Since adopting a policy of “Reform and Opening Up” in the late 1970s, China has witnessed rapid economic growth driven by an export-oriented development strategy in a globalized world. To meet the imperatives of effective facilitation and seamless control of international trade, China Customs (GAC) has spearheaded the creation of “China E-Port” which functions as its national Single Window trading environment, harnessing information and communication technology (ICT) to catalyze the transformation and modernization of its customs system into an integrated information platform focusing on clearance management and enforcement. This brief reviews the evolution of customs reform in China that has led to E-Port, and aims to share relevant insights into the Chinese Single Window experience for policymakers in other countries.
After embarking on a national policy of “Reform & Opening Up” in 1978, China has experienced rapid economic growth and tremendous increases in foreign trade volumes. This prompted the inception of a Customs reform and modernization program, and the subsequent development of its Single Window trading environment. As the ministerial-level government agency responsible for supervising and controlling import and export, China’s General Administration of Customs (China Customs or GAC) has undertaken Customs modernization in three phases (UNDP, 2006)\(^1\): the initial phase, which involved the preliminary work on a legal and regulatory framework for GAC; the second phase, focused on improving legislation, transparency, and accountability for trade efficiency; and the third phase, which was triggered by China’s accession to the WTO in 2001 and led to more legislation and regulatory reforms to meet China’s WTO commitments.

Within this broad portfolio of e-Government initiatives charted by the Chinese Central Government, information and communication technology (ICT) has played a critical role in catalyzing GAC’s modernization into a “smart” Customs that leverages technology to reduce the time, cost and complexities of international trade. This is embodied by three “Es” (see Figure 1): (a) China E-Port, which acts as a Single Window system for trade documents; (b) E-Customs, which handles border clearance control through the H2010 Customs Clearance System; and (c) E-General Administration, which enables better [vertical] administrative decision making through the H2012 Customs Internal Administration System\(^2\).

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\(^1\) UNDP (2006). China Customs Modernization for Trade Facilitation and Equitable Development.

\(^2\) See Zhang and Zhao (2009). The Implication of Customs Modernization on Export Competitiveness in China. http://www.unescap.org/tid/publication/tipub2543_zhang.pdf. Note that the terms “E-Customs” and “E-General Administration” are referred to as “e-processing” and “e-headquarters” respectively in this publication.

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Figure 1: The Three “Es” of GAC

Source: Adapted from Wang, 2009
The Five Phases of China Customs Reform

GAC initiatives can be informally traced back as early as 1978, and have been divided into five broad phases of reform by Tang (2008):

1978 can be seen as the starting point for GAC in the journey to automation, where innovations such as computers to calculate the tariff on passenger luggage and computer programs for duty and tax collection and trade statistics compilation were engineered and introduced into the trading system.

After nearly a decade of developing computer programs to improve trade procedures, GAC decision makers realized that separate programs without systemwide application would not be enough to handle China’s increasingly more complex trading information management needs. At this stage, a milestone project was launched in March 1988 to develop the National Customs Clearance Management System (originally called H883), which aimed at automating many of GAC’s trade processing procedures. H883 eventually replaced many manual operations with computerized trade processing for procedures such as vehicle monitoring, trade-related certificate verification, processing trade management, licence management, and tariff exemption.

Given the adverse impacts of the 1998 Asian financial crisis and an increasing trend of foreign exchange (forex) fraud, GAC began exploring an inter-agency verification system of electronic ledger (e-Ledger). E-Ledger was based on the extranet of the original Customs information platform and developed in partnership with the State Administration of Foreign Exchange. It was the first effort to deploy networked application to jointly monitor the trade supply chain. E-Ledger eventually formed the core application of a new system called E-Port, which is now an integrated trade and logistics information management platform based on telecommunication companies’ Public Switched Telephone Networks (PSTNs). In 1998, GAC also commenced a two-step reform strategy, characterized by “Customs Clearance Reengineering” in the first step and the establishment of a risk management system in the second step.

Between 1998 to 2000, E-Ledger services was deployed quickly to other enforcement functions such as license verification and tax refunds for processing trade. In July 2000, the State Council appointed the GAC as the lead agency of eleven (11) other ministries to jointly establish the Steering Committee of Port E-Enforcement System Coordination which formed the prototype of the later E-Port Committee. The main task of the Committee was to push forward data sharing between the involved government agencies and private stakeholders at the levels of central and local governments. By 2001, development had started on a new system that later aimed at improving general administrative functions in GAC.

**Phase 5: E-Customs as Decisionmaking Support System (2001–present)**
In 2003, GAC began refocusing its streamlining efforts on risk management systems, and updated its clearance management system from H883 to H2000, which enabled national customs authorities to process trade and conduct enforcement in a uniform and consistent way. The goal of cross-Customs district information management was realized, and the system was named - and persists to be called - “E-Customs” (Wu, 2011).

