

# The Roadmap Towards the Digital Economy Era

Germany  
Trade Efficiency Assessment



The shipment is at the very core of the global economy. It moves the food we eat, the clothes we wear, and the materials we use to build our cities. The shipment impacts the nature and quality of our very lives.



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Connecting the Strengths of the World Community, Creating Well-Being Across Humanity

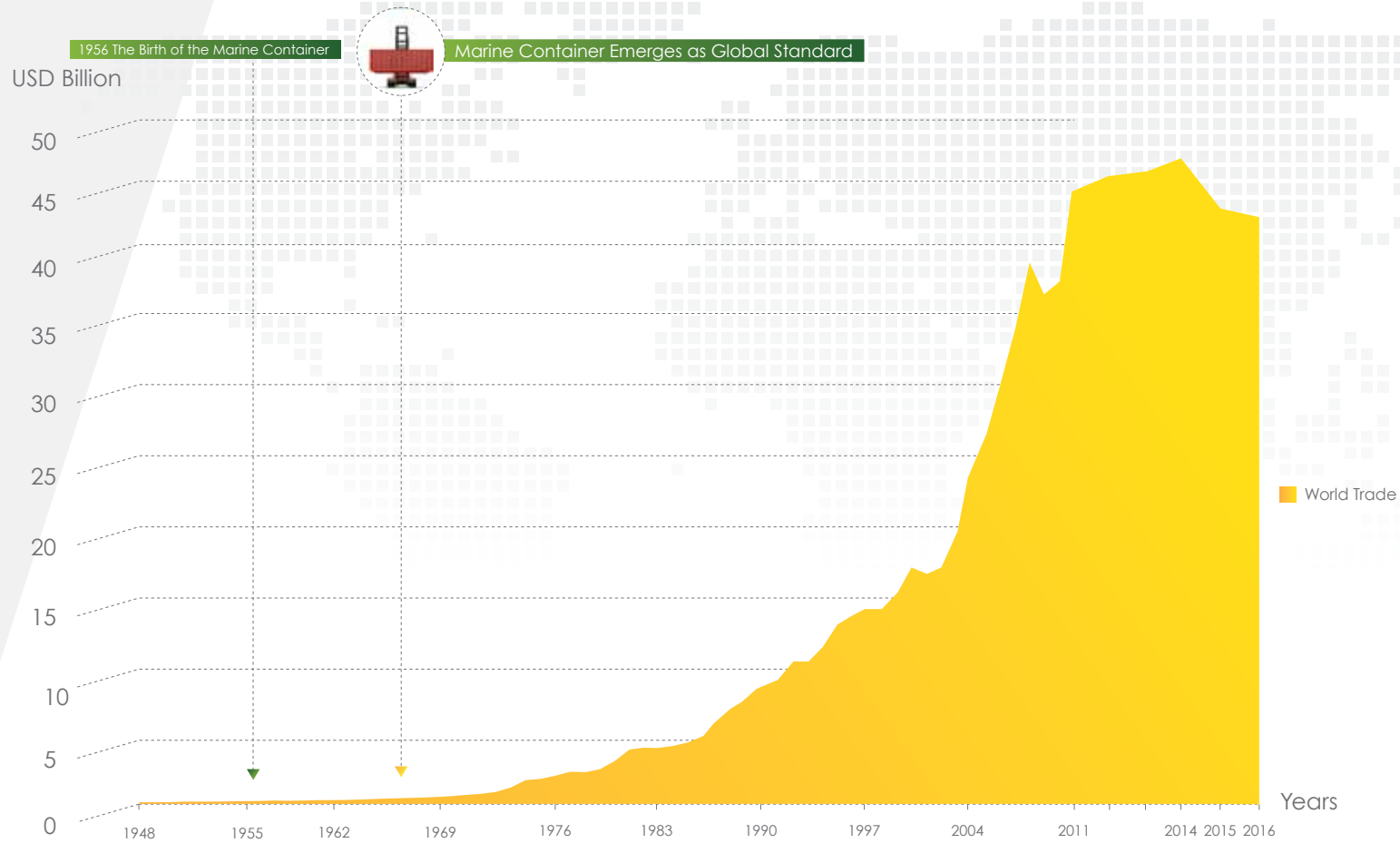


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# World Trade Volume, 1948 - 2016

## 1966



Source: The World Bank, Exports and Imports of Goods and Services time series. <http://data.worldbank.org/topic/trade>.  
Total World Trade is the sum of total imports and exports for World Goods and Services Trade.

## Foreword By The Co-Chairman

The world's leaders are exerting major proficiencies when navigating the tidal waves represented by jurisdictional boundaries in the interdependent global economic arena, while maintaining the commitment to their own citizens to deliver a tangible global economic solution.

Despite the foregoing, the diminishing trust the world is experiencing between political leaders and the very citizens they represent is widening. According to global experts, the G20's actions must strive to meet the economic aspirations of the world.

We must change the pattern of diminishing trust by working together to capitalize on what each sector does best within its capabilities and jurisdictions. This is the foundation of the following Implementable Policy Formula (IPF) that forms the basis of the G20 Nations Case Study launched by GCEL at the Second 2015 B20 Joint Task Force Meeting - OECD Headquarters, Paris, June 2015:

### **I. Common Denominator Among Policies**

This is the most common and comprehensive denominator of those tangible and quantifiable policies that have a rapid and direct positive impact on the real economy.

*2015 Turkey B20/G20:* The G20 adopted the Digital Economy as a policy initiative since it impacted 17 out of 25 key B20 2015 Turkey Taskforce recommendations.

*2016 China B20/G20:* The G20 recognized the B20 2016 China recommendation for the electronic World Trade Platform (eWTP), a precursor to a more comprehensive Digital Economy Platform.

*2017 Germany B20:* Established for the first time a "Digitalization Task Force" to focus on Digital Economy implementation.

Today, global leaders have embraced the Digital Economy as a common and comprehensive denominator for the implementation of policies.

### **II. Validation From The Ground Level**

It is of paramount importance that policy benefits are validated by listening to the voice of the real economy participants impacted by these policies at the ground level.

This is the foundation of the G20 Nations Case Study in hand that presents the voice of the G20 citizens at the ground level through the highest world standard assessment involving more than 70 ministries, NGOs/ IGOs and academia from the G20 countries. This Case Study will shape how the Digital Economy should look to serve as the tool to implement the recommendations by the policy makers.

As of the date of this report, the results of the global study have been staggering: 90.4% do not have an integrated system and 94.5% have commonly agreed on the digital tools needed to do a better job.

### **III. Industry Capability & Commitment**

Once the policy's benefits are validated at the ground level, we must secure the related industry resources for rapid implementation.

We have secured the commitments of the world's top technology companies—servicing more than 60% of the world's GDP and with more than 2.6 million experts—to collectively deliver upon policy makers' recommendations to meet the needs of the real economy participants, at no cost to the end-user.

We must understand that the main objective is not the creation of the Digital Economy for its own sake, but rather for the restoration of global economic health. Therefore, the question remains, "Where do we start?". Experts worldwide agree that the mother of all industries is the global Business-to-Business (B2B) marketplace that has reached USD 140 trillion in 2015 based on the Visa Commercial Consumption Expenditure Index Report, with trade at its core.



“Enhancing efficiency through innovation demands that we first step ‘outside the box’ of our traditional thinking and establish new standards based on the technological possibilities of our tomorrow”.

— Global Coalition for Efficient Logistics (GCEL)

Trade is founded upon four interdependent pillars: Commerce, Finance, Insurance, and Logistics. The weakest of these industries by far is logistics, owing to its fragmentation and inefficiency. It is, however, also the vital linchpin that connects our world. Therefore, it is essential that we begin by strengthening the global logistics industry through a solid digital platform, which will produce the highest-grade fuel to power the B2B marketplace to its maximum output. This fuel is information, created from data of the highest quality, Ultimate Data Quality (UDQ), which is dynamically and continuously validated by multiple parties in the global value chains. UDQ has a high level of veracity and can be relied upon by participants in the global B2B marketplace to help make informed purchasing decisions. It also benefits service providers such as banks and insurance companies due to the de-risking effect created by greater transparency within global supply chains and provides the strongest foundation for strategic decision-making by CEOs on whether to centralize, decentralize, or create new operations to maximize their return on equity (ROE).

This report identifies the necessary steps and available technology tools to improve the performance level of the logistics industry, thereby fulfilling global trade efficiency aspirations. This is the spirit of innovation the world needs, much like the spirit that enabled a simple steel box, the marine container, to unleash tremendous levels of efficiency and decades of global economic growth. We have a tremendous opportunity before us. Globally, we can use new digital tools to reduce annual trade costs by USD 3.7 trillion, increase trade by USD 7.7 trillion, and increase the world's GDP by 17%, in addition to creating nearly 310 million jobs by 2030.

In Germany alone, annual domestic and international trade cost savings can reach USD 57.1 billion, trade can be increased by USD 334 billion and more than 2.2 million jobs can be created through the digitization of trade activities. Furthermore, the digital tools for doing a better job on the ground level, that have been commonly defined in this report by 94.9% of Germany's trade community, will also serve to assist Germany towards achieving its national strategic objectives; to name a few:

- i. Maximize Germany's expertise in mid and high value production and grow services
- ii. Minimize Germany's dependency on the high income countries by building the buying power of mid and low income countries, and
- iii. Improve Germany's ease of doing business

Finally, this document is the first tangible step towards realizing the Digital Economy and renewing prosperity around the world, at no cost to the end-user. This report shows where we are and where we must go; best of all, it shows us how to get there. By diagnosing and acting upon Germany's trade efficiency challenges presented in this report, we will create a solid foundation for sustained economic growth, thus enabling Germany to serve as a benchmark for a new era of prosperity in the European region and the world.

*Captain Samuel Salloum*

Co-Chairman

— **The Global Coalition for Efficient Logistics**, February 2017



**The Global Coalition for Efficient Logistics extends its gratitude to the following organizations for their participation in the execution of the Germany Trade Efficiency Assessment:**

**FEDERAL MINISTRY FOR ECONOMIC AFFAIRS AND ENERGY**

Reviewed the survey methodology, survey process analysis, and the final report.

**THE GERMAN ASSOCIATION FOR SMALL AND MEDIUM-SIZED BUSINESSES (BVMW)**

Reviewed the survey methodology, survey process analysis, and the final report.

**UNIVERSITY OF GÖTTINGEN**

Reviewed the survey methodology, survey process analysis, and the final report.

**THE NIELSEN COMPANY**

Reviewed the survey methodology and conducted survey interviews.

We would also like to extend our thanks to the various firms, organizations, and agencies which graciously participated in the Germany Trade Efficiency Assessment—generously providing us with their time, attention, and insightful responses.

*Thank  
You*



## Executive Summary

Governments and leading international organizations have recognized the importance of trade efficiency as the key to prosperity of peoples, nations, and the whole world. The inefficiency of global trade increases the cost of our food, clothing, and the materials we use to build our cities—ultimately compromising the well-being of people worldwide. On the other hand, all of us stand to benefit from gains in trade efficiency and security.

Trade is founded upon four interdependent pillars: Commerce, Finance, Insurance and Logistics. The weakest link between the four industries is Logistics. Yet, at the same time, it is the common denominator of our world. Maximizing the efficiency of global logistics represents the solid foundation required to empower the other three industries—presenting a new era of trade efficiency to the world. By establishing an open digital logistics platform, we will enhance digital commerce, digital finance, and digital insurance—ultimately empowering the Digital Economy.

In fact, when the marine container made logistics more efficient and secure, it was able to reduce the cost of trade exponentially, including cutting loading costs from USD 5.86 to USD 0.16 per ton. Today, with digital technology, we can do it again, thus providing Germany with USD 57.1 billion in yearly international and domestic trade cost savings. This sets the foundation for trade increase and job creation. The first step in reaching the level of digital technology utilization necessary for maximum trade efficiency is to determine Germany's current efficiency levels.

When assessing the level of modern digital technology utilization, efficiency measurements should not be based only upon the current best practices but also on a new standard in order to meet 21<sup>st</sup> century trade efficiency requirements. This standard is based upon what current technology makes possible when

applied to the following six key areas: Integration, Processes, E-Documentation, Tracking & Visibility, Competence, and Cargo Security. These areas have been separately recognized by renowned international organizations—including the World Bank, UNCTAD, and APEC—as essential factors to trade efficiency and basic foundations of our 21<sup>st</sup> Century 6 Elements Trade Efficiency Indicators (21-6-ETEI) standard.

The Germany Shipment and Trade Efficiency Assessment (SEA) begins by recognizing that trade is inherently a horizontal process, and that its efficiency is defined by the movement of a shipment through each segment of the trade pipeline. Thus, information was gathered along the full extent of this pipeline, sampling participants from businesses of all sizes and in all trade zones. By covering the entire shipment flow, the SEA is able to highlight the strengths and weaknesses of individual regions and clusters. Global experts have reached a consensus that this analysis demonstrates the new standard for SEA by virtue of:

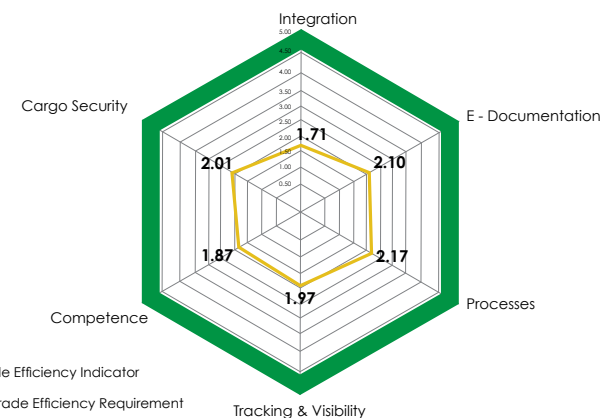
- ▶ *Scale / Scope:* The SEA covers all private and public participants in the flow of trade, including Customs, logistics service providers, shippers, financiers, and insurance providers.
- ▶ *Breadth of Sample:* The study targeted industry participants from small, medium, and large enterprises, as well as from the public sector throughout the entire logistics pipeline.
- ▶ *Geographic Coverage:* Respondents were surveyed in all key trade zones of the country.
- ▶ *Sample Size:* Throughout the country, the survey included more than 10 times the number of respondents sampled in the existing world standard.
- ▶ *Direct Sampling:* Assessments were conducted with trained examiners on a person-to-person basis, rather than via electronic or automated means.

- ▶ **Survey Methodology:** Questions were illustrated in order to visualize the subject of inquiry, thus ensuring ease of understanding which results in optimum response accuracy.
- ▶ **Quality Assurance:** The survey received world-class oversight and an extensive quality control cross-check to ensure data accuracy, as well as call backs to over 45% of survey respondents to further substantiate data quality.

The ZOLL National Single Window portal and several systems including SEED, PSC, TARIC, REX, EORI, and TRANSIT have been instrumental in advancing Germany's digital trade capabilities with the goal of integrating trade-related systems, increasing trade, and enhancing cargo security.

However, the main obstacle facing all 19 clusters is that 81.8% of the businesses surveyed in Germany do not have an integrated vertical system and depend on third parties. Furthermore, 95.5% of the data transmitted among trade participants is through manual methods of fax and email. This number of companies with no vertical systems and which rely on manual data transmittal between trade participants is so large that it delays integration, both within Germany as well as with its foreign trade partners. This restrains Germany from achieving the trade efficiency required to maximize its potential and realize the economic ambitions of German businesses.

Based upon the survey results, the following chart illustrates where Germany stands today in relation to the 21-6-EETI. For trade to reach its highest potential, all six areas must perform at peak efficiency. As the 21-6-EETI chart indicates, there is an opportunity for optimization in each of the six areas where Germany is concerned. The values expressed for each area are presented on a scale of 0 to 5, with 5 representing peak performance within an optimal environment. The efficiency of a trade pipeline cannot be more than that of its weakest participant. Hence, by using in-house vertical systems, without horizontal integration with all trade lane participants, the maximum allowable score in any of the six efficiency elements is 2.5. Therefore, the Integration score that measures horizontal connectivity among all clusters involved in logistics is a key determinant of the other five efficiency scores. Peak performance relative to the individual areas is explained in detail within the body of this analysis.



The report acknowledges the pioneering effort by Germany to facilitate trade by investing in the National Single Window that connects a range of systems through its ZOLL secure online portal including ICS (Import Control System), SEED (System for Exchange of Excise Data), TARIC (EU System Customs Union Tariffs System), VIES (VATS Information Exchange System), REX (Registered Exporter System), EORI (Economic Operator System), and TRANSIT (System for Tracking Movement of Goods using Movement Reference Number) that establish Germany at the forefront of the efficiency in logistics. These initiatives aim to advance Germany's digital trade capabilities, and provide the benchmark for all trade pipeline participants in Germany to follow suit on the importance of technology for trade efficiency.

However, the findings of this report indicate that 81.8% of participants surveyed in Germany do not have integrated systems and depend on third parties to leverage these systems. On average, 95.5% of their communications are still manual through mail, fax, and email, restricting them from achieving the peak trade efficiency.

The survey results clearly demonstrate that Germany has worked hard to create a favorable trade environment; however, substantial opportunities exist to achieve the country's full potential:

- ▶ Under the 21-6-EETI standard, Germany's scored 1.71 on Integration. This signifies that the implementation of the Single Window Initiative and a range of digital tools provided by Germany has provided the foundation for applying information technology for trade facilitation. However, Germany needs to embrace an innovative approach to increase the levels of

integration horizontally to further improve the collaboration among the trade participants in its trade pipelines to increase its trade efficiency and achieve economic growth.

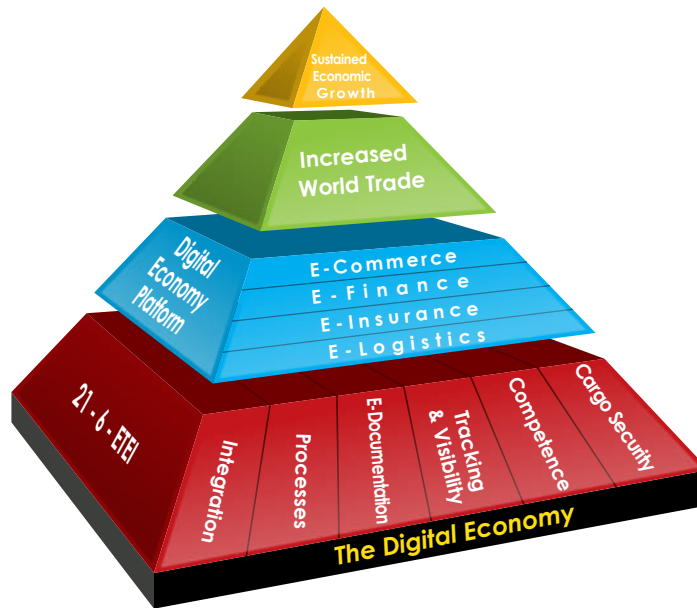
- ▶ The Processes score of 2.17 indicates an opportunity for Germany to realize the 21-6-ETEI standard. Germany has gained reputation as the most efficient manufacturer in the world in managing handoffs in its value chains effectively. However, Germany needs to embrace innovation to enhance its horizontal processes across all its jurisdictions to improve the efficiencies of its global value chains and increase the global competitiveness of German businesses, especially its SMEs.
- ▶ Germany's Tracking & Visibility score of 1.97 indicates that there is further opportunity to enhance the ability for Germany to obtain real-time information concerning a shipment's location and movements throughout the global value chains. Improved shipment visibility within Germany's trade pipelines, can further improve the predictability of shipment deliveries, enable planning of operations, help realize just-in-time inventory levels, and decrease overall operational costs.
- ▶ Germany's E-Documentation score of 2.10 on the 21-6-ETEI standard suggests that currently it has a moderate capability for electronic documents delivery of shipment information among the participants in its trade pipelines. Currently up to 80% of the shipping data is re-entered and 95.5% of shipment information is exchanged by mail, fax, or email; this results in shipment delays due to errors caused by manual data sharing methods. New innovation is needed for Germany to seamlessly share trade related information across all the participants in its trade pipelines to facilitate advanced customs clearance, reduce shipment delays, and decrease trade costs.
- ▶ The Competence score of Germany is 1.87. This signifies that German businesses need to enhance their workforce Competency to retain their global competitive edge. By leveraging innovation that transform contractual obligations into electronic metrics, monitoring job completion and escalating when necessary as well as training the workforce in using such digital tools will assist the German businesses to stay at the forefront of the global value chain efficiencies.
- ▶ Germany's Cargo Security score of 2.01 reflects the leadership role of the German government in implementing the Single Window system to streamline practices of trade participants that enabled it to gather advanced information to be able to anticipate and proactively prevent dangerous goods from reaching its jurisdictions.

Logistics costs in Germany are relatively low. While there are significant variations by region, overall international and domestic trade cost in Germany is currently estimated to be nearly 7.9% of Germany's GDP; this is higher than the optimally feasible logistics costs of 6% of its GDP when proper innovation is introduced. Germany's less than optimal logistics cost is mostly due to the fragmented nature of the sector. Carrying goods around the country can involve a mixture of foreign, state-owned, and domestic private businesses. As efficiency gains are achieved in each area and region, and numeric scores are increased to within the range of 4.5 to 5.0, there are corresponding international and domestic trade costs savings. This level of improved performance would result in yearly international and domestic trade costs savings of nearly USD 57.1 billion annually, providing the tools to expand Germany's trade by USD 334 billion annually, and leading to 2.2 million new job creation in Germany. Furthermore, new digital tools can help maximize capacity utilization of Germany's present physical logistics infrastructure while providing a real-time national trade dashboard that will help secure and prioritize national and international physical infrastructure investments.

Just as Germany's has taken an innovative role in enhancing trade efficiency by implementing several vertical systems, its trade community has expressed broad interest in pioneering new initiatives for the Digital Economy and in utilizing them to integrate Germany's SMEs, both within the region and across the world. In fact, 94.9% of respondents expressed the importance of the Digital Economy.

Germany would like a Digital Platform that allows businesses to:

- ▶ Promote their services and products nationally and internationally
- ▶ Directly target qualified buyers—in need of their services and products
- ▶ Simplify decision-making of potential buyers and accelerate the sales cycle
- ▶ Expedite and simplify trade finance
- ▶ Decrease trade insurance premiums while enhancing the coverage
- ▶ Ease integration into the global trade pipeline
- ▶ Post their products and services in the languages that potential customers prefer



German SMEs desire that the required Digital Platform environment is matched by their counterparts around the globe. The Association of Development Financing Institutions in Asia and the Pacific (ADFIAP) and the former Secretariat of the World Federation of Development Financing Institutions (WDFDI), whose members serve the financial needs of more than 60% of world SMEs, have also confirmed the desirability of the following Digital Economy environment based upon their regular daily interactions within the current inefficient environment.

