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# Biometrics: Solving the Regressivity of Vats and Rsts with 'Smart Card' Technology

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## INTRODUCTION

Biometric identifiers[1] embedded in national identity cards puts a formerly impossible goal of consumption taxation within the grasp of policymakers for the first time. Never before has it been possible to design a broad-based, single rate consumption tax that is truly and independently progressive.[2]

No consumption tax has ever had all three of the critical attributes of a progressive consumption tax: a broad base, a single rate, and measured relief for those in greatest need.[3] Although economists have urged that a broad base and a single rate be

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[1] "The strict definition of biometrics is the science that involves statistical analysis of biological characteristics. A (slightly) more pragmatic definitions is:

> **biometrics n.** The application of computational methods to biological features, especially with regard to the study of unique biological characteristics of humans."

Richard Hopkins, *An Introduction to Biometrics and Large Scale Civilian Identification*, 13 INT'L. REV. L. COMPUTERS & TECH. 337 (1999).

[2] ALAN A. TAIT, VALUE ADDED TAX: INTERNATIONAL PRACTICE AND PROBLEMS (1988) at 59 (arguing that it is a thankless task to try to design a progressive VAT and recommending instead that "… distributional issues are better served by income taxation and by carefully targeted transfers to the households it is wished to help."); RICHARD A. & PEGGY B. MUSGRAVE, PUBLIC FINANCE IN THEORY AND PRACTICE 443 (1976) (explaining that VAT is regressive because "… the ratio of consumption to income (the average propensity to consume) falls when moving up the income scale, so does the ratio of tax burden to income."); *see also* Robert J. Landry III, *The Regressivity of Individual State Taxes from 1980 to 2000: A Nationwide Comparison* 11, 12, Tables 7 & 8 (July 16, 2006) (indicating that even though California has a regressive retail sales tax [comparing the sales tax burden of a hypothetical poor person as a percent of income in Table 7 with the state tax burden of a hypothetical rich person as a percent of income in Table 8] it has the second most progressive tax system of any of the states due primarily to the progressive strength of its income tax) *available at* http://ssrn.com/abstract=908068.

New analysis questions the premise of this argument – that the search for progressivity in consumption taxes should be abandoned because the income tax can be relied upon to make the whole tax system progressive. This premise may not hold in a developing contry context, because the income tax is very weak. Thus, making the consumption tax the only real hope for progressivity in those tax systems. *See* Richard M. Bird & Eric M. Zolt, *Redistribution via Taxation: The Limited Role of the Personal Income Tax in Developing Countries*, 52 UCLA L. REV. 1627, 1682 (2005) (arguing that because the personal income tax plays a limited role in wealth distribution in developing countries policymakers, "… concerned with distributive issues can and should pay close attention even to apparently minor features of consumption tax design and implementation, because such details may have more important distributive effects than the income taxes in such countries.").

[3] For example, consider the New Zealand and South African VATs. Both have (1) very broad (but not comprehensive) tax bases, and (2) a single rate, but do not have (3) a mechanism for providing measured (selective) relief to the poor.

For an international assessment of the breadth of the tax bases of the New Zealand and the Republic of South Africa VATs see ALAN SCHENK & OLIVER OLDMAN, VALUE ADDED TAX: A COMPARATIVE APPROACH IN THEORY AND PRACTICE 27 (2001) (indicating that the base of the New Zealand VAT is much broader than the EU VAT base, and that New Zealand has become the model for other equally broad VATs such as the VAT in South Africa and Botswana).

In both New Zealand and the Republic of South Africa the VAT is imposed at a single rate. New Zealand's rate is 12.5% rate (GOODS & SERVICES TAX ACT § 8(1) (1985) (N.Z.) *available at*

pursued over progressivity,[4] most consumption taxes instead seek progressivity at the expense of both base and rate considerations.[5] The reason is entirely political. Popular

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http://www.ird.govt.nz/library/publications/business/ir375.pdf). South Africa's rate is 14%. (VAT Act §7(1) (Act No. 89 of 1991) amended up to and including Taxation Laws Second Amendment Act, 2005 (No. 10 of 2005) (S.A.) *available at*: http://www.acts.co.za/vat/index.htm).

