

Trusted Third Party for Clearing Consumption Tax of Global Electronic Commerce and System Architecture of Global Electronic Tax Invoice (GETI)

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Abstract

This study deals with controversial issues surrounding the today's cyber-taxation and recommends feasible consumption tax system architecture titled Global Electronic Tax Invoice System (GETI). The GETI is an electronic consumption tax architecture to provide "all-in-one" tax and e-payment services through a trusted third party (TTP). GETI is designed to streamline the overall cyber-taxation process and provide simplified and transparent tax invoice services through an authorized TTP. To ensure information security, GETI incorporates Public Key Infrastructure (PKI) based digital certificates and other data encryption schemes when calculating, reporting, paying, and auditing tax in the electronic commerce environment. GETI is based on the OECD cyber-taxation agreement that was reached in January 2001, which established the taxation model for B2B and B2C electronic commerce transactions.

For the value added tax systems, tax invoice is indispensable to commerce activities, since they provide documentations to prove the validity of commercial transactions. As paper-based tax invoice systems are gradually phased out and are replaced with electronic tax invoice systems, there is an increasing need to develop a reliable, efficient, transparent, and secured cyber-taxation architecture. To design such architecture, several desirable system attributes were considered -- reliability, efficiency, transparency, and security. GETI was developed with these system attributes in mind.

Key Word: Cyber-Consumption Tax; Cyber-Taxation; Electronic Commerce; Public Key Infrastructure; Taxation Technology

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I. Introduction

While the Internet offers new opportunities for businesses around the world, it simultaneously poses a new set of challenges in the area of consumption tax.

To clarify this cyber-taxation dilemma, the Technical Advisor Group (TAG) of the Organization for Electronic Co-Operation and Development (OECD) officially defined the fundamental taxation principle of global electronic commerce. However, underlying technologies to support this taxation initiative proposed by the OECD have not yet been fully developed [14,15, 17].

This study attempts to address a following set of questions: 1) How have the international trends been evolving on the cyber-taxation? 2) Is it possible to develop a architecture for implementing cyber-taxation methods defined by OECD?

II. Controversy Surrounding Electronic Commerce Taxation

There are several identifiable challenges when trying to administer tax on the Internet based commerce. These challenges include identification of tax payers, certification of documents, detection of tax point, and prevention of tax evasions caused by tax havens and off-shore banking facilities [8, 12, 16, 17].

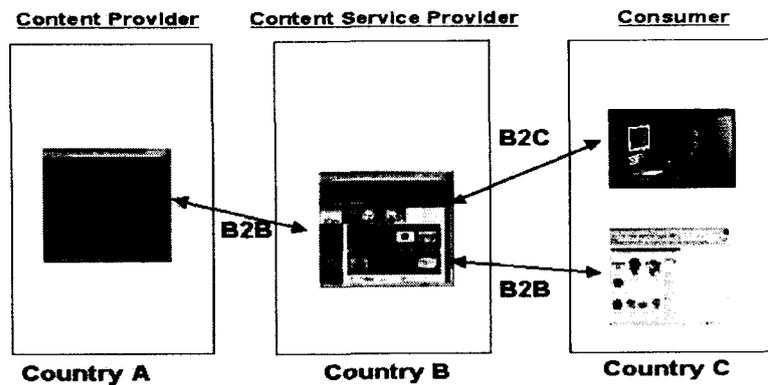
The Property of Contents

Contents can be classified into three

distinct categories -- product, service, and the intellectual property. In the world of electronic commerce, contents have been viewed as the type of service, which can be either tangible or intangible services. For tangible services, physical place of consumption can be distinctively identified. On the other hands, intangible services have uncertain place of consumption. Services such as consulting, accounting, legal and intellectual service, banking and financial transaction, advertising, transport of copyright, provision of information, data processing, broadcasting, and telecommunications are examples of intangible services.