### The Digital Economy In Germany

We have briefly presented the result of Germany's SEA with emphasis on the six key areas of trade in relation to the 21-6-EETI standard, which will be explored more thoroughly later in this document. However, the end game is the empowerment of the four pillars of trade to establish the required Digital Economy: A fully digital trade environment consisting of optimally-performing e-Commerce, e-Finance, e-Insurance, and e-Logistics industries. As illustrated in the chart above, the six key elements of trade efficiency—Integration, Processes, E-Documentation, Tracking & Visibility, Competence, and Cargo Security—are the necessary elements for an e-Logistics platform that is integrated with the other three economic pillars.

Optimal performance in all of these six key areas is necessary to empower the four pillars, enabling them to deliver the efficiency and cost reductions required to drive trade growth, and thus propel economic prosperity for generations to come.

The following is a brief description of where Germany stands today in relation to the 21-6-EETI standard and to the four pillars.

### The 21<sup>st</sup> Century Digital Economy Environment

The 21<sup>st</sup> Century Digital Economy environment is an ecosystem that permits global integration of product and service offerings with the intelligent proficiency to match sellers to targeted buyers.

This environment is based upon dynamic, validated real-time information accumulated and continuously updated through the normal course of trade activities around the world, rather than the unsubstantiated reviews presently in use. The following is a brief description of benchmark standards for each pillar, followed by a description of current conditions.

### The Future of E-Commerce in Germany

The main benefit of the ecosystem described above is that it allows the creation of a smart e-Commerce matrix that provides the dynamic scoring level needed to:

- ▶ Ensure quality of services and products based on sellers' global activities
- ▶ Facilitate and expedite product and service finance
- ▶ Minimize insurance premiums and optimize coverage
- ▶ Ensure easy integration of sellers into the buyer supply chain
- ▶ Ensure the reliability and dependability of the logistics industry pipeline from seller to buyer

Based on Ultimate Data Quality (UDQ), the aforementioned scoring system is presented at any time the buyer decides to evaluate a seller's product or service, locally, regionally, or globally. Such a system results in maximizing conversion ratios from seeing a desired product and service to acquisition.

Although it remains an ideal system that Germany—and the rest of the world—are striving to reach, this e-Commerce environment does not yet exist. However, as previously stated, 94.9% of Germany's businesses have demanded the e-Commerce environment described above.

### The Future of E-Finance in Germany

The main benefit of the ecosystem described above is that it allows the creation of the smart e-Finance matrix that will provide the dynamic scoring level needed for:

- ▶ *Trade Finance Risk Mitigation:* Minimize underwriting risk based upon borrowers' historic and future global trade finance activities
- ▶ *Minimize Transaction Risk:* Maximize lenders' capability to electronically direct loan proceeds to the borrower's preapproved sellers of products and services
- ▶ *Asset Recovery Risk:* Ensure the capability to seize assets in the trade pipeline for rerouting or liquidation to minimize asset impairment loss

All of the above will expedite trade finance, promoting trade increases and thereby enabling new global market expansion for large enterprises, as well as for the SMEs of the world who represent one of the main cornerstones of global economic growth.

Currently, the lack of access to the information described above limits e-Finance for trade in Germany. Although financial institutions have created efficient in-house vertical systems, banks have no access to real-time shipment information and have limited access to timely data regarding buyers, sellers, and the movement of goods. Banks' 21-6-ETEI scores remain among the lowest of all clusters surveyed in Germany.

### The Future of E-Insurance in Germany

The main benefit of the ecosystem described above is that it allows the creation of the smart e-Insurance matrix that will provide the dynamic scoring level needed for:

- ▶ *Trade Insurance Risk Mitigation:* Minimizing underwriter risk based upon all trade lane participants' historic performance as well as specific trade pipeline routes and destinations, thus expediting insurance coverage
- ▶ *Maximize Global Coverage:* Providing the ability for firms' seamless integration into the global trade insurance market, enabling them to provide door-to-door coverage with limited risk
- ▶ *Expedite Claims Processes:* Granting access to current and historic information gathered throughout the trade pipeline provides firms with needed data to process claims quickly and accurately

In Germany today, e-Insurance for trade remains ambiguous and costly. The lack of trade integration and visibility to the state of shipments within the pipeline as well as the continued reliance on paper documentation, holds insurance industry scores below optimal 21-6-ETEI levels.

### The Future of E-Logistics in Germany

The main benefit of the ecosystem described above is that it allows the creation of the smart e-Logistics environment that will provide the ability to:

- ▶ Minimize standardization requirements
- ▶ Create a point-to-world integration environment
- ▶ Transform Logistics Service Provider (LSP) contract obligations into electronic metrics, enabling real-time monitoring of contracted vs. forecasted vs. actual performance
- ▶ Create an optimum E-Documentation environment that minimizes keystrokes and errors by:
  - ▶ Validating data from multiple sources within the same trade pipeline.
  - ▶ Auto populating the missing information dynamically in the forms to meet the evolving Buy, Sell, Country, Industry, Financial, and Insurance (BSCIFI) documentation requirements.
- ▶ Provide the required tools to plan and manage global trade lanes from shelf-to-shelf at no cost to end users

Despite vertical efficiencies achieved by some LSPs, the German logistics industry suffers from the same problems facing the industry worldwide. It remains fragmented and unnecessarily costly, and the lack of technologically optimized systems and processes prevents it from achieving the highest 21-6-ETEI ratings.

### **The Future Trade Potential Of Germany**

Currently, Germany exports approximately USD 838 billion to high income countries (HIC). The economies of HIC are experiencing slow economic growth due to decelerating demand, a high debt burden, and aging population. We applaud the efforts of Germany to minimize its dependency on HIC recognizing they are facing uncontrollable challenges. Nearly 35 years ago, the HIC used to be 22% of the world's population. Due to low birth rates and an aging population, the HIC now represent 15% of the world's population, and with the same trend this level is projected to reach 11% by 2050. Based on this declining population, experts estimate that Germany's growth in trade with HIC will also decline in the future.

Hence, it is fundamental for Germany to minimize its trade dependence on HIC by investing in the economies of the middle income countries (MIC) and low income countries (LIC) towards building their purchasing power so that Germany can grow its exports to those countries in the near future. For every 1% increase in the purchasing power of MIC/LIC, Germany can increase its exports to those countries by USD 21.2 billion with a potential annual trade increase for Germany reaching up to USD 334 billion.

The main challenge is to de-risk trade between countries which is made possible through the adoption of the Digital Economy Platform that will provide increased efficiency and transparency as well as assist to achieve business excellence in a relatively short time frame. This campaign has already been endorsed by the League of Arab States, Organization of Islamic Cooperation, African Union, among others, and the Organization of American States that have entered into strategic agreements to deploy the Digital Economy Platform. Accordingly, Germany will not be alone in this effort. By using the Digital Economy Platform tools, the trade participants in MIC and LIC will de-risk operations with their trade partners, thereby attracting foreign direct investments, easing access to trade finance and insurance, and increasing their reach to global markets, all of which contributes towards building their purchasing power.

As mentioned previously moreover, through the digitization of trade activities, Germany can realize annual international and domestic trade cost savings of USD 57.1 billion and create more than 2.2 million jobs.

To sum up, the digital tools for doing a better job on the ground level, which have been commonly defined in this report by 94.9% of Germany's trade community, will also serve to assist Germany towards achieving its national strategic objectives; to name a few:

- i. Minimize Germany's dependency on HIC by building the buying power of MIC/LIC.
- ii. Maximize Germany's expertise in mid and high value production and grow services.
- iii. Improve Germany's ease of doing business.

## In Summary

The Germany SEA is intended to provide guidance as to the current strengths and opportunities of Germany's trade environment. Its existence is a testament both to Germany's dedication to achieving trade excellence and GCEL's commitment to providing support for the country as Germany improves its rightful position of leadership within Europe and throughout the world.

GCEL has already demonstrated its commitment to promoting prosperity through trade efficiency via its research and knowledge-sharing initiatives. We will continue to support Germany's efforts to achieve 21-6-ETEI performance levels by involving Germany's government and businesses as we deploy the Digital Economy Platform. It is GCEL's core foundation to offset the geopolitical, monopolistic, and data privacy concerns related to the Digital Economy platform, while making it available without cost to every business around the world.

Once acted upon, the body of knowledge represented by this survey will lay the foundation for revitalized trade and for unprecedented economic benefits to humanity. The remainder of this document provides an in-depth exploration of Germany's trade environment as well as recommendations that will enable Germany to take a leading role in the 21<sup>st</sup> century Digital Economy.



"Due to the present economic unrest and the uncertainty of the future, we cannot be satisfied with the cup half full; we must always strive towards peak results in order to overcome today's challenges, and build a solid economic foundation for future generations."

— Global Coalition for Efficient Logistics (GCEL)



FOUNDATION OF THE TRADE EFFICIENCY ASSESSMENT |

## An essential starting point in creating economic prosperity tomorrow lies in understanding shipment efficiency levels today

The world is at a tipping point toward a new digital era. Even as nations struggle to recover from the ongoing challenges from the 2008 global financial crisis, technological advancement has begun to fundamentally change the way business is done. As leaders seek a global digital solution to the material problem of a battered global economy, the opportunity has arisen to boost the world's economies through a fundamental transformation of global trade, achieved by leveraging technology to create a new paradigm of trade efficiency.

The Germany Shipment and Trade Efficiency Assessment (SEA) is one in a series of studies being conducted in the G20 countries. The focus of this assessment is upon the shipment itself, as the shipment is more than just a product that is bought and moved. The shipment lifecycle starts with the policymaking to generate it, the free trade agreements to sell it, the infrastructure investment to manufacture it, the logistics infrastructure to move it, and the service industries to service it. Simply put, the shipment is the common denominator that brings this world together in economy and trade. We must analyze the shipment efficiency throughout its journey from production until it reaches the end user.

The shipment is one of the most important nuclei of the global economy that directly affect our lives. At the macro level, it is the food we eat, the clothes in our stores, and the materials used to build our cities—all of which impact the nature and quality of our lives. Supporting these are the four industries that serve as the pillars of global trade: Commerce, Finance, Insurance, and Logistics. These industries are represented through nineteen clusters, categories of public and private organizations, and enterprises directly involved in shelf-to-shelf shipment movement. At the micro level, the shipment itself

is the common denominator between the clusters, the pillar industries, and our lives. Therefore, making the shipment more efficient and reducing its cost have the potential to directly affect every household around the world, positively impacting every single human life.

To correctly assess shipment efficiency, we must analyze critical information related to each of these nineteen clusters and how they are handling the shipment when it is in their jurisdiction throughout its shelf-to-shelf journey. The emphasis must be upon horizontal shipment activities rather than vertical operations.

Today, e-Commerce, e-Finance, e-Insurance, and e-Logistics all exist to a certain extent; digital systems and practices have been implemented to varying degrees within each of these industry verticals. The flow of trade, however, is by definition a horizontal process. Efficiency is determined by the characteristics of a shipment movement through the entire length of the trade pipeline. While commerce, banking, insurance, and certain logistics firms have achieved efficiency gains through digitization, the efficiency of the overall system cannot exceed that of its lowest performing member: Logistics.

Logistics has historically been the weakest link in this chain, despite being the industry that makes trade possible, and that connects our world; its fragmentation has prevented e-Commerce, e-Finance, and e-Insurance from realizing their full potential. In addressing the efficiency challenges faced by the logistics industry through the required logistics platform, we present the foundation needed to maximize the capabilities of the other three pillars, enabling them to reach their full potential, declaring the birth of the 21<sup>st</sup> century Digital Economy Platform (DEP).

## **Shipment & Trade Efficiency Assessment (SEA) and the HumaWealth Program in Germany**

The SEA represents the starting point for Phase 6 of 7 total Phases in launching the HumaWealth Program, a global economic development initiative, to deploy the 21<sup>st</sup> century Digital Economy Platform (DEP) in each of the four regions of the globe. The phases are as follows:

### **1. Regional Strategic Partnerships**

An execution of an official partnership agreement between GCEL and pan-regional organizations within a specific region toward achieving the following:

- a) Official recognition of the DEP's importance to the region's economy
- b) Co-convening the HumaWealth Awareness Events with GCEL, across the region, to provide opportunity for the region's Commerce, Finance, Insurance and Technology (CFIT) firms to be part of the deployment team
- c) Joint publication presenting the economic roadmap leveraging the DEP to create jobs and trade increases throughout the region
- d) Identification of the proper countries within the region to participate in the Benchmark Trade Lane (BTL)
- e) Co-convening the HumaWealth Genesis Event triggering the selection of the first global deployment network to launch the DEP worldwide – **(Partnerships completed)**

### **2. HumaWealth Awareness Events**

A series of events in partnership with governments across the region announcing to the local CFIT firms the opportunity to participate in the HumaWealth Genesis Event.

This Genesis Event is the trigger point for the equal opportunity process to select the Global Deployment Network that will launch the first DEP worldwide. – **(Awareness Events completed)**

### **3. Think Tank Session**

A strategy session with key regional government officials to jointly plan steps towards the deployment of the BTL within the region. – **(Think Tank Sessions in process)**

### **4. Joint Missions**

Joint missions towards qualification of the BTL country partners  
– **(Qualification of BTL Countries in process)**

### **5. BTL Launch Ceremony**

A ceremony hosted jointly by GCEL, the pan-regional organizations and the two BTL countries initiating regional BTL activities, triggered by the MOU executed between GCEL and the countries' respective officials

– **(Planning the BTL Launch Ceremony)**

### **6. The Benchmark Trade Lane**

This phase includes the following steps:

- a) *The SEA*: Assessment of shipment and trade efficiency examining critical information related to shipment participants when handling the shipment from shelf to shelf
- b) *Education*: Sharing of findings from the SEA with industry representatives of the selected country, outlining areas of improvement, and presenting the DEP as the tool to achieve business excellence
- c) *BTL Participant Selection*: Involves the selection of parties in a shelf-to-shelf shipment process in an existing trade lane between the preselected countries
- d) *The Genesis Event*: Co-convened with international NGOs and global pan-regional organizations to trigger the selection of the first round of the Global Deployment Network
- e) *Global Deployment Network Selection*: Selection of CFIT Gateways, conducted through a transparent, equal-opportunity process
- f) *BTL Deployment*: Implementation of the 21<sup>st</sup> century DEP on the preselected trade lane
- g) *BTL Showcase*: Regional events wherein GCEL and the CFIT Gateways invite the Gateways' customers and selected industry representatives to witness the benefits first hand, triggering the DEP global deployment

## PHASE 6a – SEA: A New Standard in Trade Efficiency Assessment

GCEL's Assessment is designed to span the entire shipment flow; as a result, the findings provide a clear roadmap to overcome weaknesses, reduce expenditures of time and capital, expand trade, and ultimately provide the foundation for sustainable economic growth. The assessment has three key characteristics:

**1. The SEA builds upon global standards.** The World Bank's Logistics Performance Index (LPI) is one of the current global standards for logistics efficiency assessments. The LPI gathers limited information from 1,051 online, self-selected, voluntary respondents from 132 countries (an average of 8 respondents per country), with progressively more information gathered from mid and high income countries<sup>1,2,3</sup>.

GCEL's Assessment advances the global standard in seven important ways to ensure rigorous findings that point the way to a new era of efficiency:

- ▶ **Scale/Scope:** The SEA covered all private and public participants in the flow of trade, including customs, logistics service providers, shippers, financiers and insurance providers.
- ▶ **Breadth of Sample:** The study targeted industry participants from small, medium and large enterprises, as well as from the public sector throughout the entire logistics pipeline.
- ▶ **Geographic Coverage:** Respondents were surveyed in all key trade zones of the country.
- ▶ **Sample Size:** Throughout the country, the survey included more than 20 times the number of respondents sampled in the existing world standard.
- ▶ **Direct Sampling:** Assessments were conducted with highly trained examiners on a person-to-person basis, rather than via electronic or automated means.
- ▶ **Survey Methodology:** Questions were illustrated in order to visualize the subject of inquiry, thus ensuring ease of understanding which results in optimum response accuracy.
- ▶ **Quality Assurance:** The survey received world-class oversight and an extensive quality control cross-check to ensure data accuracy as well as call backs of over 40% of survey respondents to further substantiate data quality.

## 2. The 21<sup>st</sup> Century 6 Elements Trade Efficiency Indicators (21-6-ETEI).

The standard of the SEA Survey is based on realizing the full potential of 21<sup>st</sup> century technology as applied to six internationally recognized efficiency elements called the 21<sup>st</sup> Century 6 Elements Trade Efficiency Indicators (21-6-ETEI). Efficiency results from doing things correctly and on time. In the case of trade efficiency, the obvious question is: Which things must be done correctly and on time? Many international organizations such as the World Bank, APEC, UNCTAD, and others have studied ways to reduce landed import and export costs—the measure of all costs from shelf to shelf, apart from the cost of the product itself.

GCEL's Assessment is based on a comprehensive "best-in-class" approach to shipment efficiency. GCEL's 21<sup>st</sup> Century 6 Elements Trade Efficiency Indicators (21-6-ETEI) standard addresses a comprehensive array of key efficiency elements, each highlighted separately by recognized global organizations.

### The 21-6-ETEI are:

- |                    |                          |
|--------------------|--------------------------|
| 1. Integration     | 4. Tracking & Visibility |
| 2. Processes       | 5. Competence            |
| 3. E-Documentation | 6. Cargo Security        |

Historically, organizations have assessed these indicators separately. GCEL's 21-6-ETEI views these indicators as interrelated, taking into account that performance in any single area necessarily affects the performance in other areas for better or worse. The core purpose of the Assessment is to correctly diagnose the root causes of inefficiency so that the right treatment can be prescribed. For this prescription to be sound, the underlying survey must be comprehensive, evaluating all segments of the logistics pipeline according to the 21-6-ETEI criteria. In doing so, the Assessment appropriately addresses all six elements holistically, enabling us to offer solutions that are measured and appropriate.



"You must be the change you want to see in the world."

— Mahatma Gandhi

### 3. The SEA is conducted in accord with world-class standards.

At each step in the survey process—from the formulation of the initial survey strategy through final and rigorous quality control—the Germany SEA survey has been conducted according to recognized, established standards for accuracy and data integrity. Our partners include leading global firms with proven expertise within their respective disciplines and exhaustive knowledge of the trade, shipping, and security arenas. The German Association for Small and Medium-sized Businesses (BVMW), University of Göttingen and the Nielsen Company have all played a role in the assessment process and report findings. Each has done its part to ensure that the Germany SEA has been conducted in accordance with the highest international standards; moreover, the information included in the report is timely, relevant, and suited to provide a clear path towards establishing the highest possible performance levels in trade practice. Future SEA surveys and reports shall be conducted with the same high standards, and shall employ the services of a similar range of leading firms and agencies.

### 7. DEP Global Deployment and National Trade Dashboard (NTD)

The NTD is a self-monitored dashboard assisting governments to prioritize and attract physical infrastructure investment, as well as identifying firms who have reached business excellence. This criterion is a required foundation to drive increased trade, finance, and investment. It is significant to note that the Benchmark Trade Lanes in Asia will have no technological requirement beyond Internet access besides the integration with the selected carriers; limited access to technology is no barrier to usage, and in some instances it may be an advantage. Indonesia, for example, was one of the first nations in the world to deploy digital soft infrastructure for telecommunications, swiftly deploying cellular networks and triggering the rapid adoption of digital telecommunications. In fact, Indonesia's rate of adoption surpassed that of the United States, where the existing hard infrastructure of copper lines and analog switches were legacy investments that actually delayed its transition to digital telecommunications. In the same way, nations around the world have the opportunity to rapidly deploy the soft infrastructure needed for a powerful 21<sup>st</sup> century digital platform for trade.

### Survey Results

The Germany SEA has been compiled and analyzed by an expert panel. This panel included government officials, a renowned world-class consulting and research firm, and global experts from the industry itself. The panel prepared a comprehensive report that summarized key findings on the current efficiency levels and that provided a roadmap to increased trade efficiency. The report will be delivered to public and private leaders throughout the nation, providing an essential base of shared knowledge among trade participants. This roadmap provides the foundation for informed investment and policy decisions, helps in setting state and corporate priorities, and serves as a critical initial step toward delivery of the required tools to expand trade, support new jobs, and sustain economic growth.

### In Conclusion

As stated earlier, the gains in trade efficiency achieved by the cargo container led not only to the transformation of industries, but also to increased global prosperity over many decades. In fact, trade efficiency is the key to global prosperity; it is absolutely critical that we diagnose trade efficiency performance correctly, and implement appropriate solutions that maximize efficiency within all of the 19 participant clusters that support the four pillars of trade. In doing so, we stand to guide the world past its recent period of economic hardship, laying the foundation for the innovation that the world is calling for. However, any innovation must be founded upon a thorough understanding of present conditions, and should provide a clear path ahead together with promised measurable benefits. The Germany SEA report represents this foundation, and is the first step towards realizing the 21<sup>st</sup> century Digital Economy.

1. World Bank, 2016. Connecting to Compete 2016, Trade Logistics in the Global Economy: The Logistics Performance Index and Its Indicators.
2. Morse (1994) Designing Funded Qualitative Research; Handbook of Qualitative Research (2nd Ed.)
3. Creswell (1998). Qualitative Inquiry and Research Design... Sage Publications.

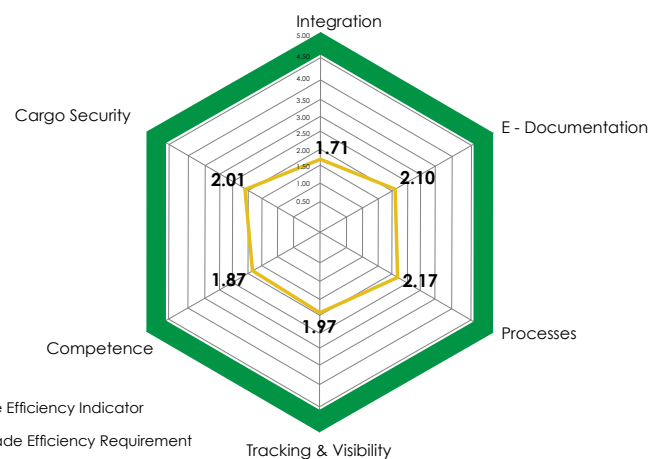


## Introduction: Germany's Trade Practices Relative to the New Millennium Standard for Growth

We have evaluated Germany's current trade efficiency in relation to the 21-6-EI standard of an optimally performing trade environment established by actualizing the full potential of what technology can provide today. In the following pages, we will explore the significance of each element as well as its performance in relation to this new standard. We will present results based upon overall country performance, individual economic zones, and individual clusters—accompanied by recommendations of essential steps that must be taken in order to attain peak performance in each element.