New Zealand expressly resisted making universal base concessions for the purchase of necessities. Supplies of basic food products and medical services, for example, are subject to tax. There are only eleven categories of zero-rated supplies, ten of which deal with exports, and one other dealing with the disposal of a "going concern." (GOODS & SERVICES TAX ACT §§ 11, 11A AND 11B) (1985) (N.Z.). There are eight categories of exempt supplies, four of which deal with real estate. The others deal with financial intermediation services, penalty or default interest, the supply of fine metals, and supplies made by a non-profit organization. (GOODS & SERVICES TAX ACT § 14) (1985) (N.Z.). The Republic of South Africa could not go as far as New Zealand even though policy analysts wanted to follow New Zealand. Political demands were strong for visible relief through the exemption of basic necessities. Thus, South Africa adjusts the New Zealand model, allowing a a zero-rate for all insurance provided medical and dental supplies (VAT Act §10(21A) (S.A.)), and a zero-rate for the purchase of all basic foodstuffs (VAT Act §11(1)(j) and SCHED. 2(B)(1) (S.A.)). Thus, neither New Zealand nor South Africa provides measured relief for the poor. New Zealand provides no relief. South Africa provides universal relief for the purchase of necessities by rich and poor alike.

[4] LIAM EBRILL, MICHAEL KEEN, JEAN-PAUL BODIN & VICTORIA SUMMERS, THE MODERN VAT 105-12 (2001) (indicating that the standard IMF advice is for a VAT that has a single rate with a broad base, and that progressivity should be considered an attribute of a fiscal system as a whole and achieved most effectively through direct expenditures); *see also* Sanjeev Gupta et al., *Should Equity Be a Goal of Economic Policy*, IMF Economic Issues No. 16 (January 22, 1999 available at: http://www.imf.org/external/pubs/ft/issues/issues16/index.htm (stating that the IMF regularly advises that a broad base and a low rate is the controlling policy in all taxes).

[5] Jurisdictions attempting to follow this advice study the New Zealand experience. The four hallmarks of New Zealand's broad based VAT are (1) zero-rating limited to exports and international services, (2) exempt supplies limited to real estate and financial services, (3) inclusion of the government sector in the base, and (4) an attempt to include at least some financial intermediation services in the base. "… [C]ountries which have adopted a GST-type regime after studying the New Zealand experience include Canada, South Africa, Thailand, Fiji, Singapore and Australia." (ALASTAIR MCKENZIE, GST: A PRACTICAL GUIDE, 1 CCH New Zealand (2002)).

However, economic theory does not translate the same way in all political contexts. For example, both Singapore and Fiji base their VATs on the New Zealand model, but the political and economic situations within which these VATs differ significantly. These differences are reflected in the VAT statutes. Singapore followed the New Zealand model much more closely than did Fiji. The reason has to do with the level economic development, the presence of a strong centralized government in Singapore, and the polarized, ethnic-based political strife of Fiji.

Singapore consciously designed its consumption tax with the standard IMF economic advice in mind. It did not try to achieve progressivity within the tax itself, focusing instead on a broad base with a single rate. The Singapore Goods and Services Tax Act is primarily based on the U.K. Value Added Tax Act of 1983, but at critical points the New Zealand Goods and Services Tax Act is applied instead of the UK model. The New Zealand overlay makes the Singapore tax base very broad. Zero-rated supplies are limited to exports and international services, and exempt supplies are limited to land and financial transactions. Singapore does not follow New Zealand with respect to the inclusion of the government sector in the tax base, nor does it extend the VAT to any financial intermediation services. (GOODS & SERVICES TAX ACT, CAP. 117A, §§ 28, 21, 22 & FOURTH SCHED. (1993) (SINGAPORE) *available at* http://statutes.agc.gov.sg/). Singapore's stated intention to follow New Zealand was set out in a White Paper issued at the inception of the Singapore VAT:

> Beyond exempting companies with turnovers below $1m, we do not intend to further exempt specific goods or services. Goods and services tax can then be applied across-the-board. This way we avoid the problems faced by other countries … Instead of exempting essentials, New Zealand took the opposite route. After

acceptance of a consumption tax frequently requires that efforts be made to mitigate the perception of unfairness arising from taxing the poor when they purchase necessities.[6] These mitigation efforts almost always fail to transform the tax into a progressive levy.[7]

The essential problem (under the current system) is that when tax relief is granted it is universal not surgical. Thus, for example, under most consumption tax regimes rich and poor alike enjoy an exemption for the purchase of food for home consumption.[8]

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> examining the experiences of countries with complex goods and services tax schemes, New Zealand decided to hardly exempt any items from its goods and services tax. Instead it offset the goods and services tax's impact by reducing other taxes and giving direct rebates to citizens through their comprehensive welfare system.