Ambiguous Place of Supply in the Cyberspace

In a typical Internet based transaction, usually there are three entities that are involved --the consumer (purchases goods and services from the merchant), the content service provider (sells contents directly to the consumer), and the content provider (produces contents and sell them to the content service provider). One of the problems when attempting to institute taxation into this type of Internet based transactions is determining where should be the place of supplier [17].



<Figure 1> Internet Based Commerce

OECD Tax Jurisdiction Settlement

In July 1997, William J. Clinton, the president of the United States, raised the custom and taxation issues in the article titled, "A Framework for Global Electronic Commerce [2]." Soon after that, economic, trade, and technology ministers from more than forty nations met in Bonn, Germany to discuss tax issues concerning electronic commerce [18]. In that meeting, they acknowledged the U.S. position of not imposing any new taxes, such as the bit tax that was suggested by the European Union during that time. In the European Union, where most of member states have adopted the VAT tax scheme showed serious concerns that their tax revenues might be reduced. The electronic commerce taxation issue was raised once again at the OECD conference titled "Dismantling the Barrier to Global Electronic Commerce", which was held in Turku, Finland in November 1997 [15]. The focus of the discussion has been whether the tax jurisdiction should belong

to the country where the e-mall's server located or the country where the consumer resides. To finally resolve this cyber-taxation dilemma, another OECD conference was held in Ottawa, Canada in October 1998. And, it was agreed that the consumer's country has the tax jurisdiction [14].

In January 2001, OECD outlined detailed methods for taxing electronic commerce [15]. Self-assessment rule is applied to the B2B type of transaction, while registration of non-residence rule is applied to B2C transactions [18]. However, supporting technologies and legal framework for implementing these OECD tax methods have not yet been fully developed.

Current E-Tax Systems

In countries like US and Australia, electronic tax registration and payment systems have been widely adopted. In the US, electronic tax systems have been widely used since its introduction in 1986 [12]. In Australia, taxes filed with the Austrian e-tax system. Electronic

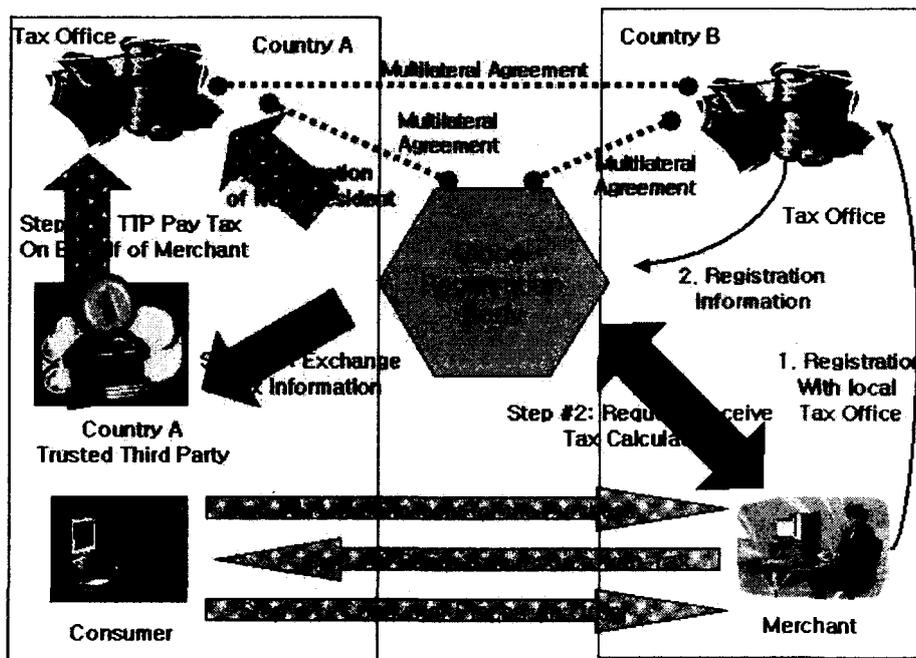
Lodgement System (ELS) constitutes more than 70% of total tax filings. In Europe, many European countries have been pushing toward to e-tax services. TeleTVA (France), TAXISnet (Greece), and Revenue Online Service (Ireland) are some of the e-tax systems that have been developed by European nations.