The chart below illustrates the performance of each element in relation to the 21-6-EI standard. It also illustrates the considerable gains Germany will achieve once the recommendations of this report are acted upon. Through these recommendations, Germany can achieve peak performance in each of the six elements, resulting in a yearly international and domestic trade cost savings of USD 57.1 billion, placing Germany at the forefront of a new era of trade efficiency. This new level of efficiency will serve as a solid foundation for increased trade and job creation, meeting the economic ambitions of Germany.

### Germany's Trade Efficiency Based on 21<sup>st</sup> Century 6 Elements Trade Efficiency Indicators (21-6-EI)



We have chosen to present the results of the Germany SEA based on 21-6-EI standards, illustrating Germany's current trade practices as follows.

#### I. The Element

- ▶ What is the meaning of the element?
- ▶ When is the element used?
- ▶ Why is the element important?
- ▶ Who has validated the importance of this element?
- ▶ Where does the element apply to the public and private sectors?

#### II. FINDINGS - DATA

#### III. FINDINGS - IMPACT

#### IV. RECOMMENDATIONS



## Integration

The state of trade efficiency within a trade lane, country or region is determined in large measure by the level of integration that has been achieved among the nineteen clusters. The purpose of this section is to define integration and to explore its vital role in supporting efficiency and—by extension—a country's economic well-being.

### What is the Meaning of Integration?

Integration is defined as the ability to connect all participants involved in the flow of a shipment within a seamless, dynamic information-sharing environment. Information provided by trade participants within this environment is then available as needed and appropriate to other participants within the trade pipeline. Presently, the main method of integration practiced is based on point-to-point integration; the 21<sup>st</sup> century trade efficiency standard is based on point-to-world integration.

### When and How is Integration Used?

When Integration is achieved either through point-to-point or point-to-world methods, the information shared can be generally categorized as either Participant-related or Shipment-related.

Participant-related information consists of data concerning a specific trade pipeline participant. This information is typically entered once and continuously updated as needed. This would include:

- ▶ Organization name
- ▶ Facility locations
- ▶ Contact details
- ▶ Products or services
- ▶ Financial information
- ▶ Certification information
- ▶ Conveyors, equipment, etc.

Shipment-related information consists of data concerning a specific shipment as generated in real-time at various steps in the shipping process. This is the common denominator information shared between all trade pipeline participants and includes:

- ▶ Buying and selling information
- ▶ Shipping and receiving information
- ▶ Finance information
- ▶ Insurance information
- ▶ Regulatory compliance information

### Why is Integration Important?

There are three primary reasons why Integration is an essential element of trade efficiency:

- I. To Enable a Real-Time Dynamic Data Environment**
- II. To Provide Data Consistency and Validity**
- III. To Provide Dynamic Validated Data History**

#### I. Real-Time Dynamic Data Environment

The advantage of this environment is the ability to make an action in one part of the world simultaneously visible to the rest of the world.

The main benefit of such an environment is that it allows us to have real-time comprehensive visibility, facilitating decisions for prompt action. This represents the foundation for the additional benefits that will be achieved from a point-to-world integration environment.

#### II. Data Consistency and Validity

Data consistency is achieved when the environment provides the ability for multiple sources within a pipeline to compile information about the same shipment, starting from the buy/sell agreement all the way to the final delivery of the shipment. Validity is achieved when everyone in the trade pipeline can confirm data entered during previous steps in the shipment process.

This multiple-source data confirmation occurs across companies, countries and continents—making data tampering impossible

The main benefits of Data Consistency and Validity are illustrated in the following key areas:

- a) Reduced data redundancy
- b) Minimized keystrokes, and thus the reduced possibility of human errors
- c) Easier population of validated E-Documentation data
- d) Reduced manual communications via fax, email, post, and phone

These benefits are especially important for government agencies concerned with the goods point of origin, cargo security, or compliance with national and international regulations. They are also valuable for financial and insurance firms, as well as for trade partners.

### III. Dynamic Validated Data History

As data is dynamically collected and validated through real-time processes, trade information history gets accumulated and continuously updated throughout the normal course of trade activity. This is achieved horizontally for all nineteen clusters around the world providing unprecedented quality scores as opposed to current single-source, unsubstantiated reviews.

The main benefit of the validated data history is that it will allow us to create metrics based upon a global standard, thus maximizing the conversion ratios at the commerce stage from seeing a desired product to acquisition. It also expedites trade finance, providing visibility of historic and planned trade activity as well as minimizing underwriting risk and other finance-related issues. Furthermore, the quality of the validated data will enable insurance firms to reduce premiums and will allow us to make well-educated decisions in selecting reliable and dependable logistics services pipelines, thus helping Germany achieve “Just-in-Time” (JIT) logistics at the lowest cost possible. The above is a brief representation of the unprecedented benefits that can be achieved out of the dynamic validated data history.

### Who Has Validated The Importance of Integration?

The importance of Integration has been confirmed by many renowned international organizations, yet global integration has never been quantified nor have integration tools been made available, at no cost, to the nineteen clusters around the world to this day. The importance of Integration can be confirmed by the following summarized statements from leading international organizations:

**United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP):** “The importance of integration to the development of “sustainable transport” and the significance of developing mechanisms to assist policy makers, managers of unimodal transport systems and integrated transport operators in ensuring the efficient operation of transport infrastructure and services.”<sup>1</sup>

**World Bank:** “Globalization has made the demand for logistics services more sophisticated, pushing for integration and diversification of services to help operate uninterrupted supply chains.”<sup>2</sup>

**Asian Development Bank (ADB):** “The need to reduce transport and logistics costs, by connecting production clusters in different countries and connecting these clusters with markets, will be a major challenge in the next few decades.”<sup>3</sup>

**Asia – Pacific Economic Cooperation (APEC):** “Delivering stronger business growth requires a renewed focus on removing barriers to deeper integration.”<sup>4</sup>

### Where Does Integration Apply to the Public and Private Sectors?

Integration is important to a broad range of businesses and governmental entities, since it provides a validated dynamic data history for effective planning. Meanwhile, it also provides a real-time dynamic data environment that is consistent and validated, enabling optimal operations and thus reaching business excellence at the highest standard. In order to present a brief overview of the benefits of Integration, we have divided the nineteen clusters into the following three categories:

### Buyers, Sellers and Logistics Service Providers

- ▶ Provide optimum visibility for market needs and expansion.
- ▶ Enable effective planning when outsourcing for services or goods.
- ▶ Allow real-time performance monitoring of trade partners based on contract obligations.
- ▶ Integrate KANBAN level with "Just-in-Time" logistics, resulting in optimized costs while meeting market requirements.
- ▶ Increase reliability and dependability of the supply chain pipeline, providing a solid foundation for market expansion.
- ▶ Maximize infrastructure capacity utilization with better visibility, allowing for optimal planning.
- ▶ Enable sound decision-making in a timely manner.

### Finance and Insurance Firms

- ▶ Banks can validate trade history, as well as current and future activity performance, thus minimizing underwriting risk. Furthermore, Integration will ensure that the funds provided are spent in the proper place and at the right time. It also enables the financed materials in the pipeline to become properly collateralized assets. All of the above will contribute to minimizing banks' risk and easing access to trade finance.
- ▶ Development banks can maximize returns on investments through the improved performance of the clusters involved. The transparency of productivity will attract major local and international physical infrastructure investment.
- ▶ Insurance firms can maximize the accuracy of risk assessment, which will increase underwriters' competitiveness and market share, nationally and internationally. It will also enhance and expedite claims investigations.

### Government

#### Cargo Clearance

- ▶ Provide accurate information about product point of origin and all other related shipment data; resulting in better profiling, allowing faster clearance of goods, and improving trade efficiency.

### Cargo Security

- ▶ Optimize cargo security measures by minimizing single points of failure, providing multiple layers of cargo security defense—starting from the intelligence, coast guard, border crossing, and domestic layers—while minimizing cargo security compliance costs nationally and internationally.

### Food Safety

- ▶ Faster containment and better response to food disease outbreaks by establishing a global agricultural health surveillance system to contain disease outbreaks proactively while reducing the cost of regulatory compliance.

### Disaster Impact Readiness

- ▶ Ability to integrate into the global and domestic trade pipeline, thus redirecting materials required for emergency situations with the highest degree of efficiency by rapidly mobilizing LSPs to deliver necessary relief supplies at minimum cost.
- ▶ Capability to implement an Emergency Transportation Flow Management System to direct and redirect traffic, ensuring the uninterrupted flow of commerce.

### Carbon Footprint

- ▶ Reduce fuel consumption by increasing capacity utilization of logistics conveyors throughout the logistics pipeline, especially by increasing throughput at ports and state border crossings.

### Findings - Data

Integration Efficiency scale in brief:

**Level 1** = Absence of effective integration systems, extensive use of phone/fax/mail for communication, and a high degree of data redundancy. The efficiency of a trade pipeline cannot be more than that of its weakest participant. Hence, by using in-house vertical systems, without horizontal integration with all trade lane participants, a participant can score 2.5 at the most.

**Level 5** = Presence of effective integration and communication systems, low degree of data redundancy.

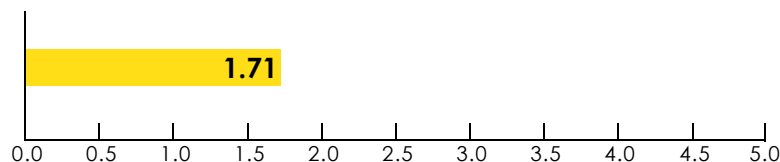
## Germany's Overall Integration Score

This represents the aggregate data on a national level from the nineteen clusters surveyed in Germany. Collectively they have scored 1.71 out of a possible 5. The top score of 5 represents the optimal use of technology in the field of integration.

The German government has invested in the National Single Window and liberalization schemes to integrate the private sector with various parts of the government in an effort to increase the level of Integration nationally, with the European Union (EU) member states and with the trade partners globally. The National Single Window expedites and simplifies information flows, provides single point of entry, and the one-time submission of information. It also facilitates trade by bringing benefits to all trade participants involved in the flow of trade from shelf-to-shelf.

Similar focus on integration across all the trade participants is necessary to significantly improve Germany's overall integration score.

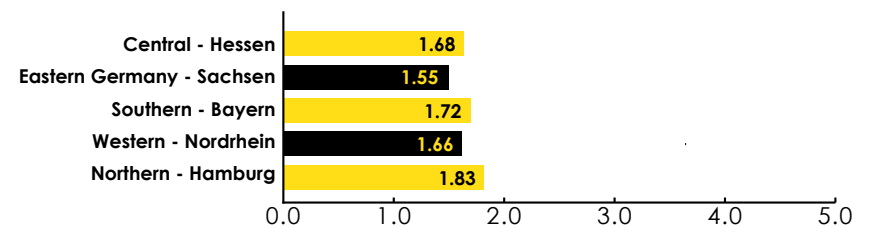
This integration score is relatively low despite the German government's investment in various systems including ZOLL secure online portal, System for Exchange of Excise Data (SEED), and EU Customs Tariff (TARIC). These initiatives are examples of Customs and industry working together to provide an efficient and consistent approach to improve the facilitation of trade. Similar focus on integration across all the trade participants is necessary to significantly improve Germany's overall integration score.



## Integration by Economic Zone

When we analyze the Integration score by economic zones, the industrially advanced and export oriented Northern-Hamburg-Niedersachsen (1.83) zone with the busiest port of Hamburg in the Baltic Sea has scored the highest. The Southern (1.72) zone, due to the higher concentration and presence of the highly sophisticated export-oriented industries including automotive and chemical manufacturing centers in Bavaria and Baden-Württemberg area, has scored the next best. The difference in the scores of the remaining zones is low at 5.6%, indicating a countrywide opportunity to enhance Integration scores.

This low use of technology application across all zones in Germany confirms the need for the German government to devise economic development strategies and policies to enhance economic Integration across all the zones.

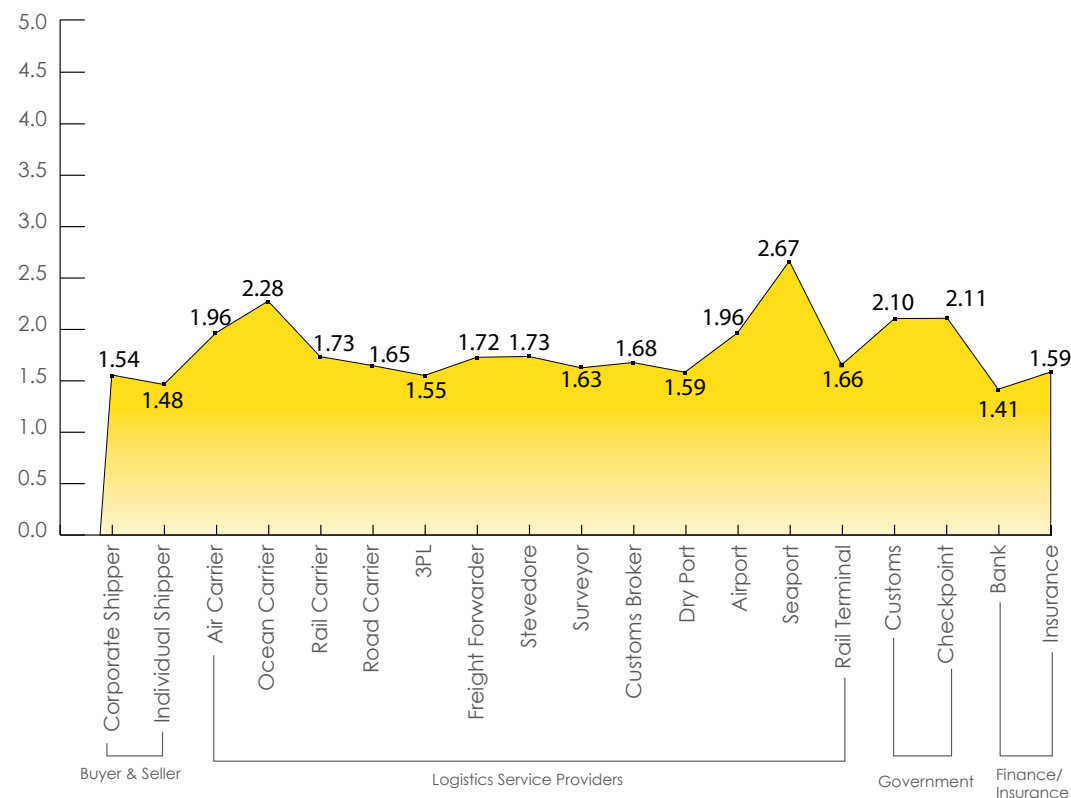


### Integration by the 19 Clusters

Seaport (2.67) and Ocean Carrier (2.28) achieved the highest integration scores. This indicates some level of integration with trading partners mainly due to the use of the trade facilitation systems including National Single Window portal and the high efficiency of the German ports. German seaports, among the world's most efficient, are the driving force for the German foreign trade and handle almost a quarter of Germany's imports and exports.

When we examine the Integration scores across the other trade clusters, Checkpoint (2.11), Customs (2.10), Airport (1.96) and Air Carrier (1.96) scored higher—indicating the investments made into vertical systems in these clusters that benefit the other trade participants they deal with. The remaining clusters have scored uniformly low on Integration.

The use of information technology in most of the government operated services contributes to their relatively better communication with other trade participants. However, low Integration scores across the remaining clusters indicate that existing electronic data systems are limited in capacity and scope of coverage, and that 95.5% businesses in Germany use manual methods such as email, phone, and fax to share shipment information with their trading partners as they do not have integrated systems. This lack of integration results in Germany's trade pipeline being fragmented and contributes to higher import, export, and overall trade costs.



### **Predominant Communication Methods by the Nineteen Clusters**

Only 4.5% of survey respondents communicate within their own trade lane pipeline using FTP (File Transfer Protocol) or EDI (Electronic Data Interchange). The remaining 95.5% communicate manually within the pipeline through phone, fax, postal mail, or email.

On average, 81.8% of the businesses do not have an integrated system and depend on third parties for participation in the National Single Window. Therefore, Integration improvements in Germany can be achieved through a Digital Economy Platform (DEP) that provides point-to-world integration for organizations with no system and connects the existing fragmented vertical systems.

<b>The Nineteen Clusters</b>	<b>Predominant Communication Method</b>
<b>Corporate Shipper</b>	<b>Email/EDI</b>
<b>Individual Shipper</b>	<b>Email</b>
<b>Air Carrier</b>	<b>Email/EDI</b>
<b>Ocean Carrier</b>	<b>Email/EDI</b>
<b>Road Carrier</b>	<b>Email</b>
<b>Rail Carrier</b>	<b>Email</b>
<b>3PL</b>	<b>Email</b>
<b>Freight Forwarder</b>	<b>Email</b>
<b>Stevedore</b>	<b>Phone</b>
<b>Surveyor</b>	<b>Email</b>
<b>Customs Broker</b>	<b>Email</b>
<b>Airport</b>	<b>Email/EDI</b>
<b>Seaport</b>	<b>Email/EDI</b>
<b>Rail Terminal</b>	<b>Email</b>
<b>Dry Port</b>	<b>Email</b>
<b>Customs</b>	<b>Email/EDI</b>
<b>Checkpoint</b>	<b>Email</b>
<b>Bank</b>	<b>Email</b>
<b>Insurance</b>	<b>Email</b>

## Integration Indicators

The following chart provides a summary of predominant responses by specific organization classes to Integration-related questions asked during the survey<sup>1</sup>.

	Buyers/Sellers	LSPs	Finance/Insurance	Government	Countrywide
How Is Information Exchanged? <sup>2</sup>	Postal Mail/ Fax	Postal Mail/ Fax	Postal Mail/ Fax	Postal Mail/ Fax/EDI	Postal Mail/ Fax
Communication Protocol <sup>3</sup>	No Electronic Communication Protocol	No Electronic Communication Protocol	No Electronic Communication Protocol	Flat File/EDI	No Electronic Communication Protocol
Data Redundancy <sup>4</sup> %	51-70% Same information	51-70% Same information	31-50% Same information	31-50% Same information	51-70% Same information
Frequency Of Sending & Receiving Shipment Updates <sup>5</sup>	> Day	> Day	> Day	> Day	> Day
Trading Partner Data Validation <sup>6</sup>	Occasional	Occasional	Limited	Occasional	Occasional
New Partner Integration Time <sup>7</sup>	7-14 Days	7-14 Days	7-14 Days	1-6 Days	7-14 Days
New Partner Integration Cost <sup>8</sup>	Moderate	Moderate	Moderate	Moderate	Moderate

### OBSERVATIONS:

1. Values reflect the average response from answers received.
2. Consider Predominant Communication Method by Trade Participant chart on page 32.
3. There is no Electronic Communication Protocol due to lack of integration.
4. This refers to the percentage of redundant data that is re-entered over and over in multiple forms.
5. This indicates how often shipment updates are received. Since system integration is minimal, more than a day elapses between shipment updates. Updates are also received when costly mistakes occur, when it is already too late to react.
6. This indicates how many trade partners and LSPs in the same trade pipeline are re-validating the same shipment data.
7. This refers to the time needed for a new trade partner or LSP to integrate in the trade pipeline after finalizing the buy/sell agreement for products and services.
8. This refers to the cost needed for a new trade partner or LSP to integrate in the trade pipeline after finalizing the buy/sell agreement for products and services

## Findings - Impact

The survey indicates that most of the 19 clusters communicate by phone, fax, or email. Due to this lack of Integration, no communication protocol is used. The clusters have up to 51% and 70% data recurrence and redundancy, and it takes them days to send or receive shipment updates with limited data validation. In addition, integrating a new trading partner can take up to 7 to 14 days, which can reduce competitiveness, limit market-share expansion, and increase cost.

The following findings relating to Germany's trade integration highlight opportunities for improvement that will add to its already significant accomplishments as one of the world's largest emerging economies. Further, the recommendations will demonstrate Germany's ongoing commitment as a leader in leveraging technology to its full potential towards reaching 21<sup>st</sup> century trade efficiency standards for integration.

Germany's integration rating is 1.71 on a scale of 1-5, suggesting that significant steps must still be taken in order to achieve peak performance and realize the benefits of point-to-world integration. The 1.71 Integration level translates as follows:

### Current Data Environment in Germany – Passive

A passive data environment is the opposite of a real-time dynamic environment. This means that information can only be shared sporadically and with limited visibility throughout Germany's supply chain pipeline. The main problem caused by such an environment is that actions may be taken based upon incomplete or outdated information— leading to errors, and therefore excess costs.

### Current Data Environment in Germany – Inconsistency and Lack of Validation

The lack of real time end-to-end shipment information leads to inconsistent data that is not properly validated. This greatly limits data verification or dynamic comparison of trade pipeline participants' documents or actions, and therefore prevents instant identification of data anomalies or errors. The main problems caused by such an environment are:

- a) Data redundancy is greatly increased.
- b) The number of keystrokes is multiplied, thus increasing the probability of data errors.
- c) The ability to dynamically populate E-Documentation with accurate, verified data is greatly limited.
- d) The need for manual involvement such as phone, fax, or email is significantly increased.

### Current Data Environment in Germany – No Dynamic Validated Data History

The lack of effectively collected, validated, categorized and stored data limits the availability and accessibility of information concerning trade participants' activities and performance, making it difficult to effectively accomplish key objectives including:

- a) Attract and evaluate new trading partners or logistics service providers
- b) Penetrate more national and international markets

Available information, such as statistical research and unsubstantiated online reviews, is limited and passive; this can inhibit trade finance and increase insurance costs.

The above-mentioned characteristics of the current data environment limit the ability of Germany's business community or government to reach its full capabilities in trade efficiency and economic growth. For example, it is globally recognized that SMEs are the engine of job creation and economic growth. In return, SMEs require business and trade finance in order to grow; nonetheless, they continue to face obstacles in securing needed funds.

This is mainly because financial institutions categorize SMEs as high risk. At the same time, due to the pressures imposed on them, financial institutions cannot be held solely responsible for underfunding growth. These pressures can be summarized as follows:

- ▶ The business strategy of the financial institutions can be characterized as being of a risk-averse nature, since the majority of funds available are other people's money.
- ▶ Further restrictions on financial institutions, for example Basel III (Set of reforms in 2009, revised in 2013, designed to improve regulation, supervision, and risk management in the financial sector).
- ▶ Pressure is placed upon financial institutions from economic leaders around the world to provide further credit, and especially trade finance to SMEs, in order to get the engine of trade humming again. Financial institutions lack the needed integration with global trade that would provide them with real-time, validated, and consistent visibility regarding prospective clients. The reality is that German financial institutions scored a 1.41 on the 21-6-ETEI scale of 5. This means that they have no transparency or visibility in either the trade pipeline or the business activities that they finance.