Fiji also listened to the economic advice of the IMF when it introduced a VAT in 1992. Once again the New Zealand VAT was consulted, but when the base was considered Fiji political realties resisted the economists. In Fiji zero-rated supplies include the supply of sugar cane, prescription medicines, drugs, and fertilizers for planting sugar cane. In addition, for the 2000 tax year all "essential food items" defined to be "tinned fish, flour and sharps, powdered milk, edible oil, rice and tea" were zero-rated. Exemptions include "the supply and provision of the right to partake in any gambling" and "the supply of education by an educational institution." The government sector is not included in the VAT, and no effort is made to tax financial intermediation services. VALUE ADDED TAX DECREE 1991 (Revised to 30 April 2003) First Sched. §§ 5 & 8; Second Sched. §§ 16, 17 & 22 (Fiji) *available at* *http://www.frca.org.fj/legislations/VAT%20DECREE%201991%20-%20REVISED%20TO%2030%20APRIL%202003%20_FINAL_.pdf*

[6] RICHARD BIRD & PIERRE-PASCAL GENDRON, VAT REVISITED: A NEW LOOK AT THE VALUE ADDED TAX IN DEVELOPING AND TRANSITIONAL COUNTRIES 20 n.37 & 45-46 n.78 (2005) *available at:* http://www.fiscalreform.net/research/pdfs/VATR%20Final%20Report%20181005.pdf (indicating that concern with "distributional issues" lead to "political unrest" in Mexico, Colombia, the Philippines, Guatemala – where opposition was characterized by the political slogan "el IVA no va" (No to VAT) -- and Canada – where it was responsible for the defeat of the Canadian government that proposed it).

[7] Landry, *supra* note 2, at 10, 12, Tables 7 & 8 (indicating that, "… the overall ranking show that most state systems are regressive. Thirty states are regressive, twenty-two are progressive … [and that] sales and excise taxes [taken in isolation] generally are regressive among the states and add to the [overall] regressive nature of a state's tax system …" In fact, Landry's tables indicate that in 2000 the RST was significantly regressive in each state [comparing the sales tax burden of his hypothetical poor person as a percent of income in Table 7 with the state tax burden of his hypothetical rich as a percent of income in Table 8]. The top ten states, the states with the most regressive RSTs are West Virginia, Mississippi, Tennessee, Idaho, South Carolina, North Carolina, New Mexico, Kansas, Utah, and Arkansas. Louisiana has the least regressive RST. Landry indicates that the Louisiana RST is 16% more burdensome on the poor than it is on the rich (considering the RST as a percentage of income). West Virginia, which has the most regressive RST in the U.S., is ten times as regressive as Louisiana. West Virginia's RST is 172% more burdensome on the poor than on the rich [arrived at using Landry's figures by dividing the difference between the RST burden on the rich and the poor in each state by the burden on just the rich in each state]).

[8] BIRD & GENDRON, *supra* note 6, at 94 (indicating that in both VAT and RST "… by far the most common exemption for equity reasons is that of food"); JOHN F. DUE & JOHN L. MIKESELL, SALES TAXATION: STATE AND LOCAL STRUCTURE AND ADMINISTRATION 74 and 79 (2d ed. 1994) (noting that the exemption for food is "… the most expensive … cost[ing] a state from 20 percent to 25 percent of sales and use tax revenue… [and] is perhaps the largest mistake the states have made in their sales tax structures, … Larger volumes of expenditure of persons above the lowest income levels are freed from tax for no justification whatsoever"). *See, e.g.*, VALUE ADDED TAX ACT 1994, Sched. 8 Group 1 General Item 1 (U.K.) (zero-rating "food of a kind used for human consumption") *available at* http://www.opsi.gov.uk/acts/acts1994/Ukpga_19940023_en_1.htm; MASS. GEN. LAWS ch. 64H, §6(h) and MASS. REGS. CODE tit. 64H.6.5(4), § 830 (exempting food products for human consumption unless they are included in a meal sold by a restaurant).

Similar exemptions broadly apply to prescription medicines.[9] The near universality of these exemptions classify them as true necessities.[10] However, with each universal exemption – tax practice compromises tax theory without achieving progressivity.

Technology offers policymakers a surgical option. Three critical technology-intensive developments ("smart" national IDs; fully digital consumption tax regimes; certified tax calculation software) make it possible for a new breed of consumption tax to be designed. Through technology – relief can be granted to select individuals (the poor or the handicapped, for example), within the context of a broad-based, single rate consumption tax of either VAT or RST design.

## SUMMARY OF THE ARGUMENT

This paper proceeds in three initial PARTS, each of which examines one of these tax-technology developments. A concluding section follows in a fourth PART that assesses and applies these technological developments and presents a specific proposal for tax reform targeting regressivity in the consumption tax.[11]

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[9] *See, e.g.*, 2 STATE TAX GUIDE (CCH) ¶ 900-480 (2005) (indicating that in all states, except Illinois, prescription medicines are exempt for sales and use tax); VALUE ADDED TAX ACT 1994, Sched., 8 Group 12 Item 1 and Notes 2, 5 (U.K.) (zero-rating the supply of "qualifying goods" dispensed to and individual for his "personal use" where the dispensing is by a registered pharmacist on "prescription").