IV. E-Tax Invoice Architecture Proposal

Global Registration Body Proposal

One of the early architectures proposed to implement the OECD's e-tax methods is global registration body proposal. This e-tax architecture is designed to comply with the non-resident registration rule (an e-tax rule by that requires non-resident registration for

foreign merchants before conducting any B2C transaction domestically). In this tax invoice architecture, there are two non-government entities that are involved in tax invoice processing. Global registration body and trusted third party (TTP) are two non-government agents formed to handle tasks of processing international tax invoices. Global registration body is an international tax organization authorized to handle calculation, registration, and reporting of electronic commerce taxes. To handle tax payments, a trusted third party is formed to provide third party tax services to merchants -- streamlining the traditional tax reporting and registration, placing lesser burdens on tax offices and merchants.



<Figure 2> Global Registration Body Proposal

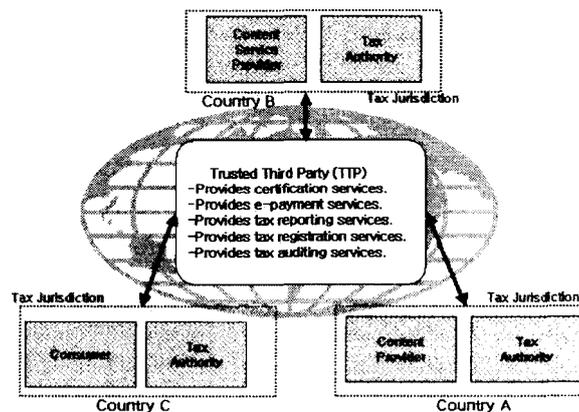
V. Global Electronic Tax Invoice (GETI) Proposal

System Architecture of GETI

GETI is designed to streamline the overall e-tax process and provide simple and transparent tax invoice services through a trusted third party (TTP). TTP is a commercial agent with multiple roles that can provide “all-in-one” tax and e-payment services. In the GETI architecture, the role of TTP is greatly expanded to incorporate functions of

payment gateway, certification authority, and global registration body. Its functions include digital certification, e-payment, tax reporting, tax registration, and tax auditing. It is designed to provide a comprehensive set of B2B and B2C tax and e-payment services to merchants, tax authorities, and consumers.

PKI based digital certificates are integral parts of GETI. Digitally signed certificates issued by Certificate Authority (CA) are used throughout the taxation process to ensure a high level of security [1].



<Figure 3> Global Electronic Tax Invoice (GETI)

One noticeable characteristic of the GETI is the centralization of tax services. Instead of multiple, specialized agents providing different services, a centralized TTP provides all of necessary tax and e-payments services. This centralization will help to increase the efficiency of the tax invoice processing by improving the flow of tax data among merchants, tax authorities, and consumers.

Prerequisites for Implementing GETI

In order to implement GETI in the real environment, there are several prerequisites that need to be considered. First, cyber-tax agreements among international tax authorities must be established in order to set the legal and taxation framework to support GETI.

Also, cooperation with the technology sectors, especially IT businesses is necessary in order to develop necessary underlying technologies to support the e-tax invoice initiative. These necessary technologies would be developed by -- Tax Application Service Provider (TASP) – a provider of IT technology services to support e-tax initiative.

To further explore the feasibility of e-tax initiative, global test-beds that involve business, technology, and government sectors needs to be established. And such efforts to establish a global test-bed require time, technology, manpower, financial supports, and other forms of commitments by various governments, business communities in order to make an e-tax initiative a success.

VI. Conclusion

GETI offers a feasible cyber-consumption taxation architecture. GETI supports the OECD's cyber-tax methods (i.e. self-assessment for B2B and resident of non-resident for B2C) and offers a comprehensive set of tax services. As e-tax becomes a reality, GETI is expected play an important role to support e-tax initiative.

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