In order to mitigate underwriting risk, banks need dynamic, validated, and consistent information concerning companies and their practices—at not only the loan application stage, but also when funds are disbursed. For example:

- ▶ How long has the firm been in business?
- ▶ Has there been any financial fraud involvement?
- ▶ What is its product volume and who is the buyer?
- ▶ How long has the firm produced a particular product?
- ▶ Is the buyer of the product financially stable?
- ▶ What is the firm's degree of business success?
- ▶ Do the materials come from a reliable source?
- ▶ What is the historical timeliness of payment transactions?

When finance is provided, it is necessary for the financial institutions to dynamically ensure that the funds are used for their stated purpose. In addition, loans must be collateralized to limit risk. Integration would provide real-time visibility to the goods in transit. Combined with the authority to seize control of the assets if needed, this would provide banks with additional assurance, enabling and expediting finance.

German insurance firms have an Integration score of 1.59. This makes it difficult for them to dynamically evaluate trade participants that have higher numbers of insurance claims or higher rates of reported damages. Consequently, insurance premiums are high, and in some cases, full coverage is subject to delay. With the ZOLL online secure portal that provides easy access to all the trade facilitation systems being in place, most of the trade participants received the clearance data from Customs via portal or EDI. However, as previously explained, these systems are dependent upon a domestic single source of data represented in the current environment, which limits all of the following on a global basis:

- ▶ Validation of the data provided to Customs
- ▶ Transparency required for national and international freight visibility
- ▶ Fulfilment of cargo security measures
- ▶ Validation of the goods country of origin

### Recommendations

World economic leaders have long recognized the importance of Integration as a foundation to sustain economic growth. This is important when rebalancing the world economy and facilitating economic integration between the developed, emerging and developing nations. The G20 nations have continually acknowledged the vital role Integration must play in order to increase the share of trade between its members. It is also recognized in Germany that Integration will reinforce the economy and make the country more competitive on the global economic stage.

However, Integration has neither been properly defined nor has its application point, start point, or cost been specified. Is Integration alone enough? All of these questions are answered in this section. In fact, Integration alone will not do the job; otherwise, the Internet alone would have been sufficient, as it provides a form of point-to-world integration.

integrated  
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The Internet has changed the face of communications and retail trade, but it has neither achieved its own potential nor has it created the integrated trading environment that the world needs. Until today, no one has provided a comprehensive plan for its realization, or recognized all the factors needed for integration to achieve its desired results.

Integration is the first of six essential environments (21-6-ETEI) that need to be enhanced in order to deliver the economic benefits that the world desperately needs. A true trade integration solution must have the following four foundations:

1. In order for a global, regional, or national integration solution to be rapidly adopted when involving multiple parties in the same pipeline it must be free of cost to end-users. A new business model is a must in order to achieve the above and ensure sustainability of the solution while ensuring rapid global deployment.
2. The Integration solution must be non-intrusive. This is only possible in two ways:
  - ▶ The solution must provide portal-in access to the nineteen clusters, opening direct access to world markets and services. Such an environment will enable quick adoption by SMEs and LSPs, allowing them to perform to their full potential.
  - ▶ The solution must provide plug-in access to large firms, enabling integration with their vertical in-house systems. This should be conducted through their own trusted technology providers.
3. When adopting the Integration solution, nothing must go wrong. The word “nothing”, by itself, is unquantified; yet, sometimes it is required when proposing an innovation. In reality, there are two ways to address such an issue:
  - I. Define what could go wrong, and address these items one by one. However, since no one can predict what could go wrong ahead of time, we have to maximize on plan B.
  - II. There are only two ways to ensure that we are able to remedy the unknown:

- I. Technology without investment constraints.
  - II. The top technology firms in the world, sitting together at one table and resolving what went wrong.
4. The Integration solution must offset geopolitical and monopolistic concerns. For the solution to be sustained, it must be delivered by a private sector network of leading technology firms who have earned the world's trust through their proven capabilities. These companies must work together despite their natural inclination to compete; the world will simply not accept a solution provided by one company or one region. Thus, the solution must be deployed based on equal opportunity to all organizations capable of doing the job, and monitored within a strongly structured environment by the public and private sectors.

Meeting the Integration challenge also requires that we improve our standards. It is not enough to rely upon the traditional “Best in Class” standards based upon the best current performance examples. Today's “Best in Class” standards have constrained trade and logistics within a box keeping them fragmented and inefficient in the eyes of the world. Our measure must be based upon the optimization of technology and the benefits it can provide when operating at peak levels; we must implement an integration solution that meets this new and elevated standard. By doing so, we will enable Germany to be ready for 21<sup>st</sup> century trade efficiency and to sustain the leading position in global trade it commands.

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1. UNESCAP, *Toward an Asian Integrated Transport Network*, p.9,2007
  2. The World Bank, *Connecting to Compete 2010, Trade Logistics in the Global Economy, The Logistics Performance Index and its Indicators*, p. 3, 2010
  3. Asian Development Bank, *Institutions for Regional Integration: Toward an Asian Economic Community*, p. 56, 2010
  4. APEC Business Advisory Council, *Report to APEC Economic Leaders, Working Towards Sustainable Growth For All*, Yokohama, Japan, p. 50, 2010



## Processes

**E**fficient trade processes are defined as the ability to systematically perform routine tasks within a changing and fast moving environment. In other words, different but interrelated processes performed well by the various 19 clusters within the trade pipeline determine the efficiency of the shipment when crossing from shelf to shelf.

### What is the Meaning of Processes?

Processes are generally defined as the blueprint for how to maximize the use of available tools and manpower to achieve a desired output in a specific vertical environment. Since trade is a horizontal process, the 21<sup>st</sup> century trade efficiency standard requires a horizontal solution as a foundation for achieving trade efficiency.

### When and How are Vertical and Horizontal Processes Used?

**Vertical Processes** - Today, each of the 19 clusters in the trade lane pipeline is expected to have their own internal processes to achieve their own business requirements. Some of these enterprises use sophisticated systems, while others use basic ones. The level of sophistication of the processes adopted by each of the 19 clusters on its own is subjective and determined by their individual business requirements. These requirements take into consideration customer needs, country requirements, local culture, the available labor force, and other factors that vary from one cluster to another. Again, their processes are designed to optimize vertical business performance in their attempt to maximize their bottom line.

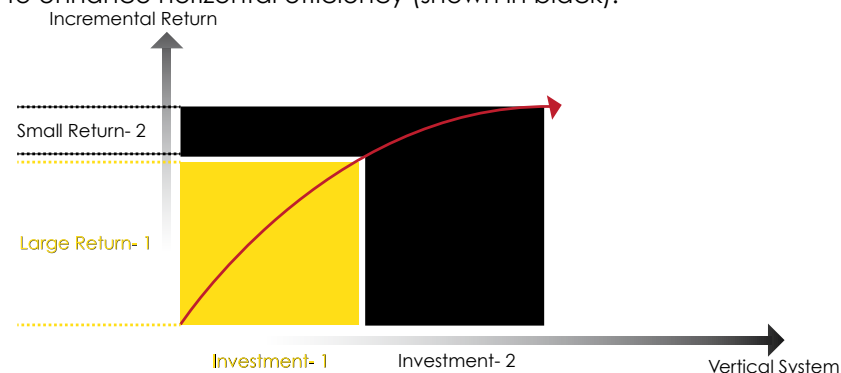
**Horizontal Processes** - Because trade is a horizontal process, the 21<sup>st</sup> century horizontal efficiency standard is a must in order to achieve shipment efficiency when crossing all the trade participants across the trade pipeline. This standard requires cooperation and compatibility among all participants involved in the horizontal flow of a shipment.

### Why are Vertical and Horizontal Processes Important?

As previously stated, vertical processes are important in optimizing business performance within a specific cluster. Horizontal processes are important to maximize the efficiency of the trade lane pipeline as it crosses the 19 clusters. Vertical processes alone will not meet horizontal efficiency requirements; they must work together in a non-intrusive manner. The following represent the three main factors that prevent us from achieving efficiency in the horizontal global trade process:

#### I. Inappropriate Investment Strategy

The fragmentation that we are facing in global trade today is mainly due to vertical in-house system investments erroneously geared towards maximizing horizontal efficiencies. As illustrated in the graph below, initial investments in vertical systems (shown in yellow) provide high efficiency returns on a vertical basis. However, returns on investment start to diminish as businesses over-invest vertically in their attempts to enhance horizontal efficiency (shown in black).



## II. Inequality of Vertical Efficiency Levels Across the Pipeline

Horizontal efficiency is limited by that of the lowest performing participant among the 19 clusters within the trade pipeline. Efficiency gains within any single vertical must be matched by other participants in order to be horizontally effective. The adopted process must be coordinated across participants from shelf to shelf in order to achieve optimal results in the trade pipeline.

## III. Inefficient Hand-Off Processes

Even if all 19 clusters have equivalent standard levels, the hand-off remains a critical element toward maximizing efficiency within the trade pipeline.

In conclusion, it is commonly believed that to maximize horizontal process efficiency, it is necessary for all parties to adopt the same standard processes. Today's reality is that standardized language and processes are not the answer. We ought to examine the airline industry and how it has been successful in maximizing its horizontal process efficiency while each cluster has maintained its own vertical processes.

As passengers cross from their point of departure to their final destination, they pass through multiple clusters (airline systems, airports, etc.). Each cluster uses its own systems and processes, and focuses on the common denominator for data exchange—the passenger. By exchanging the minimum data, termed as the Universal Data Elements (UDEs)—required for the passenger to cross horizontally in an efficient manner, these firms in the airline industry have been able to move the passenger efficiently through all verticals without any need for standardization by the clusters involved.

Similarly, for trade, the common denominator among all 19 clusters is the shipment. The shipment requires a minimum number of data elements (UDEs) in order to cross efficiently and securely from shelf to shelf across all 19 clusters' jurisdictions. It has been proven that up to 51-70% of data exchanged between the 19 clusters in Germany is redundant. This redundancy is not limited to Germany. For example, among the top 20 ocean carriers in the world,

which together represent 84% of global cargo volume, there is only a 20% variance in their bill of lading data elements. This is why the UDEs are required to maximize the horizontal efficiency of a shipment without any standardization required by the clusters involved.

## Who Has Validated the Importance of Processes?

Organizations from around the world have recognized the benefits of harmonization or standardization. Their main objective is not full standardization per se, but rather the benefits that can be achieved through it. The UDE initiative will minimize the standardization requirements while realizing the benefits that the world has long awaited. Recognizing that this global need has yet to be met, each of the following organizations has stated:

**United Nations (UN):** "The word 'facilitate' means to make easy or easier, and this is precisely the goal of trade facilitation – to make the processes and procedures of international trade as simple and efficient as possible for traders, concerned public authorities and governments. The need for simplification and harmonization is particularly evident in the preparation and submission of the extensive range of information and documents required by governmental authorities to comply with import, export and transit-related regulations. These requirements place a heavy burden on the resources of companies and can constitute a serious barrier to the development and efficiency of international trade, especially for Small and Medium Enterprises (SMEs)." <sup>1</sup>

**World Trade Organization Economic Research and Statistics Division:** "Studies of standards and trade that focus on sectors for which supply chains and intermediate goods are important find either that standardization per se promotes trade, or that international standards are more trade-promoting than national standards." ... "Harmonized standards can promote trade, and also make supply chains more efficient." <sup>2</sup>

**Asian Development Bank (ADB):** "Countries should harmonize their procedures, data, and documentary requirements with international conventions, standards and other relevant instruments to improve transparency and predictability." <sup>3</sup>

**APEC Business Advisory Council (ABAC):** “Given the global nature of modern supply chains, ABAC urges the harmonization of transportation regulations on an international basis to achieve both safety and facilitation of trade. Standards in each economy should be aligned with those set by relevant international organizations and where international standards do not exist, the introduction of an appropriate international framework to establish globally harmonized regulations should be encouraged. APEC economies should promote capacity building activities to ensure transportation safety by encouraging compliance with current regulations among relevant supply chain operators.”<sup>4</sup>

**International Civil Aviation Organization (ICAO):** “The solution is clear – optimum, end-to-end security of the global supply chain through the consistent application of relevant and effective controls, from start to finish during the shipping process.”<sup>5</sup>

### Where Do Processes Apply and How Important Are They to the Public and Private Sectors?

Processes are a required foundation to achieve optimum performance for the public and private sectors, thus optimizing the efficiency of the entire trade pipeline and generating multiple benefits including the following:

#### Buyers/Sellers and Logistics Service Providers

- ▶ Reduce landed import and export costs
- ▶ Maximize the capacity utilization of physical infrastructure
- ▶ Optimize outsourcing costs and quality
- ▶ Enable market expansion
- ▶ Maximize the operation's bottom line

#### Finance & Insurance

- ▶ Maximize efficiency of document validation, underwriting, and claims processing procedures
- ▶ Improve customer service and speed of response
- ▶ Reduce administrative costs

#### Government

- ▶ Increase speed of border crossing and Customs clearance
- ▶ Improve speed and accuracy of security measures
- ▶ Reduce costs associated with enforcement, document validation, and pass-through times

### Findings - Data

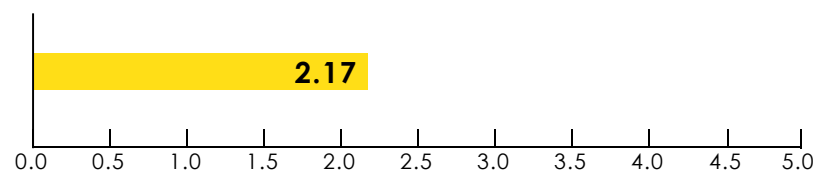
Processes Efficiency scale in brief:

**Level 1=** Absent or incomplete processes in a trade lane pipeline. The use of Electronic Resource Planning (ERP) systems can help automate processes among supply chain partners of an enterprise. However, by just investing in such vertical systems without establishing automated horizontal connectivity with the participants in the other clusters of the trade pipeline, an organization can score 2.5 at the most.

**Level 5=** Optimum and complete processes in a trade lane pipeline

### Germany's Overall Processes Score

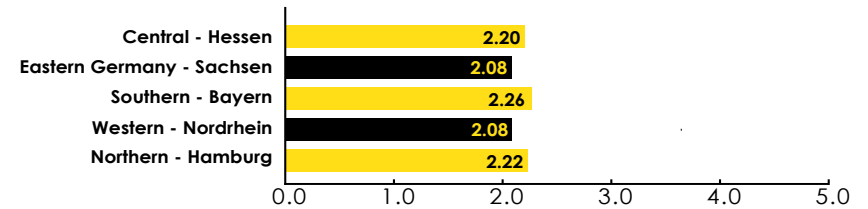
The following result represents the overall national Processes score assessing the handling of shipment flow through the trade pipeline. Collectively, the trade participants in Germany have scored a 2.17 out of a possible 5 on the 21-6-ETEL scale.



### Processes by Economic Zone

When we analyze Processes scores by Economic Zone, all five zones show some established processes due to investment in vertical in-house systems. The highest score of Southern (2.26) is due to the presence of the world-class automotive and manufacturing companies in this zone. The Northern (2.22) zone, with its major manufacturing and global logistics companies in this zone, along with the Southern zone, has established internal vertical processes and handle high volume of cargo and imports/exports for the country. However, because trade is horizontal in nature, the efficiency that can be gained through further vertical investment is very limited.

The difference between the highest and the lowest scores is very low at 3.6%, indicating a countrywide opportunity to enhance Processes scores.

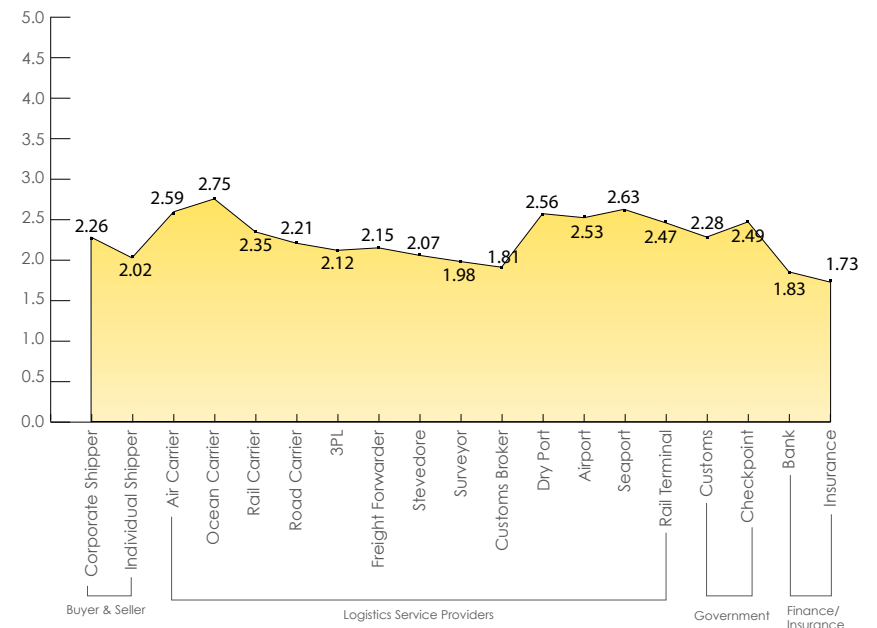


For the Processes in Germany to be more effective and efficient, there must be an increased level of integration in order to support the horizontal processes across trade pipelines. Hence, with improved Integration across Germany, further efficiency gains will be achieved in the horizontal Processes in all economic zones, boosting Germany's overall trade efficiency thereby.

### Processes by the 19 Clusters

The results illustrate the comparative strengths among the 19 clusters related to the adoption of systems when handling a shipment from shelf to shelf. A score from 0 – 2.5 indicates the efficiency of vertical systems adopted to handle horizontal processes, whereas a score between 2.5 and 5 indicates the adoption of efficient vertical and horizontal processes to meet internal vertical requirements and the needs of global and national trade which are horizontal in nature.

Germany has one of the world's most developed transportation and communication infrastructures. A dense and efficient network of motorways, railways, and waterways connects the country. Large asset-based carriers and infrastructure organizations have also invested in internal vertical processes and in-house technology systems to handle the large freight volumes. This is apparent in the scores for Ocean Carrier (2.75), Seaport (2.63), Air Carrier (2.59), Dry Port (2.56), Airport (2.53), Rail Terminal (2.47), and Rail Carrier (2.35) clusters. The ZOLL National Single Window portal that provides an easy access to several online tools that facilitate trade has helped Customs (2.28) streamline some of its processes by offering advance cargo clearing services and has contributed to the increases in the Processes score of other clusters as well.



It is worth noting that the Bank (1.83) and Insurance (1.73) clusters in Germany have scored lower than all the other clusters, indicating their traditional lack of integration with its supply chain partners.

However, 81.8% of Germany's businesses lack the integrated vertical systems necessary to boost horizontal process efficiency through improved planning and automatic monitoring of the hand-offs between participants in the trade lane pipeline. This is the limiting factor that must be addressed if Germany is to realize its full potential in the global economy.

### Processes Indicators

The following chart indicates the predominant processes in place within specific organization classes, based upon responses to some of the questions asked during the survey.

	Buyers/Sellers	LSPs	Finance/Insurance	Government	Countrywide
Vertical in-house software system used	Off-the-Shelf Not Customized	Off-the-Shelf Not Customized	Off-the-Shelf Not Customized	Off-the-Shelf Not Customized	Off-the-Shelf Not Customized
How quickly do you become aware of domestic or global changes that impact your current processes?	8-30 Days	8-30 Days	8-30 Days	8-30 Days	8-30 Days
Time required to implement an external change, domestic or global, that affects your process output	2-4 Weeks	2-4 Weeks	2-4 Weeks	2-4 Weeks	2-4 Weeks
How frequently do you re-key data due to processes adopted?	61-80%	41-60%	61-80%	41-60%	61-80%
How quickly does your process identify errors when they occur anywhere in the pipeline?	Within 2-7 days for some shipments	Within 2-7 Days for some shipments	Within 2-7 Days for some shipments	Within 1 day for ALL shipments	Within 2-7 Days for some shipments
Management process adopted to ensure optimal internal business requirement are met	Partially automated System with no escalation Process	Partially automated System with no escalation Process	Partially automated System with no escalation Process	Partially automated System with no escalation process	Partially automated System with no escalation Process
Management process adopted to ensure contractual obligations are met with the 19 clusters	Partially automated System with no escalation Process	Partially automated System with no escalation Process	Partially automated System with no escalation Process	Partially automated System with no escalation process	Partially automated System with no escalation Process
Time required to identify the cause of a process breakdown, domestic or global	2-4 Weeks	2-7 Days	2-4 Weeks	2-7 Days	2-4 Weeks
Time required to address the cause of a process breakdown, domestic or global	2-4 Weeks	2-4 Weeks	2-4 Weeks	2-7 Days	2-4 Weeks

### **Findings Impact**

The survey indicates that most of the 19 clusters in Germany do not know about changes occurring within their pipelines for 8 to 30 days on average, as typical organizations use commercial off-the-shelf systems with no customization, limiting their ability to cope with changing requirements of Buy, Sell, Country, Industry, Finance, and Insurance (BSCIFI). Identifying any errors in their internal processes in the trade pipeline can take 2 to 4 weeks on average. Addressing domestic or overseas breakdowns in the trade pipeline requires typically 2 to 4 weeks. Furthermore, most of the respondents indicate that they must manually re-key up to 61-80% of shipment data.

Taken together, these factors indicate substantial potential costs in terms of time, money, and quality. They have several notable effects upon both the country's current trade process performance and its future prospects. A selection of these effects is listed below:

### **Buyers and Sellers**

- ▶ No shelf-to-shelf optimization possible - This requires automated systems for monitoring activity completion, and automated communication between trade participants. The absence of processes limits throughput which necessitates earlier expansion to accommodate growth.
- ▶ Unpredictable shipment flow - Manual communication is inherently inconsistent, which contributes to production delays throughout the trade pipeline. Absence of processes leads to excessive non-value added costs like storage and handling, as well as misallocated resources due to the inconsistency in scheduling the next activities in cargo movement.
- ▶ Limited growth potential - Lack of efficient processes makes it difficult to respond to new economic demands and market opportunities. Manual processes between clusters leads to excessive reliance upon the efficiency of scarce personnel resources. When such resources are available, their productivity level varies, which in turn leads to inefficiency and leaves few resources to expand new partner relationships and new market opportunities.

### **LSPs**

- ▶ Missed revenue opportunities - Customer requirements take time and are processed manually, which risks losing business to more automated competitors.
- ▶ Reduced margins - Lack of automated processes prevents dynamic service/price/transit time comparisons. Static pricing and routing guides do not allow price adjustments based on forecasted equipment needs, customer bookings, or available space. The results are lower sales margins and return on assets.
- ▶ Shipment handoffs are highly inefficient as a result of limited process management automation, differing technology capabilities across participants, and a lack of integration as shown by the high re-keying rate.