[10] EBRIL, *supra* note 4, at 83-100-12 (listing VAT exemptions that have become commonplace around the world, and arguing against the advisability of them).

[11] The regressivity of a consumption tax – the concept that the weight of a consumption tax falls less heavily on the wealthy than on the poor or disadvantaged – can be considered from various perspectives. The following examples illustrate these perspectives by considering the two major variables in the argument: (a) the single year verses the lifetime measure of consumption and (b) the ratio of consumption tax paid to total income verses the ratio of consumption tax paid to consumed income.

First example – the basic argument. Assume a rich man earns 1,000 and a poor man 100 in a jurisdiction where consumption is taxed at 10%. If the rich man consumes half of his income, and saves the other half, his consumption tax is calculated as follows: [1,000 – 500] = 500 x 10% = 50. If the poor man consumes all that he earns, his consumption tax is calculated as follows: 100 x 10% = 10. The effective tax rate based on <u>total income</u> in a single year is 5% for the rich man [50/1,000 = 5%], and 10% for the poor man [10/100 = 10%]. However, based on <u>consumed income</u> the tax is neutral. Both rich and poor pay tax on their consumption at a 10% rate. Consumption taxes are commonly considered regressive based on single year and total income comparisons. Opponents frequently shift the focus from total income to consumed income.

Second example – the lifetime consumption permutation. If one assumes that all income is eventually consumed (over a lifetime) then it can be argued that the consumption tax is <u>not</u> regressive (when based on a total income). In the above example, assume that over a lifetime both the rich and the poor man will spend all of their income. Under this assumption, both rich and poor will be taxed at the same overall 10% rate. This <u>lifetime consumption</u> hypothesis is questionable. Wealthy individuals commonly pass on income that is earned and not consumed. Sometimes this inherited wealth carries over unconsumed for many generations.

Third example – the universal exemption permutation. Notice that exempting necessities does not necessarily change these results. Assume that 20% of the rich man's consumption (100) and 20% of the poor man's consumption (20) is spent on exempt necessities. Based on a single year and <u>total income</u> analysis, the rich man's tax burden is 4% [500 – 100 = 400 x 10% = 40; and 40/1,000 = 4%]. The poor man's tax burden is 8% [100 – 20 = 80 x 10% = 8; and 8/100 = 8%]. Thus, the tax remains regressive. This does not always need to be the result. It may be possible (although it is probably difficult to achieve in practice) for a statute to identify exemptions that constitute a very large portion of the poor man's

PART 1 considers biometric identifiers embedded in national identity "smart cards." It observes that they are here today. They are currently in use in Asia and parts of the E.U. with comprehensive EU implementation just over the horizon. Similar IDs in America will be in place by 2008 under the Real ID Act. This PART then argues that these cards are slowly (through the *function creep* of the technology) transforming tax delivery services in the EU, and will do the same in the U.S. It further argues that excess capacity in these cards can effect a *hyper change* in the delivery of tax services – it can allow the surgical application of consumption tax exemptions to the needy thereby allowing a broad base and single rate to be applied in all other situations.

PART 2 considers fully digital consumption tax regimes. It observes that fully digital consumption tax systems are here today in both VAT and RST systems. In the E.U. a limited digital reporting and payment "pilot" is operational under the Digital Sales Directive, while in the U.S. a limited digital reporting, payment, and calculation "pilot" is in full operation under the Streamlined Sale Tax. This PART then argues that the time has come for a comprehensive digital consumption tax, similar to the one proposed to the President's Advisory Panel on Federal Tax Reform.[12] With a digital consumption tax in place, full advantage could be taken of the capacity of the "smart" ID to exempt the poor from the tax. (Although greatly enhanced by a fully digital consumption tax, the tax delivery benefits of the "smart" ID are not dependent on it. In some instances, even under a digital consumption tax, paper processes may be needed in small businesses or remote locations).

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consumption (80%) but very little of the rich man's consumption (20%). In this case the rich man's tax burden would remain at 4%, but the poor man's burden would fall to 2%.

This is the result many jurisdictions are trying to achieve through universal exemptions on necessities. Consider the South African exemption for all basic foodstuffs, something that would be expected to be biased toward the poor. However, the exemption for all insurance-provided medical and dental supplies that South Africa also allows has the opposite bias (assuming that the poor are less likely than the rich to have medical and dental insurance.) *See supra* note 3.

