment management issues are simpler.

**Trade Compliance** - The process by which companies that ship goods internationally strategize to comply with all laws and regulations of the countries being shipped to.

**Training** - The action of teaching a particular skill or type of behavior.

**Tramp Shipping** - An ocean carrier company operating vessels not on regular runs or schedules. They call at any port where cargo may be available. Sometimes used for bulk cargo shipping.

**Transit Privileges / Stopoff Charges** - Carriers may allow cargo to be stopped in transit from initial origin to final destination to be unloaded, stored, and/or processed before reloading and final shipment. Extra charges are imposed for these transit privileges. Stopoff charges are levied for when shippers request that a shipment may be partially loaded at several locations and/or partially unloaded at several locations en route.

**Transportation 101** - A document *Transportation 101: An Introduction to Federal Transportation Policy* released by Transportation America - <http://t4america.org/docs/Transportation%20101.pdf>

**Transportation Broker** - An agency that obtains negotiated large-volume transportation rates from carriers, and resells this capacity to shippers. Unlike freight forwarders, will not handle freight and owns no pickup/delivery equipment or storage facilities.

**Transtainer / RTG** - Rail or rubber-tired gantry crane. Large yard (ship or rail) container crane. Lifts from a stack of containers 5,6,7 wide, and deposits onto truck chassis or rail flatcar.

**Urbanization** - A population shift from rural to urban areas, "the gradual increase in the proportion of people living in urban areas", and the ways in which each society adapts to the change. It is predominantly the process by which towns and cities are formed and become larger as more people begin living and working in central areas.

#### **U.S. Department of Commerce Export Regulations -**

**U.S. Department of State Export Regulations** - A department of the federal executive branch primarily responsible for making and conducting foreign policy. It is commonly called the State Department and has many responsibilities including setting regulations on products that may be imported and exported, and methods of importation and exportation, to keep the country safe.

**Validation Process - ISO** - Establishing by objective evidence that a process consistently produces a result or product meeting its predetermined requirements. Process Validation is the analysis of data gathered throughout the design and manufacturing of a product in order to confirm that the process can reliably output products of a determined standard.

**Verbal Communication** - The sharing of information between individuals by using speech. Individuals working within a business need to effectively use verbal communication that employs readily understood spoken words, as well as ensuring that the enunciation, stress and tone of voice with which the words are expressed is appropriate.

**Waterways** - Canal, river, or narrow channel of sea which ships or boats can sail along.

**Web Design/Portal** - A web portal is a term, often used interchangeably with gateway, for a World Wide Website whose purpose is to be a major starting point for users when they connect to the Web. There are general portals and specialized or niche portals. Privately designed niche portals are those that are used by employees of a company. A number of large access providers offer portals to the Web for their own users.

**Wellness - Physical and Mental** - Health and wellness are not synonyms. Health refers simply to a physical and mental body being free from diseases, but wellness is an overall balance of your physical, mental, social, spiritual, emotional, intellectual, environmental, and occupational well-being.

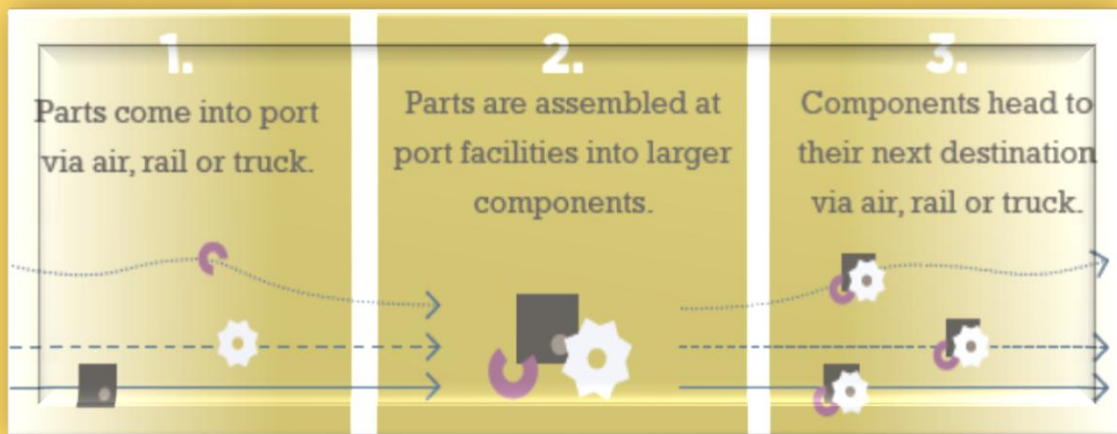
**Wellness** - The state or condition of being in good physical and mental health.

**Workman's Compensation** - A form of insurance providing wage replacement and medical benefits to employees injured in the course of employment in exchange for mandatory relinquishment of the employee's right to sue his or her employer for the tort of negligence.

**Writing skills** - Communicating a point quickly and professionally by identifying the intended audience before creating the document, using grammatical and stylistic techniques to help write more clearly, and proof reading the final document. Source: [www.businessdictionary.com](http://www.businessdictionary.com)

**Zoning Laws** - Zoning describes the control by authority of the use of land, and of the buildings thereon. Areas of land are divided by appropriate authorities into zones within which various uses are permitted. Thus, zoning is a technique of land-use planning as a tool of urban planning used by local governments in most developed countries.

### HOW INTERMODAL FACILITIES WORK



Source: Texas Comptroller of Public Accounts

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