### **Finance & Insurance**

- ▶ The partially-automated processes adopted throughout Germany's trade pipeline limit visibility to finance and insurance underwriters, which increases their risk and in turn increases premiums and financial costs.
- ▶ The manual process adopted will also limit financial institutions' ability to integrate in the trade lane pipeline as a prerequisite to providing bill consolidation service, a major market that all financial institutions worldwide are seeking.

### **Government**

- ▶ Inadequate adopted processes can result in lack of visibility across the supply chain pipeline, which could increase cargo security risk and decrease the ability to intercept counterfeit goods, in addition to minimized ability to collect proper Customs duties.


## Recommendations

Compared to what 21<sup>st</sup> century technology can make possible, Germany has the opportunity to transform what could be perceived as a less than favorable Processes evaluation into a major competitive edge, by establishing a new benchmark for process excellence. Germany's society is driven to succeed; its leadership has proven its ability to do so by formulating economic strategies aimed at diversifying its economy. However, it lacks the right tools to enable German companies and organizations to achieve their full potential. The advantage is that at present, there are few adopted systems or processes to uphold digitization in Germany.

An agile process that boosts vertical and horizontal efficiency will reduce data redundancy while providing for full data validation, thus minimizing human error. In the event of errors or anomalies, agile technology-driven processes enable rapid responses to changes or unforeseen events occurring anywhere in the trade pipeline. Last but not least, such processes provide oversight of the trade participants to ensure that their performance is in alignment with their business obligations.

It is no longer enough that trade participants be efficient within their own vertical systems. To perform at optimal efficiency, the 21<sup>st</sup> century trading environment demands that every participant in the trade lane pipeline has the capability to become immediately aware of any issues, changes, or unforeseen events affecting the pipeline they are involved with, either nationally or globally. A process that enables the required horizontal efficiency described earlier in this section, coupled with real-time integration, would deliver powerful advantages to Germany's trade-related industries, and enhance its position as a regional and global trade leader.

1. The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT): Simple, Transparent and Effective Processes for Global Commerce, New York and Geneva, p. 4, 2005.
2. World Trade Organization Economic Research and Statistics Division: Using Supply Chain Analysis to Examine the Costs of Non-Tariff Measures (NTMs) and the Benefits of Trade Facilitation Staff Working Paper ERSD-2012-02, pp. 20-21, pp. 27-28, 15 February 2012.
3. Asian Development Bank: Designing and implementing trade facilitation in Asia and the Pacific, p. 48, 2009.
4. APEC Business Advisory Council (ABAC): Working Towards Sustainable Growth for All, p.11, 2011
5. Address by the Secretary General of ICAO Mr. Raymond Benjamin to the World Customs Organization (WCO) Council, Brussels, 24 June 2011.



"It is no longer enough that trade participants be efficient within their own vertical systems. To perform at optimal efficiency, the 21st century trading environment demands that every participant in the trade lane pipeline has the capability to become immediately aware of any issues, changes, or unforeseen events affecting the horizontal pipeline they are involved with. "

— Global Coalition for Efficient Logistics (GCEL)





## E-Documentation

**E**-Documentation is a series of electronic documents created to expedite the flow of a shipment from shelf to shelf by meeting the Buyer, Seller, Country, Industry, Finance and Insurance (BSCIFI) documentation requirements.

### **What Is the Meaning of E-Documentation?**

E-Documentation, or electronic documentation, is one of the defining aspects that distinguish an advanced system of trade from one that relies on less efficient methods. E-Documentation is defined as the creation, storage, and transmittal of necessary data related to a shipment or trade participant in a purely electronic form. Presently, E-Documentation is not used to its full potential. It is limited to a point-to-point environment where information is shared only from one data provider to one data receiver at a time. The 21<sup>st</sup> century E-Documentation standard is based on maximization upon point-to-world integration—achieving an accurate, validated, and efficient E-Documentation environment encompassing all the 19 cluster's trade transactions. This results in maximum trade efficiency, thus expediting shipment flow and reducing costs.

### **When and How is E-Documentation Used?**

E-Documentation is typically submitted through either a web-based portal or through EDI, depending upon the systems available in a particular country or organization. These documents contain information shared among the 19 clusters in the trade pipelines, including but not limited to:

#### **Export Process Generated Documents**

- ▶ Shipping forms and documents
- ▶ Certificates of origin
- ▶ Insurance certificates
- ▶ Packing lists
- ▶ Export documents
- ▶ Commercial invoices
- ▶ Export packing lists
- ▶ Pro forma invoices

- ▶ Transportation documents
- ▶ Bills of lading for air, ocean, rail, or truck
- ▶ Shipper's Export Declarations (SED)
- ▶ Export compliance documents
- ▶ Export licenses
- ▶ Destination control statements
- ▶ Other certificates for shipments of special goods
- ▶ Certificates of analysis
- ▶ Certificates of free sale
- ▶ Dangerous goods certificates
- ▶ Fumigation certificates
- ▶ Health certificates
- ▶ Ingredients certificates
- ▶ Inspection certificates
- ▶ Pre-shipment inspection certificates
- ▶ Weight certificates
- ▶ Other export-related documents
- ▶ Consular invoices
- ▶ Dock receipts and warehouse receipts
- ▶ ISPM 15 (Wood Packaging) Markings
- ▶ Shipper's letters of instruction
- ▶ Temporary shipment documents

#### **Import Process Generated Documents**

- ▶ Power of attorney certificates
- ▶ Arrival notices
- ▶ Bills of entry
- ▶ Import licenses
- ▶ Customs bonds

#### **Cargo Security Related Documents**

- ▶ Importer security filings
- ▶ Pre-shipment cargo manifests
- ▶ Air cargo security filings

## **Trade Finance and Insurance Related Documents**

- ▶ Letters of credit
- ▶ Transfer documents
- ▶ Insurance documents
- ▶ Commercial documents
- ▶ Insurance claims and resolutions
- ▶ Collateral documents
- ▶ Purchase orders
- ▶ Requests for quotation
- ▶ Freight booking requests and confirmations
- ▶ Invoices and proofs of delivery for sale of goods
- ▶ Storage, detention ,and demurrage
- ▶ Value-added services

Currently, most trade documents are handled by traditional methods such as print, fax and postal mail in a point-to-point environment. This environment does not enable data to be validated. According to APEC studies, 70% of data provided by one cluster to the next is redundant. Manual processes mean that 100% of data must be re-keyed every time, increasing the chance for data errors.

## **Why is E-Documentation Important?**

E-Documentation is extremely important; many studies validate the trade efficiency and cost savings achieved when E-Documentation is fully utilized. However, E-Documentation has not yet reached its full potential since the participants in the 19 clusters mainly rely on phone, fax, paper, and email to exchange information with their direct trading partners. In order to achieve its maximum efficiency and benefit, E-Documentation must expand beyond the initially intended objective; documentation exchange must be among all 19 clusters in the pipeline. The optimal E-Documentation environment will enable business excellence throughout the trade pipeline, including meeting BSCIFI requirements.

The 21<sup>st</sup> century trade efficiency requirement calls for two dimensions of E-Documentation:

- a) E-Documentation related to BSCIFI requirements
- b) E-Documentation exchange related to business transactions between the service providers within the supply chain

Once the above is achieved, we will have the following three foundations for data optimization in both categories:

### **I. Data Accuracy and Validity**

### **II. Data Efficiency**

### **III. Rapid New Requirement Response**

#### **I. Data Accuracy and Validity**

Data is continuously pre-populated, minimizing keystrokes, thus reducing the chance of human error and maximizing the ability to flag data anomalies. Furthermore, data is continuously validated from multiple sources (19 clusters) in the same trade lane pipeline during the course of their interaction with the shipment. As information is cross-checked against historic data as well as current activity data shared throughout the pipeline, errors or anomalies will be quickly identified and addressed.

#### **II. Data Efficiency**

Accurate and validated data is efficiently assembled from different clusters throughout the shipment process and made available in real time throughout the pipeline. This will help accelerate shipment movement to meet the requirements of the real-time environment.

#### **III. Rapid New Requirement Response**

The point-to-world environment will reduce the time needed to publish and reinforce new BSCIFI requirements. The wealth of dynamic, validated data, available in the point-to-world environment, will satisfy the majority of new BSCIFI requirements by automatically populating the newly required data elements. If the new data element does not already exist within the point-to-world environment, end users will be proactively prompted to provide the missing information during the course of doing business on a real-time basis.

### Who Has Validated the Importance of E-Documentation?

E-Documentation benefits to trade efficiency have been broadly recognized by organizations worldwide as a means of reducing costs, leading to increased trade efficiency which spurs economic growth. The following represents only a glimpse of those benefits:

**United Nations Conference on Trade and Development (UNCTAD):** "Trade facilitation could result in savings to traders and consumers of 2 to 3% of the value of traded goods." <sup>1</sup>

**United Nations Economic Commission for Europe (UNECE):** "Information is crucial for efficiency and security of the SC [Supply Chain]...Efficiency of documents and related procedures has a key impact on transaction costs, times and risks... A saving of one day in shipping time is worth 1%, ad valorem, of the manufactured goods." <sup>2</sup>

**APEC:** "When paperless trading technologies are fully extended to all intra-APEC merchandise trade, the cost savings are likely to be substantial. For example, a three per cent average reduction in the cost of imported items (which appears to be a conservative estimate) to intra-APEC trade would involve gross savings in excess of USD 60 billion when extended to total intra-APEC merchandise trade." <sup>3</sup>

**APEC:** "The cost of providing paper-based documents for cross-border trade is a major expense to traders. Complex documentation can also be intimidating and discourages many small firms from participating in cross-border trade. Removing the requirement to produce paper-based documents for trade in the APEC region is expected to lead to considerable economy-wide savings, direct savings to traders in the form of lower compliance costs and a number of indirect, and less easily definable savings, such as the ability to move goods faster, the opportunity to participate in agile production networks and lower inventory costs." <sup>4</sup>

### Where Does E-Documentation Apply and How Important Is It to the Public and Private Sectors?

E-Documentation is vital to meet the requirements of the BSCIFI entities. In order to briefly present how important E-Documentation can be in meeting their requirements, we have divided the BSCIFI into the following two groups:

#### Private – Buyers/Sellers, LSPs, and Finance/Insurance

- ▶ **Qualifications:** The dynamic visibility of certifications and business transaction documentation can help expedite qualification of product and service providers by potential buyers as well as finance and insurance institutions.
- ▶ **Contract Obligations:** The ability to transform contract obligations into E-Documentation and then to electronic metrics, thus setting the foundation for performance monitoring based on contract obligations of product and service providers. Furthermore, this ensures during the preplanning stage that the movement of shipments fulfils finance and insurance requirements.
- ▶ **Business Transactions:** The ability to create, validate, and make documents available in real-time will enable a rapid and appropriate course of action within the trade pipeline.
- ▶ **Payment Transactions:** The ability to access all related documents and dynamically cross-check them through multiple sources will expedite payments and ensure their accuracy.
- ▶ **Auditing:** Storage of comprehensive business transaction documentation in an electronic form with ease of access and flexible sorting will facilitate accurate and expeditious auditing processes.

#### Public – Customs and Border Protection Agencies

- ▶ **Compliance:** Dynamically populating accurate and validated data, optimizing the process of meeting compliance requirements.

- ▶ *Rapidly Meeting New Requirements:* The point-to-world environment will allow the distribution of new requirements in real time, thus facilitating rapid compliance. The availability of comprehensive, validated current and historical data related to the 19 clusters and the shipment flow from shelf to shelf permits the dynamic population of the new data requirements. If data is not already available within the environment, the submitter will be prompted to fulfil the appropriate data requirement.

The 21<sup>st</sup> century E-Documentation standard will have significant positive impact on a number of areas in the trade lane pipeline, including the following:

- ▶ Reduce labor costs
- ▶ Reduce shipment delays
- ▶ Reduce inventory and carrying costs
- ▶ Reduce border crossing delays
- ▶ Reduce carbon footprint
- ▶ Reduce landed import and export costs
- ▶ Increase speed of finance and insurance processes
- ▶ Increase speed of Customs clearance
- ▶ Increase interception of counterfeit products
- ▶ Increase Customs duties collection
- ▶ Maximize capacity utilization of present logistics infrastructure

### Findings - Data

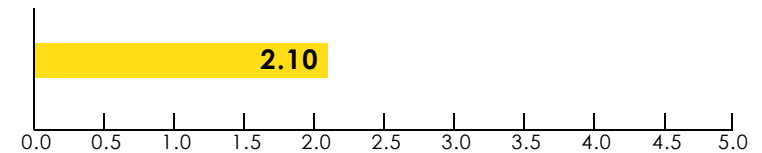
E-Documentation Efficiency scale in brief:

**Level 1** = Paper-based documentation, high level of data re-keying and potential errors, minimal validation resulting in low efficiency. E-Documentation score measures the extent of using automated information exchange among the participants across all the industry clusters involved in a trade pipeline. Hence, a participant that invests on its own vertical systems without establishing horizontal integration to hand off documents electronically can obtain a score of 2.5 at the most.

**Level 5** = Electronically-based documentation, minimal keystrokes and errors, maximum validation resulting in optimal efficiency.

### Germany's Overall E-Documentation Score

The overall national E-Documentation level represents aggregate data compiled from responses provided by the 19 clusters. Given that a score of 5.0 reflects optimal efficiency, 2.10 indicates that some of the clusters are moving from paper to E-Documentation, primarily influenced by the Customs clearance process provided through the National Single Window.

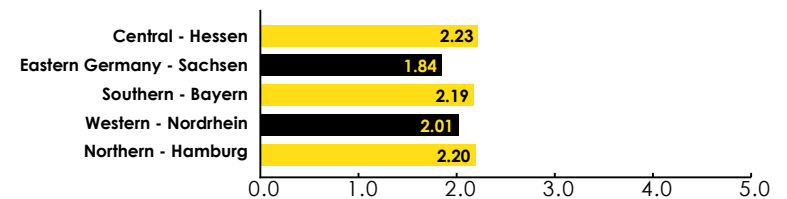


### E-Documentation by Economic Zone

The higher scores in Central (2.23), Northern (2.20), and Southern (2.19) Zones are due to the presence of major automotive, manufacturing and transport organizations with sophisticated in-house vertical systems that use E-documentation for shipment and trade related activities.

E-Documentation scores are fairly consistent across the economic zones with the difference between the highest and lowest scores being moderate at 7.8%.

Hence, there is a countrywide opportunity to achieve optimal level of efficiencies when an E-Documentation capability is made available.



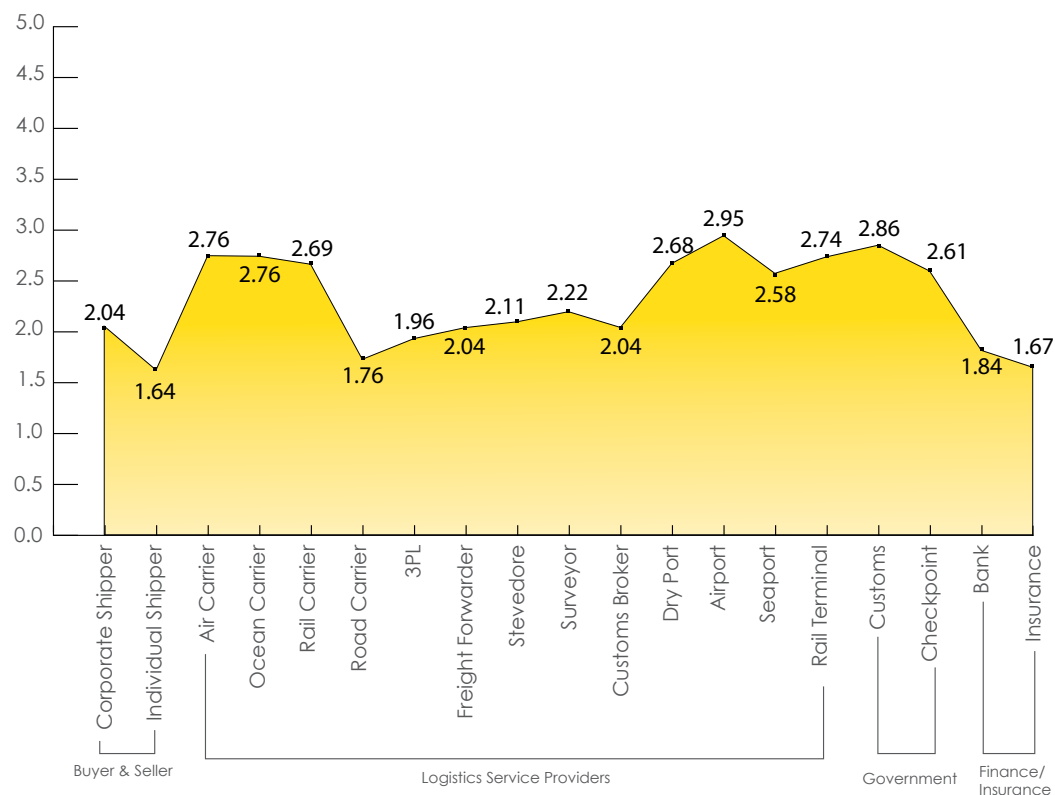
## E-Documentation by the 19 Clusters

The scores below illustrate the adoption of electronic documentation by the 19 clusters, in place of manual/paper methods. It is important to mention that the 0 to 2.5 range represents use of handwritten documentation; the 2.5 to 5 range represents the use of electronic means for the creation, production, and handing-off of documents among all participants in the trade pipeline.

Customs achieved the second highest E-documentation score of (2.86) due to the use of the National Single Window for the filing and exchange of shipment related information electronically.

Airport (2.95), Air Carrier (2.76), Ocean Carrier (2.76), Rail Terminal (2.74), Rail Carrier (2.69), Dry Port (2.68), and Checkpoint (2.61), and Seaport (2.58) have moderate scores due to the fact that some of these carriers and global service providers have developed portal applications that enable trade partners to submit some of the shipment documents online using the trade facilitation systems promoted by the Federal Ministry for Economic Development and Cooperation.

The other clusters have scored moderately or lower in the trade pipeline indicating that the trade participants in Germany perform shipment documentation manually. On average, 95.5% of shipment information is exchanged by participants using fax or email. These manual methods of creating, populating, and submitting documentation increase the likelihood of human errors, shipment delays, and added costs.



## E-Documentation Indicators

The following chart provides indicators of the level of E-Documentation based upon average responses to some of the questions asked during the survey.

	Buyers/Sellers	LSPs	Finance/ Insurance	Government	Countrywide
Shipping forms data entry method	Manually typed	Manually typed	Manually typed	Manually typed	Manually typed
Man-hours needed to populate domestic shipment documents	2-4 hours	31-120 min	2-4 hours	31-120 min	31-120 min
Man-hours needed to populate international shipment documents	2-4 hours	2-4 hours	2-4 hours	31-120 min	2-4 hours
% Domestic shipment documents rejected/returned due to errors	10%	5%	10%	5%	10%
% International shipment documents rejected/returned due to errors	10%	10%	10%	5%	10%
% Domestic shipments delayed due to missing documents	10%	5%	10%	5%	5%
% International shipments delayed due to missing documents	10%	10%	10%	5%	10%
% Shipment data re-entered due to incompatibility	61-80%	41-60%	61-80%	21-40%	41-60%
Domestic shipping documents distribution method	Email	Email	Email	Online Portal application	Email
International shipping documents distribution method	Email	Email	Email	Online Portal application	Email
Data validation level	Occasional validation	Some validation	Occasional validation	Some validation	Some validation
% Of trade pipeline participants that offer E-documentation submission	<=20% of Trade Partners	21-40% of Trade Partners	<=20 % of Trade Partners	<=20 % of Trade Partners	<=20% of Trade Partners
Number of shipping forms submitted electronically through web portal or integration	1-2 Forms	1-2 Forms	1-2 Forms	3-5 Forms	1-2 Forms

## Findings Impact

Documentation exchanged between trade pipeline participants on a countrywide basis is primarily generated via emails, with 41-60% of data being re-keyed, while mostly undergoing some validation. This indicates that only a modest percentage of trade partners in Germany electronically exchange data within the trade pipelines.

The following are some of the potential impacts and limitations represented by this situation:

- ▶ *Personnel Inefficiency:* Manual documentation is an ineffective way to deploy the labor force to its full potential, preventing workers from being used efficiently to attain optimal productivity.
- ▶ *Excess Cost:* Improper or missing documentation has the potential to delay shipments, including Customs clearance. The result is increased landed import and export costs, including inventory carrying costs.
- ▶ *Physical Infrastructure Inefficiency:* Border crossing congestion caused by inaccurate or delayed documentation erodes proper capacity utilization of the existing physical logistics infrastructure. This results in unnecessary infrastructure expansion at very high cost in terms of land and capital.
- ▶ *Increased Carbon Footprint:* Excessive emissions caused by congestion at border crossings and points of entry resulting from missing or delayed documentation increases the carbon footprint.
- ▶ *Service Industry Limitations:* Manual processes and lack of full validation can result in increased underwriting risks, which increase requirements, thus resulting in delays and additional costs in obtaining proper financial services and insurance coverage.
- ▶ *Customs Limitations:* Lack of proper validation can decrease collection of appropriate Customs duties and minimize the opportunity to intercept counterfeit goods.

## Recommendations

The migration from paper to paperless documentation known as E-Documentation has been universally recognized as being vital to trade efficiency. Many attempts have been made by leading organizations to implement comprehensive E-Documentation solutions. The emphasis of these efforts has been focused upon a subset of what E-Documentation should achieve: The electronic submission of documents mainly to meet country and industry requirements. While this is an excellent first step, this strategy by itself has proven to be insufficient.

The 21<sup>st</sup> century E-Documentation process transforms the inefficient 51% to 70% data redundancy into the foundation needed for a full E-Documentation environment: This data represents the common denominator information that constitutes the Universal Data Elements (UDE), the minimum data required to maximize the efficiency of a shipment when crossing from shelf to shelf across all the 19 clusters' jurisdictions.

As previously indicated, the 21<sup>st</sup> century E-Documentation environment provides significant benefits to all participants in the trade pipeline. The full utilization of E-Documentation provides an immediate incentive to all 19 clusters, enabling them to produce accurate and validated documents in a highly efficient manner while dynamically prompting them to rapidly meet new requirements. In achieving the above, we will take a vital step towards ensuring a vibrant, prosperous 21<sup>st</sup> century global economy.

1. United National Conference on Trade and Development (UNCTAD), "Fact Sheet 5", United National International Symposium on Trade Efficiency (17-21 October 1994), Geneva, cited in Walkenhorst and Yasui
2. UNECE, "Aligned Trade Documents for Efficient Trade: Migrating from Paper to Digital Paper," United Nations Electronic Trade Documents, Bangkok, Thailand, May 2007.
3. APEC Business Advisory Council, Report to APEC Economic Leaders, Working Towards Sustainable Growth For All, Yokohama, Japan, p. 50, 2010
4. APEC Op. Cit., 2001 p. 18.