Fourth example – lifetime consumption in conjunction with universal exemptions. If considered over a lifetime (x 50), and under the assumptions specified above, a consumption tax can actually appear to be progressive. Using the figures in the first example, the rich man's aggregate tax burden would be 9% [50,000 – 5,000 = 4,500 x 10% = 450; and 450/50,000 = 9%], and the poor man's aggregate tax burden would be 8% [5,000 – 1,000 = 4,000 x 10% = 400; and 400/5,000 = 8%]. Once again however, this result is based on the unlikely assumption that the unconsumed income of wealthy individuals is fully consumed in their lifetime and not passed on from generation to generation as savings.

Fifth example – the surgical exemption through technology. What technology offers is the ability to exempt the poor man, but not exempt the rich man on the purchase of necessities. It is possible to surgically reduce the tax burden of the poor through selectively applied exemptions (based on either a single year or lifetime time frame, or on a total income or total consumed income basis) so that the weight of the tax falls more heavily on the rich than the poor.

[12] Richard T. Ainsworth, *The Digital VAT: A Proposal for the President's Advisory Panel on Federal Tax Reform*, President's Advisory Panel on Federal Tax Reform (Apr. 30, 2005) *at* http://comments.taxreformpanel.gov/ (on file with author) (proposal in response to the second request for comments); Richard T. Ainsworth, *The Digital VAT (D-VAT)* 25 VA. TAX REV. 875 (2006) (presenting a expanded and developed analysis of the prior submission to the Panel).

PART 3 considers certified compliance software. It observes that software certification regimes for global VAT compliance have been proposed by the OECD, and are operational under the Streamlined Sales Tax in the U.S. This PART then argues that certification of tax software is the final piece in solving the consumption tax's regressivity puzzle. Tax calculation software not only (a) answers the global demand for corporate governance reform through certification of software solutions but it (b) is the vehicle through which the "smart" ID will effectuate the exemption of the poor.

PART 4 provides a summary of the previous PARTS by turning the argument of this paper on its head – it considers the regressivity of the consumption tax from the perspective of the traditional barriers to the establishment of a progressive tax instead of from the perspective of the technology that allows us to resolve it. This summary specifically looks at the barriers of (a) tax fraud, (b) surgical capacity and (c) audit/ compliance. This PART then closes with a proposal for tax reform that will eliminate the regressivity of the consumption tax.

## PART I:
## IDENTITY CARDS

National identity cards with biometric identifiers play a central role in present day public and private sector efficiency[13] and security efforts.[14] As these cards become more

[13] UNITED STATES GENERAL ACCOUNTING OFFICE, ELECTRONIC BENEFITS TRANSFER: USE OF BIOMETRICS TO DETER FRAUD IN THE NATIONWIDE EBT PROGRAM, GAO/OSI-95-20, SEPT. 1995 at 4 (reporting that from June 1991 through July 1994 the Los Angeles County Department of Public Services used fingerprinting of welfare recipients to eliminate 3,000 previously-approved entitlement cases, saving over $14 million); John D. Woodward, *Biometric Scanning, Law and Policy: Identifying the Concerns – Drafting the Biometric Blueprint*, 59 U. PITT L. REV. 97, 152 (1997) (indicating that the states of Connecticut, Illinois, Massachusetts, New Jersey, New York, Pennsylvania and Texas are using similar fingerprint imaging to prevent welfare fraud).

Globally it is the health care sector is a leader in identifying where smart card efficiency gains can be found – increasing quality and decreasing the cost of care. Both government and private sector institutions have adopted smart card technology. For example, an EU Council Regulation made health care available to citizens temporarily present in another Member State, and this in turn quickly lead to the adoption of private sector smart cards containing patient medical data, as well as an EU-wide smart card to facilitate the sharing of services among countries. Commission Regulation 1408/71 of 14 June 1971 on the application of social security schemes to employed persons, to self-employed persons, and to members of their families moving within the community, Article 22(1)(a), 1971 O.J. (L 149) *available at* http://www.dwp.gov.uk/advisers/docs/lawvols/bluevol/pdf/a9_2001.pdf). *See also* Attila Naszlady & Janos Naszlady, *Patient Health Record on a Smart Card*, 48 INT. J. MED. INFORMATICS 191 (1998) (studying the adoption of smart card technology in Hungary for efficient communication of patient histories and the findings of physical examinations); Administrative Commission on Social Security for Migrant Workers Decision 189 of 18 June 2003 aimed at introducing a European insurance card to replace the forms necessary for application of Council Regulation (EEC) No 1408/71 and (EEC) No 574/72 as regards access to health care during a temporary stay in a Member State other than the competent State or the State of residence, O.J. (L 276) 1; Administrative Commission on Social Security for Migrant Workers Decision 190 of 18 June 2003 concerning the technical specifications of the European health insurance card, O.J. (L 276) 4.