In 2004, the E-General Administration system was rolled out to give “smart” administrative support to GAC’s highly vertical management structure. By 2008, E-Customs was using clearance management system version H2010 as the further updated version of H2000 (see Figure 2). H2010 covers all business functions of China Customs and connects the GAC with customs districts and customs houses across China, providing electronic operations like document inspection, inspection, duty collection, release and cargo flow monitoring, and performing the functions of managing manifests, licenses, business compliance, intellectual properties rights (IPR) and rules of origin.

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GAC has since built a three-tier Customs virtual private network (VPN), which connects them with 42 Customs districts, 614 Customs houses and over 4,000 Customs check points.

II. E-Port as a National Single Window

Since 1998 and after over 15 years development, E-Port has truly become a highly-integrated trade and logistics information management platform linking multiple ministries, government sectors, banks, traders and other stakeholders together. It represents a highly-modernized, fully-functioning National Single Window system that can effectively cope with the demands of China’s flourishing commercial participation in global trade. Likewise, cases of counterfeit documents or seals have decreased significantly and customs revenue has increased gradually.

**Table 1: Major Acts and Policies to Support E-Port**

<table>
<thead>
<tr>
<th>LAW OR REGULATION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision on electronic data of China Customs Law 2000</td>
<td>In July 2000, the National People’s Congress amended the “Customs Law”, Chapter 3, Article 25 of which stipulates that “the customs declaration of goods for import and export procedures, shall be made in paper and electronic data declarations in the form of declarations.” The corresponding legal responsibility is provided in Chapter 8.</td>
</tr>
<tr>
<td>E-Signature Law 2004</td>
<td>E-Signature Law addresses the qualification of institutions that provide third-party authentication services. In this regard, E-Port can apply for the CA license to exchange e-document with authenticated signatures, which is the legal base for electronic transactions.</td>
</tr>
<tr>
<td>State Council Guidelines on E-Port 2006, 2012</td>
<td>The central government promulgated respectively in 2006 and 2012 the policy guidelines on E-Port’s development. In 2006, it focused on the basic coordination mechanism and responsibility of the stakeholders, while in 2012 it highlighted the strategic goal of E-Port in the next 5 years.</td>
</tr>
<tr>
<td>Customs Regulation on E-Customs and E-Port</td>
<td>This contains information on E-Port’s daily operations, such as software upgrading, maintenance, and IC card authentication.</td>
</tr>
</tbody>
</table>

Source: compiled by the authors
2.1 Legal Framework for E-Port
The establishment of E-Port is well supported by a range of laws and regulations (see Table 1), especially two in particular: 1) the revised China Customs Law in 2000 adopts international best practices for ICT applications and permits electronic declaration, and 2) the E-Signature Law provides a legal basis of identity authentication. The State Council Guidelines on E-Port are also important policy documents that define its major institutional arrangements and chart its future direction.

2.2 Application at central and local government levels
Architecturally, China E-Port is operated at both central and local government levels. In 2002, the State Council officially named E-Port as the public platform for its Integrated Customs Clearance Initiative, and demanded that provincial governments construct E-Port facilities at local government level. The E-Port has eventually developed from a pure extranet of China Customs information system into a partially public platform. To manage E-Port’s operations, the GAC established the China E-Port Data Centre, and since 2002 each provincial government has established its own branch of this office – creating a two-tier E-Port operation model at the central and local levels. By the end of 2014, all the provincial governments had signed MOUs with the GAC on provisions for cooperation, financing and operational models in jointly constructing E-Port facilities.

2.3 Integrated platform for one-stop service
In 2006, the State Council promulgated a policy to strengthen E-Port construction nationwide. The central government detailed the principles of E-Port and its major tasks and coordination mechanisms from 2006 to 2011. The policy goal included the one “gateway” network, an authentication center, and “one-stop” services. The E-Port was designed to be an integrated information system of port enforcement and logistics business to further strengthen Chinese international competitiveness at ports of entry (see Figure 3).

At present, China E-Port is connected to 14 other government agencies. Through this expanded network, the E-Port system gradually implements “one-stop clearance” at ports of entry nationwide. By the end of 2010, the network covered all the provincial capitals and municipalities of China, and its backbone network availability reached 99.94% (State Council of P.R.C, 2012). Domestically and internationally, China E-Port has successfully connected 13 main ports, 15 commercial banks, the Hong Kong Trade and Industry Department, the Macao Economic Services, and the European Union (EU) Directorate General for Taxation and the Customs Union (see Figure 4).6 The system uses 23 electronic applications and services approximately 664,000 registered online enterprises (State Council of P.R.C, 2012).

6 From 2006, GAC and the EU Commission have been jointly working on a Smart and Secure Trade Lanes (SSTL) pilot project to strengthen end-to-end supply chain security based on multi-layered risk management using the E-Port platform. http://ec.europa.eu/taxation_customs/common/international_affairs/third_countries/china/index_en.htm

Figure 3: Functions of China E-Port
Apart from the coordination mechanism at central government level, local governments also manage E-Ports under provincial and municipal leadership. Currently, there are 39 local E-Port leading institutions (including provincial and sub-provincial level and below), covering 31 provinces, municipalities and autonomous regions. The format of coordination mechanisms include 1) the Leading Working Group in government (adopted by most provinces), and 2) the Joint Meeting (adopted by Shanghai Municipality) or Local E-Port Steering Committee.