TRACKING & VISIBILITY |

## Tracking & Visibility

**T**racking & Visibility is the final indicator of a job well done throughout the trade pipeline. Optimal Tracking & Visibility is necessary in order to have good control over what, when, where, and who is responsible when mishaps occur, providing the ability for a prompt and appropriate course of action.

### What is the Meaning of Tracking & Visibility?

Tracking & Visibility is defined as the ability to obtain real-time information regarding a shipment's location and movements.

- ▶ Tracking mainly refers to goods in transit between locations.
- ▶ Visibility mainly refers to idle goods at a specific location.

Tracking & Visibility is particularly important to indicate the time and duration that a shipment is in the jurisdiction of a specific cluster for purposes of planning and accountability. Tracking & Visibility is optimal when all participants have real-time visibility throughout the entire trade pipeline.

### When and How is Tracking & Visibility Used?

Tracking & Visibility involves two broad classes of information:

#### I. Tracking

When the shipment is in transit on conveyance. Information provided consists of tracking data generated during each part of a shelf-to-shelf shipment, typically obtained through Global Positioning System (GPS) or Radio Frequency Identification (RFID) technology. GPS is primarily of use during periods of transit by air, rail, road, and sea. RFID is used to automatically record when a shipment departs from or arrives at each location on its route, and to capture cargo status information. Tracking information could include:

- ▶ Actual times of departure and arrival
- ▶ Cargo sensor data that provides:
  - ▶ Temperature over time (for temperature-controlled goods)
  - ▶ Tampering detection
  - ▶ Excessive vibration detection, etc.

#### II. Visibility

When the shipment is idle within a cluster's jurisdiction. Some essential visibility information includes:

- ▶ Contractual obligation information
- ▶ Times to perform and complete activities, i.e.:
  - ▶ Advanced shipping notice (ASN)
  - ▶ Forecasted time to complete activities
  - ▶ Actual hand-off time
- ▶ Shipment counts, weights and dimensions
- ▶ Shipment condition information
- ▶ Shipment incident information

The 21<sup>st</sup> century trade efficiency standards require that the full potential of technology be used to maximize the capabilities of present-day Tracking & Visibility. At the same time, it must minimize the technology requirements to achieve this, making Tracking & Visibility available at zero cost to the end user.

But how?

This can be accomplished through two main solutions that 21<sup>st</sup> century technology makes possible today:

- a) An open platform that allows multiple tracking technology providers to 'plug in', making their services available through a single interface, since one container's journey can involve multiple tracking devices (e.g. truck/ship/truck, with separate GPS devices for each)
- b) Minimizing tracking technology requirements (point solutions) and associated costs by maximizing on the real-time, continuous visibility of business activity involved in the trade pipeline based on Contracted, Forecasted, and Actual time when performing specific activities throughout the shelf-to-shelf shipment flow

When promoting Tracking & Visibility as an essential element of trade efficiency and security, it is essential that we enhance its reliability globally, and make it cost-accessible to all end users.

### Why is Tracking & Visibility Important?

There are three primary reasons why Tracking & Visibility is an essential element of trade efficiency:

**Planning Capability:** A plan is limited by the data used to create it. If that data is incorrect, incomplete, or defined in ways that limit its use, the plan effectiveness can suffer. Tracking and real-time data visibility that is validated by multiple clusters in the same trade pipeline has the detail needed to expedite trade financing, reduce insurance premiums, and optimize operations. Furthermore, patterns of archived information provide additional opportunities for process improvement as well as for identifying points of vulnerability that require contingency plans. Full visibility makes lean operations more than just a strategic plan, but an achievable objective.

**Improved Execution:** Tracking & Visibility shared in real time enhances timely execution of activities in an efficient manner, as well as optimizes cooperation among clusters. It will also enable advance alert management systems, and trigger rule-based contingency plans.

**Enhanced Competitiveness:** Shipment visibility improves trade efficiency and transparency, thereby strengthening business operations and boosting competitiveness in a world where globalization is the dominant theme.

### Who Has Validated the Importance of Tracking & Visibility?

As shown in the following statements, a consensus of leading trade organizations worldwide has affirmed the importance of Tracking & Visibility to increasing trade efficiency, spurring economic growth and enhancing cargo security:

**World Trade Organization Economic Research and Statistics Division:** "Technological improvements in shipping [...] and the electronic tracking made possible by bar codes on containers, have induced a secular reduction in costs associated with international transport over time." <sup>1</sup>

**United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP):** "Producers are looking for transport services that are frequent, reliable, punctual, and secure and that offer tracking services, competitive transit times and costs, regardless of the mode of transport or route taken to move the goods between places." <sup>2</sup>

**The Organisation for Economic Co-operation and Development (OECD):** "Investments in some of the components of trade logistics are trade-enhancing for countries at all levels of development. This is true for improvements in customs administration, tracking and tracing, and logistics competence." <sup>3</sup>

**Oakridge National Laboratory:** "There is no automated shipment tracking system that reaches across the supply chain transporters during the life of a shipment. Better said, supply chain partners lose visibility when tracked shipments exit their system. EDI merely allows a smoother documentation handoff at a partner-to-partner level. The supply chain owner has no visibility of the shipment as it moves between multiple transporters, nor is there any universally adopted system in the commercial sector that provides this level of visibility." <sup>4</sup>

### Where Does Tracking & Visibility Apply and How Important is it to the Public and Private Sectors?

Tracking & Visibility is important to all 19 clusters in the trade pipeline. This section indicates a few areas of particular significance, as well as some of the benefits resulting from effective Tracking & Visibility:

#### Buyers/Sellers and LSPs

- ▶ **Disruption Responsiveness:** Disruptions are rapidly communicated through alerts to all clusters, enabling rerouting, resource re-allocation, or other contingency measures as needed.
- ▶ **Performance Monitoring:** LSP performance can be readily monitored, tracked over time, and used to calculate projected performance levels.
- ▶ **Supply Chain Extension:** Improved visibility reduces risk when sourcing products from increased distances.

- ▶ *Delivery Predictability*: Tracking enables JIT delivery and reduced inventory levels.
- ▶ *Forecast Monitoring*: Comparison of forecasts and contractual obligations vs. actual shipment, passage, and delivery times aids in cluster performance assessment.
- ▶ *Infrastructure Scheduling*: Tracking enables optimized scheduling of physical infrastructure and labor within all clusters, as well as contingency planning.

#### Finance

- ▶ *Financial Monitoring*: Lenders can monitor use of loaned funds through real-time monitoring of contract, forecast, and actual data, validated by third parties directly linked to transaction events.
- ▶ *Asset Recovery*: Tracking/Visibility capability enables location of assets for rerouting, seizure, or liquidation if necessary.

#### Insurance

- ▶ *Insurance Cost Reduction*: Full transparency to shipment activities cuts insurance costs by reducing underwriting risk.
- ▶ *Claim Investigation*: Tracking/Visibility capability minimizes insurance claim investigation time and cost by pinpointing shipment locations, identifying locations where damages have occurred, and identifying appropriate jurisdiction.

#### Public – Customs and Border Protection Agencies

- ▶ *Global Data Visibility*: Security is increased through availability of advance shipment data and shelf-to-shelf dynamic visibility at all points throughout the pipeline.
- ▶ *Expedited Customs Clearance*: Transparent, dynamic access to complete and accurate documentation in advance of arrival enables rapid clearance through Customs and appropriate duty payment.
- ▶ *Food Safety*: This is the ability to rapidly contain food disease outbreaks.
- ▶ *Agile Emergency Response*: Rapid identification of the nature, scale, and location of emergency events facilitates rapid and measured response.

### Findings - Data

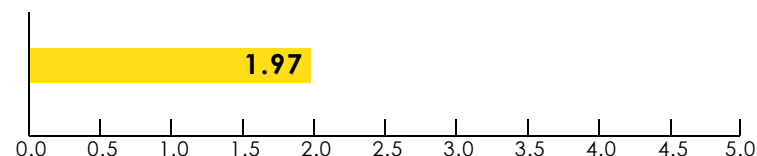
Tracking & Visibility scale in brief:

**Level 1** = Little or no Tracking & Visibility capability. A participant that invests in technologies such as RFID and GPS to enhance Tracking & Visibility of shipments within its operational scope alone can score 2.5 at the most. It would require all its trade lane partners to have such capabilities, and be integrated, in order to increase its score above 2.5.

**Level 5** = Optimum level of global Tracking & Visibility capability.

### Germany's Overall Tracking & Visibility Score

The overall national Tracking & Visibility level in Germany is 1.97, which indicates that some significant steps can be implemented in order to attain an optimum level of Tracking & Visibility performance.



### Tracking & Visibility by Economic Zone

When we analyze the Tracking & Visibility by Economic Zone, the difference of 4.2% between the highest and the lowest score is small, indicating that there is a countrywide uniform opportunity to improve Tracking & Visibility.

Germany is heading towards building more intelligent and flexible logistics network. An improved and efficient Tracking & Visibility provides higher reliability, greater efficiency, predictive ability, and faster throughput of goods.



When the right type of innovation is introduced that can improve integration and E-Documentation, along with the other elements of trade efficiency, Germany can enhance its Tracking & Visibility to achieve superior operating efficiencies.

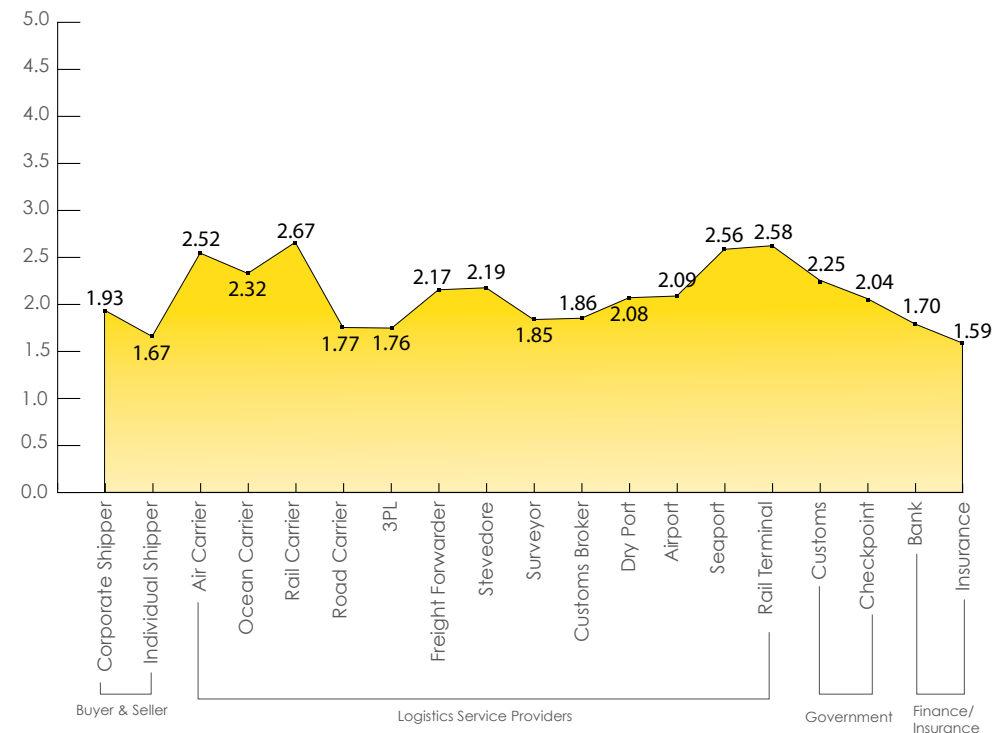
### Tracking & Visibility by the 19 Clusters

These scores indicate the ability to track and have visibility of the shipment as it crosses the 19 clusters' jurisdictions. Scores of 2.5 and below indicate Tracking & Visibility capabilities that are limited to a national level; while the range from 2.5 to 5 represents shelf-to-shelf global Tracking & Visibility, which is required in order to meet the 21<sup>st</sup> century trade efficiency standard.

It is evident that predominantly government operated and infrastructure-intensive Rail Carrier (2.67), Rail Terminal (2.58), Seaport (2.56), Air Carrier (2.52), Ocean Carrier (2.32), Customs (2.25), Airport (2.09), Dry Port (2.08), and Checkpoint (2.04) have scored above the national average. These large asset-based carriers and infrastructure-providing organizations have the ability to track shipments within their jurisdictions via GPS, RFID, IOT or similar technologies.

The remaining trade participants especially Bank (1.70) and Insurance (1.59), among others in the trade pipeline have scores below the national average on Tracking & Visibility. These low scores have implications on other clusters. Additionally, lower visibility results in increased risk that raises insurance costs and restricts access to trade finance.

Germany is home to world-class logistic players, both global and small & medium-sized companies; Deutsche Post and DHL operate one of the largest 3PL services, Deutsche Bahn operates Europe's largest rail network, and Lufthansa Cargo is one of the world's leading global air freight companies. These large asset-based service providers have their own intelligent transport system for enabling goods in transit to be monitored and managed in real time within their supply chains. However, since goods in global value chains need handling by service providers who are not within the supply chains of such firms, however large they are, Germany needs an innovative approach to digitally integrate all the service providers in the world under a common framework to realize comprehensive Tracking & Visibility.



## Tracking & Visibility Indicators

The following chart provides indicators concerning Germany's Tracking & Visibility level based upon average responses to some of the questions asked during the survey.

	Buyers/Sellers	LSPs	Finance/Insurance	Government	Countrywide
When do you start having visibility of your shipment?	Hours before & continuing until shipment is at my jurisdiction	Hours before & continuing until shipment is at my jurisdiction	Hours before & continuing until shipment is at my jurisdiction	Hours before & continuing until shipment is at my jurisdiction	Hours before & continuing until shipment is at my jurisdiction
At what location do you have shipment visibility?	At my jurisdiction and in Transit	At my jurisdiction and in Transit	At my jurisdiction	At my jurisdiction	At my jurisdiction and in Transit
Door-to-door tracking technology	Some of my shipments RFID/GPS; not all of the time	Some of my shipments RFID/GPS; not all of the time	Some of my shipments RFID/GPS; not all of the time	Some of my shipments RFID/GPS; not all of the time	Some of my shipments RFID/GPS; not all of the time
# Tracking system providers used	1-10	1-10	1-10	1-10	1-10
# System interfaces used to track shipments	Multiple interfaces with various devices tracking some of my shipments	Multiple interfaces with various devices tracking some of my shipments	Multiple interfaces with various devices tracking some of my shipments	Single interface with various devices tracking some of my shipments	Multiple interfaces with various devices tracking some of my shipments
How promptly do you receive an alert on your shipment?	Within hours for some of my shipments	Within hours for some of my shipments	Within hours for some of my shipments	Within hours for some of my shipments	Within hours for some of my shipments

## Findings Impact

Maximum shipment efficiency is only possible when the shipment is continuously visible to all participants from the time of the buy/sell agreement until it reaches its final destination. This requires integration and data sharing by every pipeline participant. Such integration does not exist today in Germany, resulting in average respondents having shipment visibility only hours before it arrives or when it enters their jurisdictions.

Banks have indicated that they only have visibility at the time of the buy/sell agreement, and at final delivery, with no validation of any activities in between. Carriers only track a shipment while it is within their jurisdiction. Customs Brokers confirmed that they only have visibility when documents arrive to execute clearance.

The survey data indicates that the majority of respondents only partially track shipments, and do so through minimal tracking provider interfaces. Maximum tracking efficiency requires an Integrated Horizontal System (IHS), whereby all shipments can be tracked door-to-door through a single interface with no hardware requirements.

With the exception of large asset-based carriers, respondents wait for several hours to be alerted that a shipment has been delayed or flagged. Wasted time can result in added cost, increased risk, or compromised security.

Germany's Tracking & Visibility levels indicate that additional efforts are required to achieve the 21<sup>st</sup> century digital economy standards. Germany's 1.97 rating indicates that significant steps are required in order to realize the full benefits that advanced Tracking & Visibility can provide to the country's prosperity and security. The 1.97 rating indicates the following:

### **Current Environment in Germany - Limited Transparency**

The meaning of limited transparency is that Tracking & Visibility capabilities are limited in scope, and that dynamic shipment location and movement information is unavailable to the majority of clusters within the trade pipeline. The main problems caused by this environment are that business competitiveness is limited and security is compromised without this essential information. For example:

- ▶ Buyers are unable to verify the location and status of goods in transit-limiting JIT capabilities, requiring higher inventory levels, and increasing costs.
- ▶ LSPs are prevented from efficiently evaluating labor performance or productively allocating equipment and infrastructure.
- ▶ Banks are subject to increased risk, which requires them to raise the cost and limit the availability of finance.
- ▶ Insurance firms are forced to raise premiums in response to increased risk, potentially pricing coverage beyond the reach of SMEs.
- ▶ Border security officials are unable to identify and flag suspect shipments, vessels, or cluster participants in advance, losing the ability to take appropriate steps before shipments reach a country's borders.

### **Current Environment in Germany- Limited Planning Capability**

The current environment in Germany limits the ability to plan, which hampers forecasting necessary for efficient trade. The main problems caused by this environment are that plans are based upon partial information and assumptions—resulting in poor resource allocation, inaccurate time estimates for job completion, and thus greatly reduced efficiency.

## **Recommendations**

Recommendations stated in the Integration section suggested establishment of point-to-world integration, whereby all trade participants would share shipment information through a horizontal trade platform. As detailed below, this initial step makes Tracking & Visibility possible.

### **Establish an Integrated Horizontal System (IHS)**

An IHS provides maximum visibility to all shipments globally through a single interface and enables performance monitoring of every participant in the shipment process. This is achieved by capturing five dimensions of time across all pipeline participants, as follows:

- ▶ *Contracted Time*: Based on contractual obligations within the buy/sell agreement, an IHS dynamically defines the time allotted to perform a specific quantity of work.
- ▶ *Forecasted Time*: The estimated time to complete the work under current conditions when the shipment enters each of the 19 clusters' jurisdictions.
- ▶ *Real Time*: The actual time to complete assigned tasks.
- ▶ *Inbound Handover Time*: The time of handover from one participant to another, which confirms the "receiving time"
- ▶ *Confirmation of the Outbound Handover*: The time of handover from one participant to another, which confirms the 'delivery time'.

By capturing these five dimensions of time for all 19 clusters while tracking all shipment movement data, optimal shipment visibility can be achieved at no cost and without the use of hardware devices.

Tracking & Visibility requires optimum global visibility provided through a single platform as follows:

- ▶ The IHS single user interface must track multiple shipments.
- ▶ Tracked shipments must be subject to no blind spots.
- ▶ Should proprietary systems fail, the IHS must provide firms and their customers with necessary visibility.
- ▶ IHS enhances tracking service providers' solution efficiency and makes it available globally through a single user interface.
- ▶ The IHS must be accessible at no cost in order to ensure universal accessibility and usage.

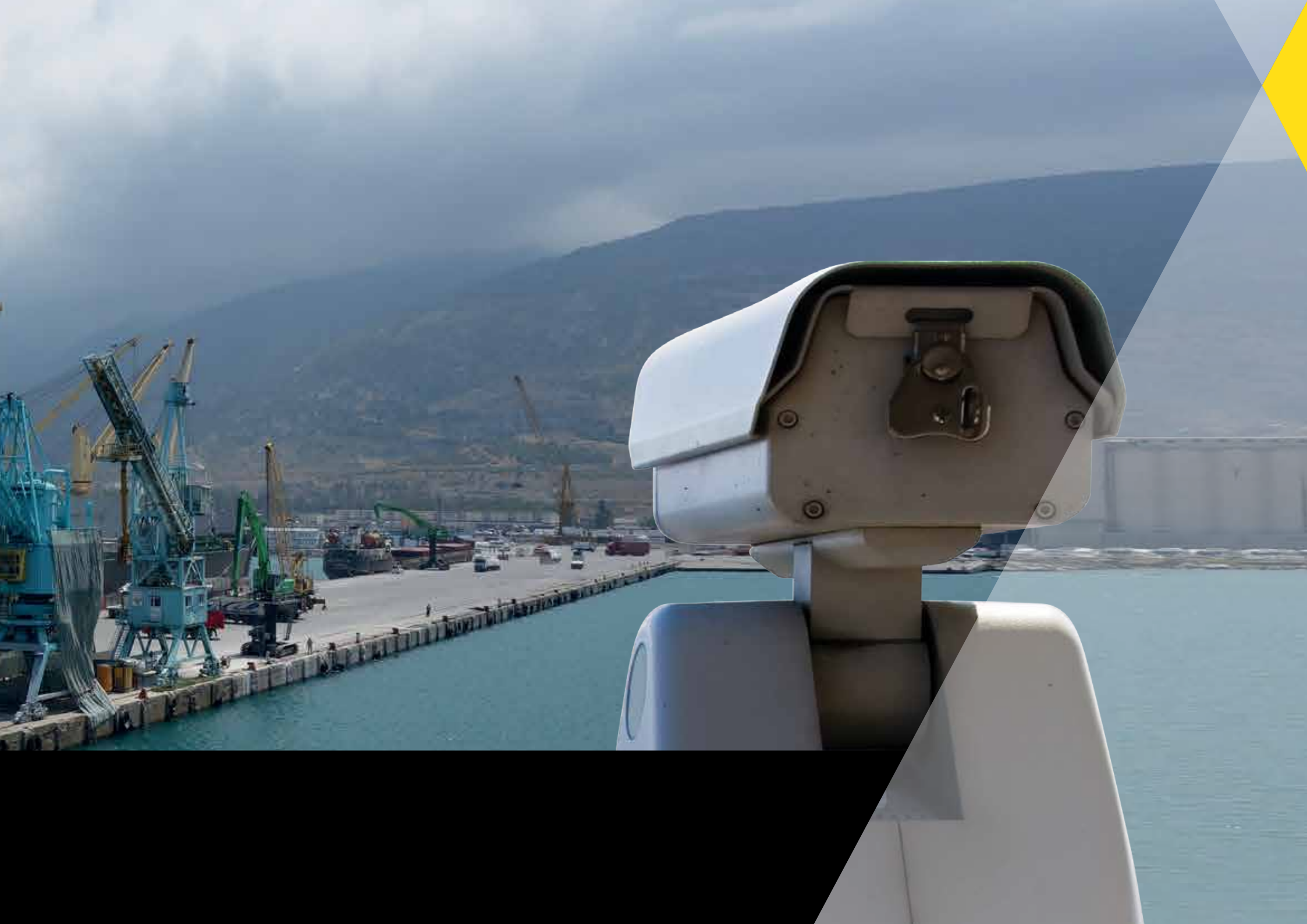
It is necessary that the IHS adopt an open-platform strategy to enable ease of integration with systems already in use.