Outside of the E.U. *see also* Alvin T. S. Chan, *WWW+ Smart Card: Towards a Mobile Health Care Management System* 57 INT. J. MED. INFORMATICS 127 (2000) (presenting a study on extending medical smart card technology through World Wide Web applications as a standard interface tool for accessing medical records contained within smart cards, conducted and implemented in Hong Kong); Benoit A. Aubert & Genevieve Hamel, *Adoption of Smart Cards in the Medical Sector: the Canadian*

and more commonplace, it is time for the tax collector to consider whether or not it is willing to use some of the excess functionality of these cards for tax purposes – functionality that would accurately and immediately associate the identified person with a deserved consumption tax exemption – functionality that would then interact with a certified tax calculation system to precisely remove the tax on just the purchases that are exempt consumption for this particular consumer (within any combination of dollar, quantity or frequency of purchase limitations desired).

Security concerns have understandably received heightened attention in the post September 11th world, and the capabilities of "smart cards" in this context are precipitating a global convergence of identity information.[15] Privacy concerns are

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*Experience*, 53 SOC. SCI. & MED. 879 (2001) (presenting a Canadian study on the adoption of smart card technology in the medical sector that stresses the need for providing both direct benefits to the user and completeness of information for acceptance by the medical professional).

Similar efforts in the U.S. were advanced under a reform of the U.S. health care system. Although ultimately unsuccessful, the Clinton Health Security Act (H.R. 3600/ S.1757, 103d Cong., 1st Sess. (1993)) made the issuance of a Health Security "Smart" Card a key component in the program. The card was intended to identify the holder as a person entitled to health benefits and was designed to permit access to patient medical data through a system of databases, improving the quality of care and minimizing administrative costs. William H. Minor, *Identity Cards and Databases in Health Care: The Need for Federal Privacy Protections*, 28 COLUM. J.L. & SOC. PROBS. 253, 256 (1995).

[14] UNITED STATES GENERAL ACCOUNTING OFFICE, ELECTRONIC GOVERNMENT: AVIATION SECURITY: CHALLENGES IN USING BIOMETRIC TECHNOLOGIES, GAO-04-785T, MAY 19, 2004 at 24 (reporting on progress made in the adaptation of biometric smart card technologies in airport security systems); UNITED STATES GENERAL ACCOUNTING OFFICE, ELECTRONIC GOVERNMENT: PROGRESS IN PROMOTING ADOPTION OF SMART CARD TECHNOLOGY, GAO-03-144, JAN. 2003 at 13-14 (reporting on the progress of 62 U.S. government smart card security and efficiency oriented programs established over the prior two year period); UNITED STATES GENERAL ACCOUNTING OFFICE, TECHNOLOGY ASSESSMENT: USING BIOMETRICS FOR BORDER SECURITY, GAO-03-174, NOV. 2002 at 4-5 (providing an assessment of the seven leading biometric technologies including facial recognition, fingerprint recognition, hand geometry, iris recognition, retina recognition, signature recognition, and speaker recognition and determining that the first four not only are suitable for border security, but have successfully been used in border control pilot projects); UNITED STATES GENERAL ACCOUNTING OFFICE, INFORMATION SECURITY CHALLENGES IN USING BIOMETRICS, GAO-03-1137T, SEPT. 9, 2003 at 4-5 (subcommittee testimony of the Chief Technologist of Applied Research and Methods, Keith A. Rhodes, assessing the costs and benefits of using biometric identifiers in a national border control security system).

[15] Biometric identifies were added to EU passports and travel documents. Facial image biometrics are required, fingerprint biometrics are optional. Council Regulation (EC) No 2252/2004, 2004 O.J. (L 385) 1, at Art. 1(2). The express reason for the biometric facial image was that, "[t]he facial image is interoperable and can be used in our relations with third countries such as the U.S. However, the fingerprint could be added as an option for Member States who wish to do so, if they want to search their national databases, which would be currently the only possibility for identification." Commission Proposal for a Council Regulation on standards for security and biometrics in EU citizens' passports, COM(2004)116 final at 7. On June 2, 2006 the Commission proposed applying biometric identifiers to E.U. visas through the Common Consular Instructions (CCI). In a press release the Commission Vice-President Franco Frattini, Commissioner responsible for freedom, security and justice, declared:

> This Proposal will have a knock on effect: it will facilitate the visa issuing procedure, prevent visa shopping, facilitate checks at external borders and strength the fight against fraud and, within the territory of the Member States, assist in the identification and return of illegal immigrants and the prevention of threats to the internal security of the Member States. … Common Application Centers will have the advantage of reinforcing and streamlining local consular cooperation between Member States as resources can be

considerable.[16] Nevertheless, both advocates and opponents of national identity smart cards agree that there is little likelihood that this movement will slow down.[17] The best

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> pooled and shared, which will be of benefit to both states and visa applicants. One central access point will even ensure that the data protection requirements, to which I attach the greatest importance, are more easily met.