The local lead agency of E-Port is usually the vice governor of the province, or (deputy) mayor of the municipality. A leading group office (secretariat) is set up, composed of concerned departments and units, including the General Office, Business Bureau, Port, Bureau of Foreign Trade, Exchange Commission, Department of Transport, Information Committee, Customs and other departments.

Moreover, at the implementation level, the local lead agency mandates a qualified company (usually a state-owned enterprise) to maintain the local E-Port platform and handle software development projects, which allows more private enterprises to participate in the development of E-Port through providing professional ICT solutions and maintenance services.

2.5 Benefits of China E-Port

China E-Port has become a hallmark in improving the transparency of trade administration and regulation, enabling trade authorities to achieve a fair, just and open enforcement environment. It partially realizes the government-to-business “one-stop” service (see Figure 6). As long as businesses have access to the E-Port Data Centre via the Internet, they can connect directly to GAC, inspection and quarantine, foreign trade,
foreign exchange, taxation, banking and other government agencies to process import and export procedures. Likewise, E-Port streamlines administrative procedures between departments in import and export control, lowers their transaction costs, and helps improve trade efficiency overall.

**Figure 6: Major Benefits of China E-Port**

According to the $12^{th}$ Master Plan of National E-Port Development, China E-Port platform infrastructure will be further improved in 2015, with the following targets:

- **Higher degree of paperless trade** - To improve customs trade processing and services, the GAC decided to pilot a paperless Customs clearance mode across China’s customs districts in 2012.

- **Collaborative port management** - Port management mechanisms and cross-sector data sharing will be further strengthened. Online verification will be upgraded in accordance with increasing demands from E-Port stakeholders and port management, while regulatory enforcement and services will be significantly enhanced.

- **“One-stop” Services of Customs Clearance** - GAC will further optimize the clearance processes to improve resource utilization.

- **E-Port technology support system** - E-Port platform infrastructure improvement will include the network coverage, maintenance, and security of the back-up system. The overall operation availability rate will reach 99.9%, to effectively meet the needs of sustainable development of E-Port.

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7$^{th}$ 5-Year Master Plan of National E-Port Development (2012). Note that in the concerned government official documents, the term of National Single Window is not used. Instead, what is mentioned is “to match the international Single Window construction regulation and standards... to build Single Window with Chinese characteristics...”. However in one presentation by GAC, the term National Single Window is used to capture the future goal of E-Port. See Wei (2013). Development and Application of China E-Port. Shanghai Customs College.

### IV. Key Success Factors in E-Port Development and Lessons Learnt

Reviewing the evolution and development of E-Customs and E-Port in China, certain success factors can be identified in establishing a national single window:

- **Strong political commitment** - The top leaders of the Chinese government provided full financial and influential support to customs reforms at both the central and local levels, guaranteeing fast and effective reform implementation.

- **An efficient coordination mechanism** - The active participation and efficient coordination of relevant government agencies weighed heavily in E-Port operations, especially with the strong leadership of the E-Port Committee by the vice secretary-general of the State Council’s General Office - which is also the major decision-making organ of Chinese central government.

- **A competent lead project agency** - GAC has the relevant technical competence to implement its trade facilitation projects, with enough autonomy and influence to directly report to the top leaders of the central government as a ministerial-level department, and obtain high-quality human resources for its maintenance, research, and development teams and GAC-appointed executive officers.

- **Well-developed ICT infrastructure** - The E-port ICT system holds a central role in transforming China’s traditional trade institutions, building on existing GAC E-customs technology and management information systems to usher in transitions to a cross-sector e-goverment platform.

- **Unified data model to promote inter-agency and cross-border paperless trade** - The lack of unified data standards and different technical requirements among information systems was a major obstacle for E-Port as a public platform to link different organizations together. In the future, it is important to adopt international standards such as the WCO Data model as a basis for the development of ICT connectivity between Customs and other trade stakeholders.

- **Legal framework to consolidate the foundation of E-Customs and E-Port** - In China, ICT - related legislation is still a work in progress, and new laws and regulations that responsibly govern how governments and businesses do transactions for trade should be developed to catch up with emerging technologies.
The United Nations Network of Experts for Paperless Trade and Transport in Asia Pacific (UNNExT) provides a networking and knowledge-sharing platform for policy makers, practitioners and technical experts to bridge the implementation gaps between the countries with different levels of trade facilitation. Its mission is to establish an ongoing community of knowledge and practice to facilitate the implementation of single window and paperless trade and transport in the Asia-Pacific region. The UNNExT intends to enhance the capacity of its members to make informed decisions about policy issues at stake and to implement related international instruments and standards. It is operated jointly by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the United Nations Economic Commission for Europe (ECE).

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