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1. World Trade Organization Economic Research and Statistics Division: Using Supply Chain Analysis to Examine the Costs of Non-Tariff Measures (NTMs) and the Benefits of Trade Facilitation Staff Working Paper ERSD-2012-02, Yokohama, Japan, pp. 11-12, 2012.
  2. UNESCAP: Toward An Asian Integrated Transport Network, p.56, 2007
  3. Organisation for Economic Co-operation and Development (OECD): To What Extent Are High-Quality Logistics Services Trade Facilitating, OECD Trade Policy Working Paper No. 108, p.19, 2011.
  4. Oakridge National Laboratory, Submitted to: Institute of Nuclear Materials Management, 51st Annual Meeting: ORNL Intelligent Freight Initiative: Enhanced End-to-End Supply Chain Visibility of Security-Sensitive Hazardous Materials, p. 8, 2009.



“Optimal Tracking & Visibility is necessary in order to have proper control over the what, when, where, and who is responsible when shipment mishaps occur — and Tracking & Visibility is the final indicator of a job well done throughout the trade lane pipeline.”

— Global Coalition for Efficient Logistics (GCEL)





COMPETENCE |

## Competence

A single underperforming person operating within an interdependent trade lane environment could have a major impact on the efficiency of the entire trade lane pipeline. In the trade environment, human competence must be considered as one of the highest priorities toward achieving optimal efficiency.

### What is Competence?

Competence in general is the quality of being physically and intellectually well qualified. In the trade environment, however, Competence is achieved when a defined obligation is met on time, with optimal quality and at minimum cost.

### Who Defines the Metrics of Competence in Trade?

The metrics for Competence are determined by contractual obligations between a trade participant and the other 17 clusters (excluding government).

### Why is Competence Essential Across the Trade Pipeline and How can it be Achieved?

Shipments move in an Interdependent Process Environment (IPE) across multiple participants' jurisdictions (the 19 clusters). Optimum door-to-door efficiency is mainly dependent on everyone performing his/her business obligations efficiently. If one person causes a delay or makes mistakes, everyone else in the pipeline may be adversely affected. The bottom line is that the maximum efficiency for a particular shipment is determined by the least efficient participant in the pipeline.

The 21<sup>st</sup> century trade efficiency environment proposes three main factors as a foundation to ensure Competence across the IPE:

#### I. Tools

The combination of software and hardware provided to perform a specific task at the highest quality, optimum time, and minimum cost.

#### II. Training

Knowledge transfer to optimize the use of the tools provided within a continuous improvement process (KAIZEN).

#### III. Dynamic Monitoring

Transforming contractual obligations (Quality, Time, and Cost) into electronic metrics. This is necessary to dynamically monitor performance based upon three dimensions of time:

- a) *Contractual Time*: The initially pre-established time and quality standards to perform a specific task
- b) *Forecasted Time*: The projected time for completion, provided by the participant when starting a task execution
- c) *Actual Time*: The actual completion time of a task, reported by the task performer and validated by subsequent IPE participants

Furthermore, real-time monitoring includes a scalable accountability process that allows dynamic escalation of operational incidents from the personnel on the ground through all management levels, as needed for prompt resolution of issues and improvement of performance. In other words, Competence can be enhanced by implementation of the following formula:

**TOOLS + TRAINING + DYNAMIC MONITORING = COMPETENCE**

### Who Has Validated the Importance of Competence?

Many organizations worldwide from both the public and private sectors have agreed on the importance of Competence to trade efficiency:

**UNESCAP:** "Other measures for enhancing the professionalism and competence of logistics service providers include the establishment of minimum standards and codes of conduct for logistics service providers at the national level, sharing

of knowledge and experiences among logistics service providers in the region, and establishment of sustainable training and capacity building programs at the national, sub regional and regional levels.”<sup>1</sup>

**World Bank:** “The quality and competence of core logistics service providers is also an important aspect of overall country performance.”<sup>2</sup>

**World Economic Forum:** “Despite the massive investments needed in ports, airports, roads, trucks, ships and airplanes, the logistics industry is essentially a people business. It is estimated that around a quarter of all costs are staff related. It is therefore essential that the industry attract high caliber employees at all levels [...] With growing complexity in managing supply chains and changing demands, people issues are taking precedence. The government and private entities need to combine forces to create focused, sustained skilling and training programmes.”<sup>3</sup>

**Malaysia Logistics Directory:** “Despite the positive outlook, it has been cautioned that the country’s fragmented logistics landscape could be detrimental to the industry’s competitiveness. In a recent study, it was revealed that logistics as a percentage of total sales in Malaysia is the second highest among ASEAN countries at around 17%, after Indonesia (19%). Meanwhile, the ratio is the lowest in Singapore at approximately 8%. The high logistics cost in Malaysia is due to the inefficiency of operations caused by insufficient support of facilities and technological infrastructure. Other factors that could hamper the growth of the industry are insufficient supply of skilled professionals, lack of security measures and lack of emphasis on value-added services.”<sup>4</sup>

**Journal of Competitiveness:** “Another implication of this study is that logistics competence and tracking & tracing variables, which have negative coefficients in discriminant function, enable countries to be classified as high competitive group. To improve the logistics competence, the public and private

sector must be considered together on a national basis. (...) Thus, while the logistics infrastructure and Customs are the essential factors for joining the high-competitive group, competence and the tracking & tracing are the core competencies for sustaining the competitive advantage.”<sup>5</sup>

### Where Does Competence Apply to the Public and Private Sectors?

In other sections, we have named specific areas where particular elements applied to various business and governmental entities. Competence, however, is different from all other elements since it is related to the individuals operating behind the software and hardware across the spectrum of trade. In other words, since people are the common denominator of all elements discussed and all efficiencies desired, human Competence advancement will lead to improving all elements of the 21-6-ETEL. This achieves the required 21<sup>st</sup> century trade efficiency.

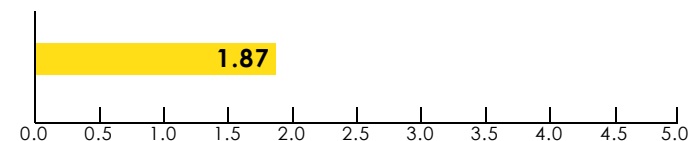
### Findings - Data

Competence Efficiency scale in brief:

**Level 1** = Absence of effective Competence processes and measurement methods within a trade lane pipeline. A participant that uses in-house Enterprise Resource Planning (ERP) systems to transform contractual obligations into electronic metrics will contribute to increasing its human resource competence. Investments in vertical systems alone can enable such organizations to score up to 2.5. However, they need all other participants in its trade pipelines to have similar capabilities to score higher than that.

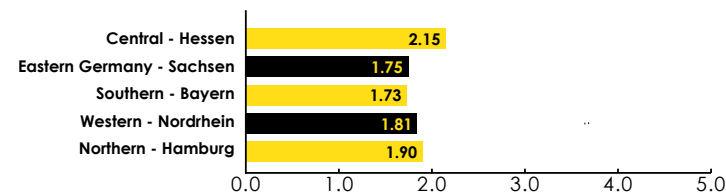
**Level 5** = Optimal and complete Competence processes and measurement methods within a trade lane pipeline.

### Germany's Overall Competence Score



The overall national Competence level in Germany is 1.87. Given that a score of 5 indicates maximum efficiency, Germany's score indicates a low level of Competence and an opportunity for Germany to leverage its skilled and talented workforce to achieve significant improvement.

### Competence by Economic Zone



The Central-Hessen-Frankfurt-Offenbacham Main (2.15) scored the highest and the Southern (1.73) scored the lowest, with the difference between them being moderate at 8.4%. This indicates a countrywide opportunity to enhance Competence.

With the use of more advanced tools to transform contractual obligations into electronic metrics, monitor job completion, and escalate when necessary, the competence level of employees can be improved to a superior level across all the economic zones, which in turn contributes to improving the efficiency of the trade pipelines across Germany.

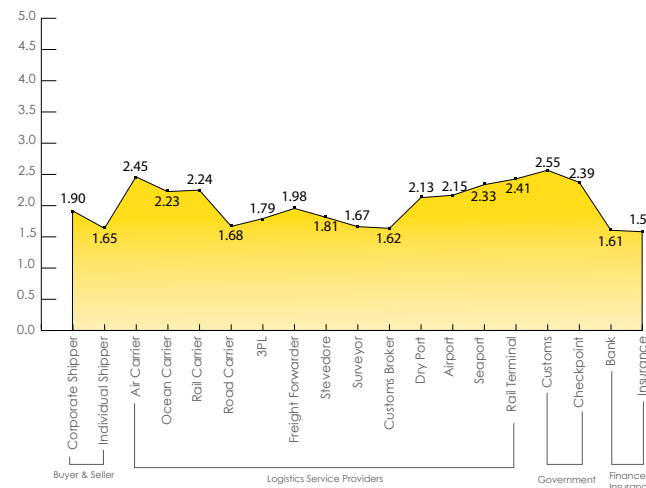
### Competence by the 19 Clusters

These scores illustrate the comparative strengths of the 19 clusters in regard to their level of Competence as per the 21-6-ETEL standard. It is important to note that the range between 0 - 2.5 indicates that a cluster's Competence is vertically oriented with manual tools, training, and performance-monitoring processes adopted within its own jurisdiction. The range between 2.5 - 5 depicts that a cluster's Competence is both vertically and horizontally oriented with automated tools to monitor the performance of other participants in the shipment pipeline.

Germany is one of the largest industrial nations and its ports play a vital role in the growth of the economy by handling Germany's imports and exports efficiently. These organizations have invested in tools to train their employees and monitor their performance. This is reflected in the relatively higher Competence scores for the government-operated and infrastructure-intensive clusters including Customs (2.55), Air Carrier (2.45), Rail Terminal (2.41), Checkpoint (2.39), Rail Carrier (2.24), Ocean Carrier (2.23), Airport (2.15) and Dry Port (2.13).

Rail Carrier (2.24) scored moderately on Competence as Germany operates the Europe's largest rail network. Many investments in key projects such as Deutsche Bahn's enhancement that help improve vertical systems to monitor job performance are required to enhance the workforce Competence of Germany in order to enable handling of increasing volumes of cargo efficiently.

However, skilled labor, training, and internal monitoring are not enough in the Interdependent Process Environment (IPE), where if one participant causes delay or makes mistakes, everyone else in the pipeline may be adversely affected. The survey shows that in Germany, the moderate scores observed across all the clusters indicate a lack of tools for managing the Competence of its workforce horizontally across the trade pipelines. Hence, Germany needs to embrace innovations that boost the Competence of its workforce across its global value chains to sustain its global leadership.



## Competence Indicators

The following chart provides indicators as to Germany's Competence level based upon average responses to some of the questions asked during the survey.

	Buyers/Sellers	LSPs	Finance/Insurance	Government	Countrywide
Employees receiving training to improve their skills	Few employees some of the time	Few employees all of the time	Few employees some of the time	Few employees all of the time	Few employees all of the time
System used to transform contract obligations into electronic metrics to monitor the performance of internal employees	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized
System used to transform contract obligations into electronic metrics to monitor the performance of the 19 clusters	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf customized	Off-the-shelf-not customized
System used to validate internal job completion based on contractual obligations	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized
System used to validate external job completion (19 clusters) based on contractual obligations	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf customized	Off-the-shelf-not customized
System used to escalate internally when contract obligations are not met	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized
System used to escalate externally with the 19 clusters when contract obligations are not met	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized	Off-the-shelf-not customized

## Findings Impact

It is important to restate that Competence is optimized when the proper tools are provided to perform a specific duty, when training is provided to use the tools efficiently, and when a performance monitoring mechanism with escalation capabilities for accountability is implemented.

In our survey, only 9.9% of the respondents indicated the use of Enterprise Resource Planning (ERP) systems for enhancing Competence, and the majority of the clusters surveyed do not have proper tools to transform contract obligations into electronic metrics, on order to validate job completion, and escalate issues both internally and externally with the 19 clusters. The majority of respondents had some training for their employees. There was limited visibility of their employees' performance when handling shipments within

their own vertical environments. They have no visibility of trade partners or logistics service providers within their own vertical environments. Furthermore, very minimal escalation processes are in place to improve their employees' performance.

In other sections, we have named specific areas where findings can adversely affect the 19 clusters. Once again, this section is different, as Competence is the common denominator between all elements and the 19 clusters. Therefore, when the Competence score is low, this has a potential negative impact on all elements and all 19 clusters. In other words, the findings' impact of the other elements can be worsened, and the negative effects can be increased by low levels of Competence.

## Recommendations

Germany, Europe, and the entire world seek to increase trade efficiency as one of the means of spurring trade and sustaining economic growth. Multiple parties have launched initiatives towards that very purpose. Trade efficiency is not just about how much money is invested, what expensive tools are used, or what agreements are reached; it is more about people performing their tasks with the proper tools in a synchronized and monitored environment. Unless they are competent in their work, optimum efficiency cannot be reached.

For reasons previously discussed, shipment efficiency within trade pipelines tends to be very inconsistent as it crosses multiple clusters' jurisdictions and countries. Furthermore, cultural and economic differences can amplify this inconsistency. In light of this reality, the question remains: How can Competence be optimized within the trade lane pipeline globally door-to-door, thus increasing quality of goods and services and delivering "Just-in-Time" logistics while driving down costs?

The four steps described below are the proposed roadmap in order to improve the Competence of the 19 clusters in Germany, Europe, and the world:

### **I. Minimize Standardization Requirements**

Enable the transfer of essential trade information through use of Universal Data Elements (UDEs), minimizing the need for standardization. This is difficult to achieve today without point-to-world integration (See page 40).

### **II. Establish Point-To-World Integration**

Enable dynamic visibility of all shipment data to all participants within the trade lane pipeline (See page 27).

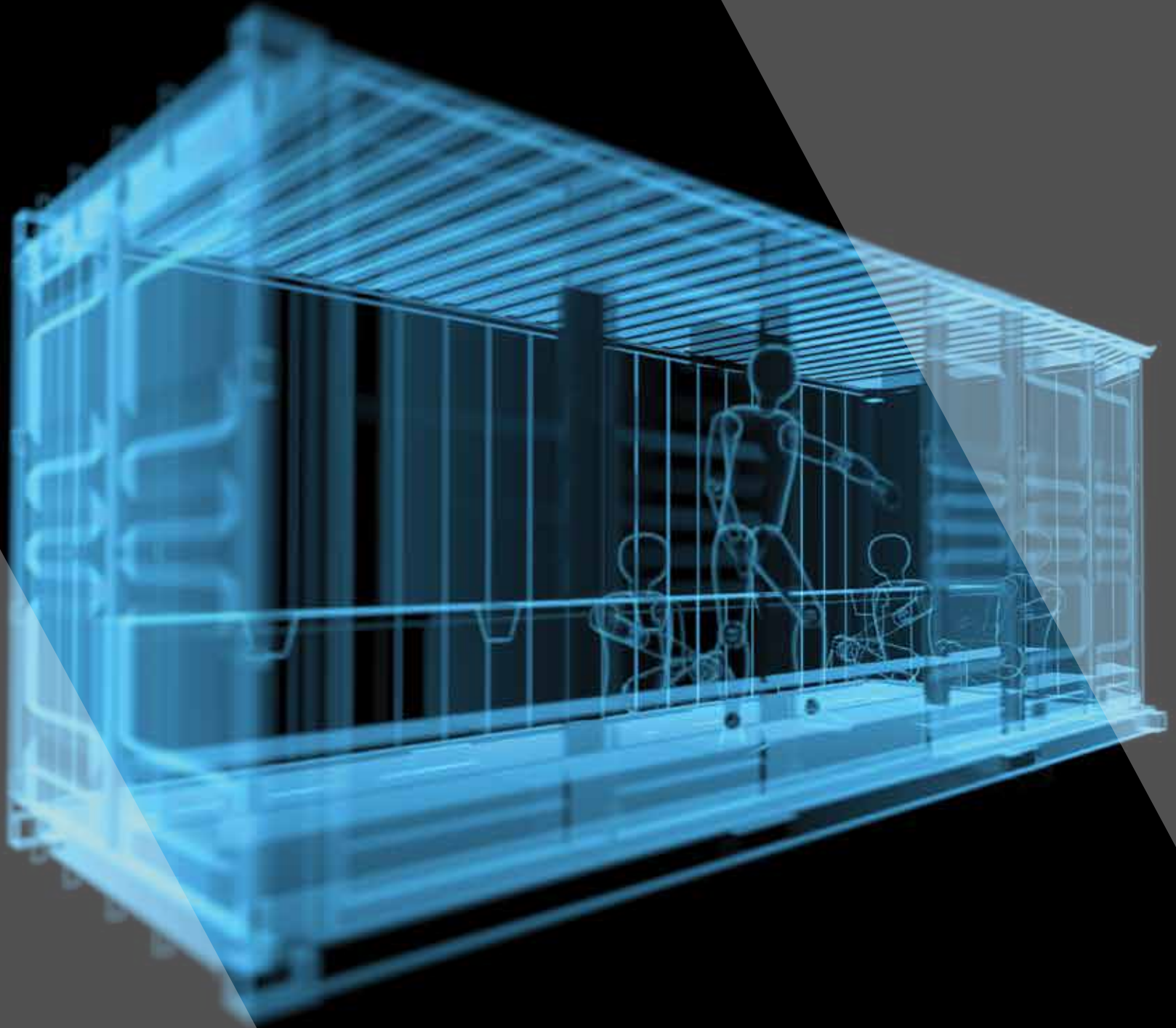
### **III. Transform Contractual Obligations Into Electronic Metrics**

Enable dynamic assessment of cluster performance on a case-by-case basis using contractual obligations as the benchmark for Competence, facilitating performance monitoring based upon Contracted, Forecast, and Actual Times, with a scalable accountability process that allows escalation of operational incidents (see page 67).

### **IV. Enable Universal Accessibility**

Provide access to the proposed system, metrics, and tools required to achieve 21-6-ETEI Competence standards to every user worldwide at no cost. These must be delivered by a trusted technology network, offsetting any geopolitical and monopolistic concerns.

1. UNESCAP: Economic and Social Commission for Asia and the Pacific, Expert Group Meeting on Preparations for the Ministerial Conference on Transport, p. 7, Bangkok, 14 and 15 July 2011.
2. World Bank: Connecting to Compete: Trade Logistics in the Global Economy, The Logistics Performance Index and its Indicators, p.14, 2010.
3. World Economic Forum: Industry Agenda- Outlook on the Logistics and Supply Chain Industry 2012, Global Agenda Council on Logistics and Supply Chains 2011-2012, June 2012, p.24, p.27.
4. Malaysia Logistics Directory 2011/2015, p.8, 2011
5. Journal of Competitiveness, Issue 4, 2011: Analyzing the Dependency Between National Logistics Performance and Competitiveness: Which Logistics Competence is Core for National Strategy? pp. 15-18, 19 December 2011.



## Cargo Security

Governments around the world consider Cargo Security to be of vital importance in their efforts to protect their citizens, borders, and economies. For example, if one cargo container exploded, in addition to the damages that this would cause in terms of human life and property, the whole trade lane would be shut down. The damages would be massive, inventories would pile up, ports would be choked, investments would be lost, and free trade agreements would be jeopardized. Finally, the reopening of the trade lane would be risky: Until today, there is no real transparency in global cargo to ensure that no more explosives are on the way.

### What is the Meaning of Cargo Security?

Cargo Security is defined as the establishment and uniform practice of policies and procedures that secure the flow of commerce against acts of terrorism.

### How can Cargo Security be Achieved?

It is very difficult to fully eliminate the threat of cargo terrorism. Despite the world's best efforts, there will always be some lingering degree of risk in the security arena. However, we can establish a solid Cargo Security platform that will allow us to continually enhance our security measures, thus greatly reducing the probability of a successful act of terrorism against the flow of commerce. This Cargo Security platform would leverage the trade efficiency platform to simplify and optimize the 19 clusters' compliance. The implementation strategy for this security platform consists of three tiers: Compliance, Trade Lane Monitoring, and Proactive Response.

#### Tier 1: Compliance

Compliance consists of two components: Regulatory Compliance and Adherence to Voluntary Initiatives. Regulatory Compliance consists of activities conducted

in accord with government security regulations, such as documentation and advance manifesting. Voluntary Initiatives to promote and enhance Cargo Security have emerged at both the national/regional and international levels. Compliance of present Cargo Security data must be enhanced and compliance processes must be simplified.

#### Tier 2: Trade Lane Monitoring

Monitoring is achieved through access to validated, real-time data visibility of the global flow of commerce. The data owner must authorize the visibility to their proprietary data generated during the normal course of business activities. Data must be dynamically checked against official sources. The real-time monitored information enables implementation of:

- ▶ *Enterprise Monitoring Processes:* The ability to monitor and dynamically flag suspicious shipments based on a trade lane participant's historic and current behavior
- ▶ *Shipment Monitoring Processes:* The ability to track shipments based on shipment events, combined with GPS, RFID, and IHS tracking from shelf to shelf, allowing dynamic flagging of suspicious shipments based on data anomalies, errors, and shipment flow deviations

#### Tier 3: Proactive Response

Validated, real-time visibility of shipment data must provide the capability to:

- ▶ Dynamically synchronized and coordinated Cargo Security activities between security agencies from around the world, amplifying the effectiveness of Cargo Security response.
- ▶ Detect and eliminate threats as far away as possible from the borders of the targeted country.

Eliminate single point of security failure by creating four synchronized layers of security starting from:

#### **I. Intelligence**

Must dynamically flag suspicious shipments based on pre-set criteria, alerting of origin port authorities to re-inspect shipments prior to loading.

#### **II. Coast Guard**

Must enable coast guards to create “virtual fencing” around a nation’s borders, whereby the approach of a single suspicious conveyance automatically provides authorities with the means to pinpoint and inspect potential threats while the conveyance is still good off-shore.

#### **III. Border Crossing**

Must dynamically provide border crossing authorities with all necessary real-time information regarding the history of the clusters involved in the flow of the shipment from shelf to shelf and regarding the contents and movements of each shipment, enabling rapid interception of suspicious shipments.

#### **IV. In-Country**

Must dynamically monitor every shipment within the country (national cargo visibility), alerting local authorities to any deviation from manifested routing, stoppage, or destinations, thus enabling their rapid interception or investigation of wayward shipments and vehicles.

### **Why is Cargo Security Important?**

The importance of Cargo Security cannot be overestimated; it is a matter of major concern to every nation in the world, and these concerns have resulted in infrastructure investments, new regulations, the addition of Cargo Security requirements to trade agreements, and costly training programs. However, a single successful attack on a major transportation hub could put the entire trade of a country in jeopardy. Nevertheless, Cargo Security initiatives require a balanced economic approach that seeks to enhance security while increasing trade efficiency. Safety must be the first priority, but overly stringent requirements stand to cause significant harm by restricting commerce and discouraging trading activity. Within this balanced framework, there are two primary reasons why Cargo Security is an essential element of trade efficiency:

#### **I. Enhanced Supply Chain Security**

Real-time dynamic validation of participant-related and shipment-related data against domestic and foreign security databases aids in the proactive analysis of deviations, mismatches, or other anomalies to flag dangerous or suspicious shipments. The heightened security protects both the physical well-being of participants in the shipment pipeline and the supply chain itself from costly or even catastrophic disruptions.