Press Release IP/06/717 (June 2, 2006) *available at* http://ec.europa.eu/idabc/en/document/5674/355

[16] There is general consensus that privacy rights are threatened by national identity cards systems, a threat that grows more serious when smart card technologies are involved. Some societies have for a long time resolved this issue in favor of identity cards others have not. A growing body of legal scholarship is responding to the new technologies. Some focuses on security issues and terrorist threats, others focus on the promise of governmental or commercial efficiencies. Inconsistent conclusions have been reached. Some find that an individual's right of privacy weighs more heavily than society's needs – others reach the opposite result.

These differences are more than mere "preferences." One of the main reasons for inconsistency centers on the definition privacy. James Whitman argues that Europeans and Americans respond to identity cards differently precisely because their understand of privacy is different. According to Whitman, a European's understanding of privacy is a dignity-based concept – privacy is violated when there is an unauthorized portrayal of the self. However, an American's sense of privacy is more liberty-based – privacy is violated when the state makes an unauthorized intrusion into the sanctity of the home. Whitman synthesizes his observations with the following rhetorical questions: "Why is it that Americans comply with court discovery orders that open essentially all of their documents for inspection, but refuse to carry identity cards? Why is it that Europeans tolerate state meddling in their choice of baby names?" James Q. Whitman, *The Two Western Cultures of Privacy: Dignity Versus Liberty*, 113 YALE L.J. 1151, 1160, 1204 (2004).

When legal scholars consider the privacy problem of embedding national identity cards with smart chips therefore, it is conceptually much easier to identify and protect against an abuse of privacy rights when privacy rights are defined in dignity terms – the European conception – rather than in liberty terms – the American conception. Identity cards are acceptable in dignity terms as long as comprehensive regulations are in place that will prevent unauthorized disclosures. The classic dignity-based defense of privacy can be found in the E.U. Data Protection Directive. (Directive 95/46/EC of the European Parliament and of the Council 95/46/EC, on the protection of individuals with regard to the processing of personal data and on the free movement of such data, 1995 O.J. (L 281) 31 *available at* http://europa.eu.int/eur-lex/lex/LexUriServ/LexUriServ.do?uri=CELEX:31995L0046:EN:HTML) (setting out detailed rules on all aspects of data processing, the confidentiality and security of the processing, the criteria to be met for appropriate data processing systems, the information required to be provided to the data subject, the data subject's right of access, right to object, and the establishment of authorities to supervise and provide remedies in cases of privacy violations).

When Whitman considers the roots of the American, liberty-based sense of privacy he focuses on the Bill of Rights, in particular the Fourth Amendment's prohibition of unlawful search and seizure. The classic statement of liberty-based privacy rights is found in Boyd v. United States, 116 U.S. 616 (1886) (forbidding the government to seize the documents of a merchant in a customs case where the court issued an aggressive declaration of the "sanctity" of the American home). Liberty-based privacy advocates therefore, object to more than the unauthorized disclosure of private information, they object to the State's mandate that identity data be assembled and made readily available to the State.

When legal scholars with a liberty-based sense of privacy consider national identity cards with embedded smart chips the scale weighs heavily against the cards. Preventing unauthorized disclosure, no matter how efficient, cannot blunt the impact of the State's mandate itself, and with the seemingly limitless capacity of smart chips to hold data the privacy defense of a national smart ID card becomes difficult. *See* Richard Sobel, *The Demeaning of Identity and Personhood in National Identification Systems*, 15 HARV. J. L. & TECH. 319 (2002) (arguing that even before September 11, 2001 the movement in America toward a system of national identification numbers, databanks and identity cards contradicted the "constitutional and philosophical bases of democratic government and undermine[d] the fundamental foundations of political and personal identity … by transforming personhood from an intrinsic quality inhering in individuals into a quantity designated by numbers, represented by physical cards, and recorded in computer banks."). Sobel's

that can be done is to offer protections against mistakes, misuse,[18] and abuse,[19] while we try to extend the social benefits of this highly accurate and immediate form of

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argument (based in a liberty-based conception of privacy) cannot be met head-on by advocates of smart identity cards that define privacy in dignity terms. *See* Daniel J. Steinbock, *National Identity Cards: Fourth and Fifth Amendment Issues*, 56 FLA. L. REV. 697 (2004) (assuming the existence of identity cards to be inoffensive per se, and then demonstrating that adequate Fourth and Fifth Amendment protection exist to protect individual privacy.)