#### **II. Expedited Clearance**

Automatic electronic submission of pre-populated security data enables faster movement through customs and border crossings by ensuring that security information is accurate, complete, formatted, and delivered in the most effective and efficient manner to all appropriate participants in the shipment process, including governments and Customs organizations. Point-to-world integration helps a shipper to be Cargo Security compliant on a global basis, thus minimizing the possibility of cargo flow disruption.

### **Who Has Validated the Importance of Cargo Security?**

A broad range of international organizations have attested to the importance of Cargo Security to the well-being of international trade and the global economy:

**WORLD BANK:** “In the post-September 11 environment, cargo security also looms large as an important border management issue in which coordination is key. Although increased attention to border security is understandable, it is important to be aware of the costs it imposes on the private sector and thus its potential to inhibit international trade. It is clearly preferable from an economic welfare point of view for security requirements to be implemented in the most efficient, timely, and cost-effective way possible. Results from the LPI survey suggest that operators in countries with high-quality logistics environments appear to be relatively well placed to adapt to new security requirements, but the same is not true of operators in logistics constrained environments.”<sup>1</sup>

**OECD:** “Sea-going vessels can be the vector for, or target of, attacks. They can also serve to facilitate other attacks and/or raise revenue for terrorist organisations. The principal risk factors related to shipping – cargo, vessels, people and financing – are also linked to the broader risk of major disruptions in world trade and increased economic costs linked to heightened security. It is important that governments address all of these

risks with broad-based security policy responses, since simply responding to threats in isolation to one another can be both ineffective and costly.”<sup>2</sup>

**UN:** “Transport and logistics services are becoming ever more crucial for remaining competitive in international trade and globalized production. At the same time, new security requirements pose additional challenges for shippers and transport service providers, especially in developing countries. Consequently, transport and trade facilitation designed to ensure a secure and efficient trade environment plays a fundamental role for developing countries in their efforts to promote international trade.”<sup>3</sup>

**UNESCAP:** “It is clear that many people depend on international trade for their livelihoods, meaning that security of international trade is directly linked to economic security. For this reason, trade security is synonymous with economic security. In summary, the purpose of trade security is not simply to prevent trade from being used as a tool for terrorists, but also to provide a safe, legal and efficient environment for trade in goods and services.”<sup>4</sup>

### Where Does Cargo Security Apply and How Is It Important to the Public and Private Sectors?

Cargo Security applies to every shipment that moves as well as to any enterprise involved in the movement of the shipment and any physical location that it crosses. Since any shipment may be subject to terrorist infiltration, Cargo Security is of vital importance to all nations and peoples, as the lack of adequate security can present a threat to our lives and to our economies.

### Findings - Data

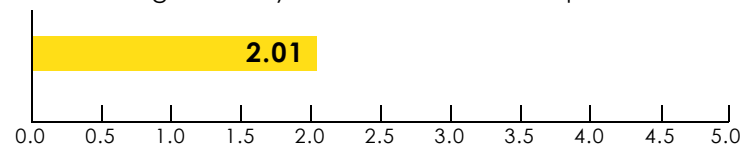
Cargo Security efficiency scale:

**Level 1** = Absence of effective Cargo Security procedures. Shelf-to-shelf Cargo Security depends on the collective effort of the participants in trade pipelines, whether they are domestic or international. However, an organization that invests in its vertical systems to enhance its Cargo Security, without any horizontal integration, can obtain a Cargo Security score of 2.5 at the most.

**Level 5** = Presence of effective Cargo Security procedures.

### Germany's Overall Cargo Security Score

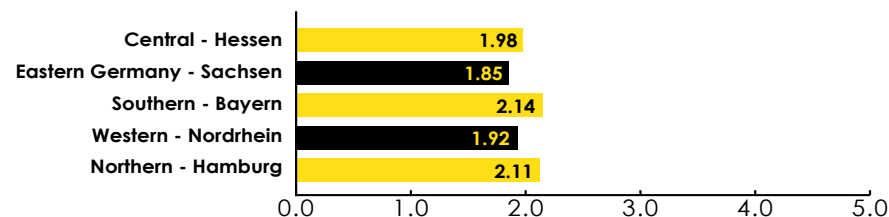
The overall national Cargo Security level represents aggregated data from all surveyed participants. Given that a score of 5 indicates maximum implementation of Cargo Security measures, a moderate score of 2.01 indicates Germany's emphasis on the importance of and investments in improving Cargo Security. Nonetheless, with implementation of more comprehensive tools, Germany's level of Cargo Security nationwide can be improved.



### Cargo Security by Economic Zone

The Cargo Security scores of all the Economic Zones are comparable with the difference between the highest and lowest being low at 5.8%. These relatively consistent scores across the regions indicate that implementation of new measures can enhance Cargo Security uniformly across the zones. The higher score in the Southern (2.14) region is due to the presence of the key export oriented industries in Germany such as Automotive, Chemical and Mechanical. These high value and key industries of national importance require additional security measures. Northern (2.11) zone with its concentration of industries that facilitate exports through Hamburg port has scored the second highest score.

Accordingly, an implementation of innovative measures that complement Germany's National Single Window by connecting all the vertical systems in Germany's trade pipelines to deliver the real-time shipment information needed for the government agencies can enhance the Cargo Security scores of all the zones.



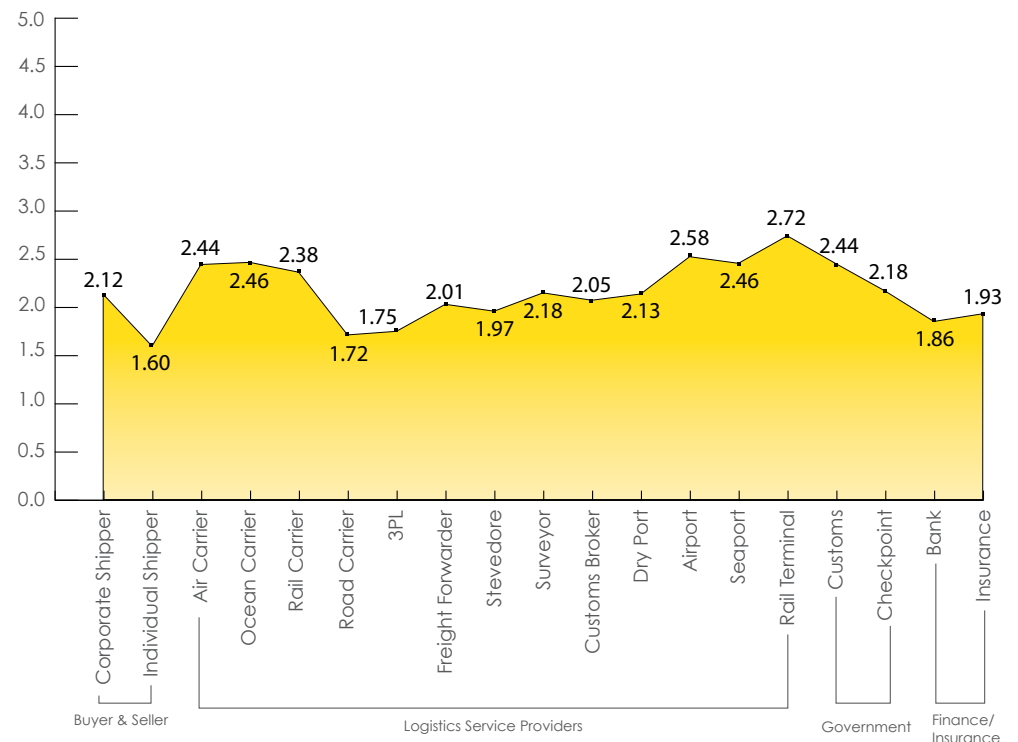
## Cargo Security by the 19 Clusters

The results illustrate the comparative strengths among the 19 clusters related to the adoption of Cargo Security. It is important to note that the range between 0-2.5 indicates security measures at the national level, while the 2.5-5 range implies compliance with international regulations and voluntary initiatives as well as the visibility to monitor, flag, and respond to shipments before arrival.

Relatively moderate Cargo Security scores appear for the clusters that are government controlled entities and infrastructure-intensive such as Rail Terminal (2.72), Airport (2.58), Ocean Carrier (2.46), Seaport (2.46) Customs (2.44), Air Carrier (2.44), Checkpoint (2.18), and Dry Port (2.13). All these clusters have scored higher than the national average.

In Germany, the use of the Zoll National Single Window portal, SEED (System for Exchange of Excise Data), PCS (Port Control System that connects electronically the systems used by seaports and airports), REX (Registered Exporter System), EORI (Economic Operator System), MRN (Movement Reference Number), ZMGS Central German Reporting System for Dangerous Goods, and TRANSIT that facilitate tracking of goods in the trade pipeline is ascribed to Germany's investment in security as it enables higher shipment visibility for the government authorities. Such facilitation of trade participants significantly simplifies the compliance process and improves the quality of real-time information provided to the government agencies, while enhancing their ability to conduct risk assessments that improve the security of its trade pipelines within their jurisdictions.

In addition, Germany needs an Innovative approach that can extend this capability by connecting horizontally all systems participating in its global value chains to improve Cargo Security at national, regional, and global levels.



## Cargo Security Indicators

The following chart provides indicators as to Germany's Cargo Security level based upon average responses to some of the questions asked during the survey.

	Buyers/Sellers	LSPs	Finance/Insurance	Government	Countrywide
% of trading partners and LSPs asking about cargo security-domestically or globally	<=20% of trading partners	21-40% of trading partners	<=20% of trading partners	21-40% of trading partners	<=20% of trading partners
Knowledge of trading partners' enterprise activities	Occasionally informed	Partial information	Partial information	Partial information	Partial information
Knowledge of trading partners' shipment activities	Occasionally informed	Occasionally informed	Partial information	Partial information	Occasionally informed
Method of exchanging shipment information with government agencies	Through a 3rd Party / Agent	Through a 3rd Party / Agent	Postal mail / Fax / Email	Postal mail / Fax / Email	Through a 3rd Party / Agent
Completeness of shipment security information within internal jurisdiction/control	<=50% complete	51-75% complete	<=50% complete	76-90% Fully complete	<=50% complete
Completeness of shipment security information within external trading partners' jurisdiction/control	<=50% complete	<=50% complete	<=50% complete	51-75% Very complete	<=50% complete

## Findings Impact

On average, less than 20% of trade participants surveyed in Germany are mindful of cargo security. This is evidenced by the responses from shippers and 3PLs that load the freight, from banks and insurance companies that underwrite the trade, and from checkpoints where shipments cross the border. The information provided about Cargo Security, nationally and internationally, is less than 50% complete on average. There is very little security information available about clusters involved in handling shipments. Clusters have no means of verifying the integrity of the security measures of trade participants from whom they receive shipments, or to whom they transfer shipments.

The National Single Window portal is the only official portal that bridges the information gap between the private and the public sectors. However, it is presently designed to receive Customs clearance data, but not security compliance data.

As a result, today:

- ▶ Cargo Security compliance information is submitted to the government only upon request.
- ▶ Information submitted is not validated against other sources.
- ▶ When problems occur in the Cargo Security compliance process, the security agencies have no automated mechanism for proper response.

Conclusion: Viewed in their entirety, these findings indicate a further opportunity to enhance Cargo Security in Germany.



“Transport and trade facilitation designed to ensure a secure and efficient trade environment plays a fundamental role for developing countries in their efforts to promote international trade...Trade security is synonymous with economic security.”

— United Nations

## Recommendations

The world today is headed towards rebalancing of the global economy. This means that high and mid income countries will conduct more business and trade with low income countries. However, all countries are vulnerable to terrorist activities due to diminished access to advanced security technologies and systems, and inadequate implementation of security standards, among other factors.

Many Cargo Security efforts worldwide, to date, have relied upon the participating organizations to increase their vigilance, effectively acting as extensions of official state security agencies. As the survey results demonstrate, however, this approach does not work, as these responsibilities do not match with business capabilities of private sector trade participants. That said, it is possible to leverage these clusters capabilities to accomplish the desired level of security through establishment of an Integrated Horizontal System (IHS) with point-to-world integration capability. Cargo Security requires a baseline horizontal system that facilitates trade efficiency while supporting security processes. The information generated and validated by participants through the normal course of business will increase the effectiveness of security measures, providing necessary data to officials without any additional burden upon the private sector participants.

1. World Bank: Connecting to Compete 2010 Trade Logistics in the Global Economy, p. 18, 2010.
2. OECD: Security in Maritime Transport Risk Factors and Economic Impact, Maritime Transport Committee, p. 7, July 2003.
3. United Nations Conference on Trade and Development, Trade and Transport Facilitation: Building a Secure and Efficient Environment for Trade, p. 12, 6 April 2004.
4. United Nations Economic and Social Council; Economic and Social Commission for Asia and the Pacific: Trade Facilitation and the New Security Environment: Issues For Developing and Least Developed Countries in the Asian and Pacific region, Committee on Managing Globalization, Third Session, part 1, p.6, 12-14 September 2006.



OUR SHARED COMMITMENT |

## Our Shared Commitment

GCEL's proudly stated mission, "Connecting the Strengths of the World Community - Creating Well Being Across Humanity" embodies the spirit of our organization's commitment to service. As a nonprofit public-private partnership, we have earned the trust of more than 26 international IGOs/NGOs, 156 countries represented by their pan regional organizations, as well as the world's leading finance, insurance and technology firms—which together serve more than 60% of the world's GDP. We are working together with our members and partners to initiate a new era of global prosperity through the realization of a long-held vision: the delivery of the Digital Economy.

This report presents Germany's current trade efficiency status, enumerating areas for improvement and illustrating how Germany can leverage the Digital Economy to establish a solid foundation for the near future and decades to come. It is the first fulfillment of the following nine commitments to the German people. We will:

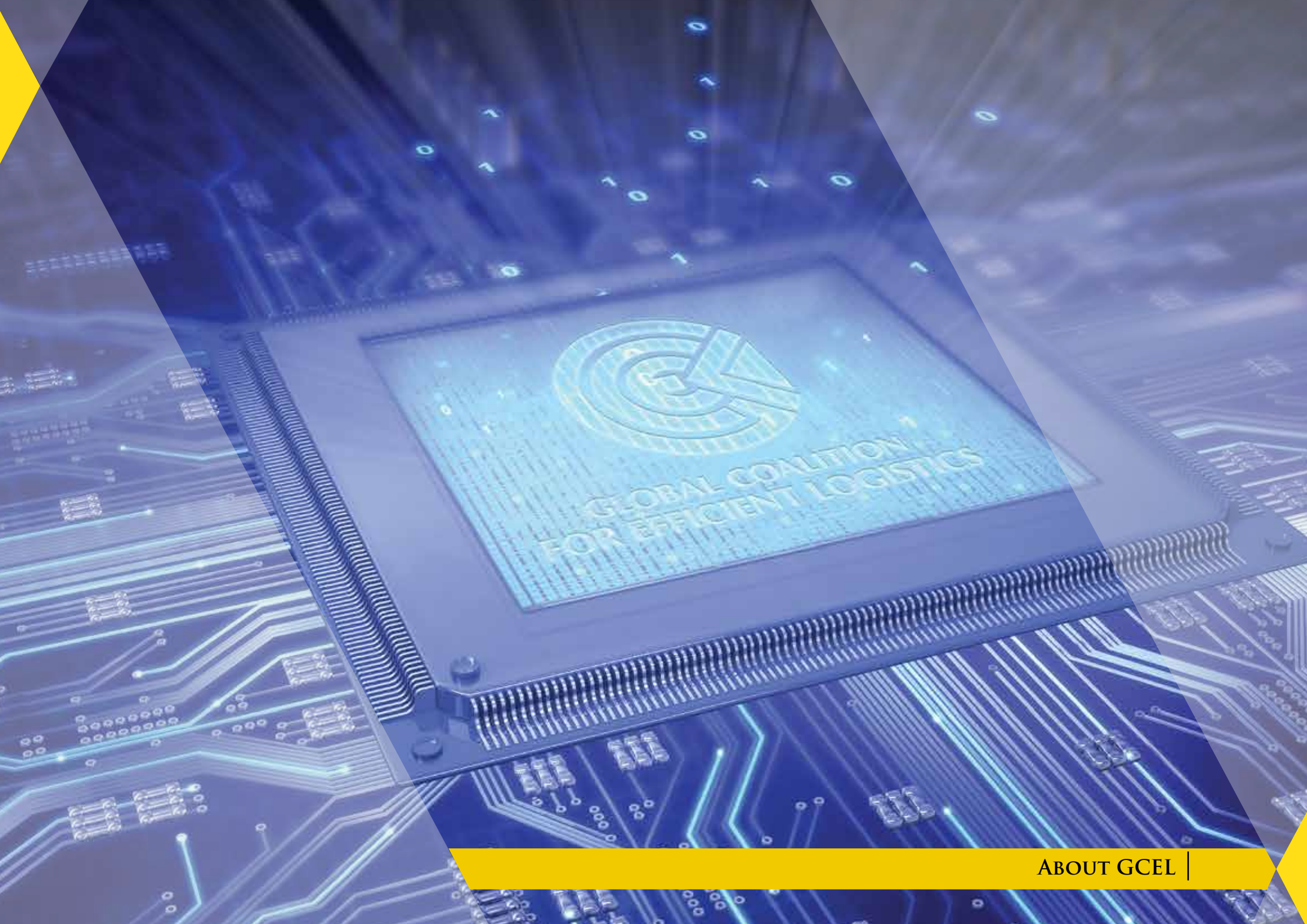
- ▶ Present the SEA Report outlining areas for trade efficiency improvement and highlighting the impact of the 21<sup>st</sup> Century Digital Economy era, the foundation for future prosperity. - **Completed**
- ▶ Share our findings with Germany's industries, outline areas for trade efficiency improvement, describe the Digital Economy Platform (DEP), and present the tools to achieve its realization. - **In Progress**
- ▶ Implement the Benchmark Trade Lane (BTL) between Italy and France as one of four global BTLs in Asia, MEA, Europe and the Americas. The European BTL will connect Europe to the world, with the desired efficiency through the DEP - **In Progress**
- ▶ Start a Rapid Deployment Program on the eve of the BTL Showcase. The Commerce, Finance, Insurance, and Technology Gateways with a combined manpower of 2.6 million serving 60% of the World GDP and the viral marketing to the businesses in all the regions of the world will combine to achieve the deployment of the DEP to 60% of the business-to-business marketplace by 2030.

- ▶ Conduct a BTL Showcase Event in Germany. This will represent the trigger point of Germany's integration with the DEP.
- ▶ Conduct BTL Showcase Events in other countries in the region.
- ▶ Ensure that the DEP will be available to every German organization following completion of the European BTL.
- ▶ Provide the DEP at no cost to every German user. We are committed to ensuring that the Platform shall be equally available to all nations and to enterprises of all sizes, with no barriers to participation.
- ▶ Prevent DEP Monopolization. A global solution can only work when it remains free from dominance by any corporation or nation; there will be an equal opportunity for all to participate in the ownership, governance, and deployment of the DEP.
- ▶ Prepare Germany's Commerce, Finance, Insurance, and Technology (CFIT) firms for their participation in deploying the global DEP. This represents our commitment to the equal opportunity program, ensuring that all qualified CFIT firms will have the knowledge needed to successfully participate in the DEP deployment.

By working together, we will prompt a fundamental shift that creates a new era of shared prosperity through increased efficiency. By applying the knowledge gained through the Germany SEA Report to the formulation and execution of purpose-driven, tangible solutions to today's efficiency challenges, we lay the groundwork for a brighter future for Germany, the surrounding region, and the world.

*The Global Coalition for Efficient Logistics*

February 2017



## About GCEL

**B**ased in Switzerland, GCEL is a nonprofit public/private partnership, which has developed a comprehensive solution to the multiple problems that make the global logistics industry highly inefficient. GCEL's members and supporters include governments, IGOs/NGOs, and leading Commerce, Finance, Insurance, and Technology (CFIT) companies around the world. GCEL is currently funded for the benefit of all through the generous support of public/private organizations around the world. The key to GCEL's approach is its unique Global Structural Formula (GSF) that bridges the gap between governments and the private sector, allowing each to do what it does best.

GCEL's HumaWealth Program will deploy the 21<sup>st</sup> century Digital Economy Platform and will provide the roadmap to achieve real, sustainable global economic growth. This Program will be deployed in a way that provides a solution that is truly global, open, and equitable to all companies and all regions of the world—based on partnership, rather than competition, and available free of cost to all potential users throughout the world.



## Glossary of Terms

<b>21-6-ETEI</b>	21st Century 6 Elements Trade Efficiency Indicators	<b>ICS</b>	Integrated Cargo System
<b>APAC</b>	Asia Pacific Region	<b>IHS</b>	Integrated Horizontal System
<b>ABAC</b>	APEC Business Advisory Council	<b>IPE</b>	Interdependent Process Environment
<b>ADB</b>	Asian Development Bank	<b>JIT</b>	Just in Time
<b>ADFIAP</b>	Association of Development Financing Institutions in Asia Pacific	<b>KANBAN</b>	Variation of Inventory Level (Japanese terminology)
<b>APEC</b>	Asia-Pacific Economic Cooperation	<b>LPI</b>	Logistics Performance Index
<b>ASEAN</b>	Association of Southeast Asian Nations	<b>LSP</b>	Logistics Service Provider
<b>BSCIFI</b>	Buy/Sell, Country, Industry, Finance and Insurance Requirements	<b>MOU</b>	Memorandum of Understanding
<b>BTL</b>	Benchmark Trade Lane	<b>NGO</b>	Non-Governmental Organization
<b>DEP</b>	Digital Economy Platform	<b>NTD</b>	National Trade Dashboard
<b>EDI</b>	Electronic Data Interchange	<b>RFID</b>	Radio Frequency Identification
<b>ERP</b>	Enterprise Resource Planning	<b>SEA</b>	Shipment and Trade Efficiency Assessment
<b>CFIT</b>	Commerce, Finance, Insurance and Technology	<b>SME</b>	Small and Medium-sized Enterprises
<b>FTP</b>	File Transfer Protocol	<b>UDE</b>	Universal Data Elements
<b>GCEL</b>	Global Coalition for Efficient Logistics	<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>GDP</b>	Gross Domestic Product	<b>UNESCAP</b>	United Nations Economic and Social Commission for Asia and the Pacific
<b>GPS</b>	Global Positioning System	<b>WFDFI</b>	World Federation of Development Financing Institutions
<b>ICAO</b>	International Civil Aviation Organization		

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