Whitman's privacy dichotomy is both analytically useful and deceptively simple. It is usefulness comes from its ability to ferret out the nuances of the privacy debate. Its deception is in its suggestion that the dichotomy he offers is a real culturally specific attribute – so that the national smart ID card could be accepted in the E.U. after comprehensive data protection rules are put in place, while they will never be accepted in the U.S. because the card itself is an offensive state mandate. The social reality of the dichotomy is its deception. It is reasonably clear that most countries have privacy concern with smart national ID cards that has both dignity and liberty components.

The U.S. has a strong tradition of seeing privacy in dignity terms. Perhaps the most cited of all American law review articles, the Warren and Brandeis article on *The Right of Privacy* makes this argument. Warren and Brandeis argue that privacy is the "right to be let alone," and that public disclosure of private facts so affronts human dignity that it should be protected as a matter of constitutional right. Samuel D. Warren & Louis D. Brandeis, *The Right to Privacy*, 4 HARV. L. REV. 193, 195 (1890). For Whitman, the Warren and Brandeis position is an anomaly. It is a "patch" of continental law that like a "… patch[es] of snow [that] sometimes survive[s] in a hollow on an early spring day … [will soon] melt away." (Whitman *supra* at 1203). It would be a mistake for national identity card advocates to ignore either the dignity or the liberty conception of privacy. The first can be met by making the cards voluntary, the second by adopting comprehensive data protection rules.

[17] Gwen Wendy Kennedy, *Thumbs Up for Biometric Authentication!* 8 COMP . L. REV. & TECH. J. 379, 379 (2004) (favoring biometric identity cards and indicating that "[t]he only remaining impediment to the large-scale deployment of biometric authentication devices is the perceived threat to privacy."); Lawrence O. Gostin et al., *Privacy and Security of Personal Information in a New Health Care System*, 270 JAMA 2487, 2487 (1993) (indicating that even though the Clinton Health Security Act was defeated, "[t]he collection and transmission of vast amounts of health information in automated form will occur with or without reform of the health care system."); Sobel *supra* note 16, at 320 (opposing biometric identity cards but indicating that the movement toward a national identity system in the U.S. had begun and seemed unstoppable long before the terrorist attacks of September 11, 2001).

[18] Stephen Moore, *A National Identification System: Testimony Before the US House of Representatives Subcommittee on Immigration and Claims, Judiciary Committee*, (May 13, 1997) (reporting that over 500 IRS agents were uncovered in 1995 using the government's confidential taxpayer database to check on the financial status of friends, neighbors, or famous people, and that public outrage was considerable, but that less than 10 agents lost their jobs, and within two years later a similar incident occurred, again with hundreds of agents) *available at* http://www.cato.org/testimony/ct-sm051397.html; OFFICE OF TECHNOLOGY ASSESSMENT, CONGRESS OF THE UNITED STATES, INFORMATION SECURITY AND PRIVACY IN NETWORK ENVIRONMENTS, 2-3 (1994) (OTA-TCT-606).

[19] Sobel *supra* note 16, at 343-49 (recording the most notorious abuses of national identity card systems as: (1) the requirement that American slaves carry "passes" in order to travel away from plantations before the American Civil War, (2) the power of the Secretary of State to deny passports (a national identity document) to individuals deemed to be Communists under the Passport Act of 1926 before the Supreme Court found the statute unconstitutional in Kent v. Dulles, 357 U.S. 116 (1958), (3) the use of identity cards by the Nazis to identify Jews for extermination during World War II, (4) the use of "passes" by the South African government to control the movement of black men and women during apartheid, (5) the system of identity cards used in Rwanda for distinguishing between Hutus and Tutus that facilitated the genocide, (6) the use of the Census Bureau by Franklin Delano Roosevelt prior to Pearl Harbor to collect data on Japanese-Americans for later isolation in internment camps); *see also* Neda Matar, *Are You Ready for a National ID Card? Perhaps we don't have to choose between Fear of Terrorism and Need for Privacy*, 17 EMORY INT'L L. REV. 287, 310-13 (2003).

identification. This paper concerns itself with benefits that can be realized in consumption taxes.

*History of national identity cards and biometric identifiers.* National identity cards have been around for a long time, and have served many purposes. Identity cards were introduced in France in the 1890's and were used primarily to regulate immigration, integration and assimilation. The French cards were seen as a means of preserving the "Frenchness of France."[20]

Hong Kong made paper national identity cards mandatory in 1949. The Hong Kong cards performed social service functions in addition to providing a measure of national security from "foreign" Chinese nationals. The Hong Kong cards were intended to "… assist measures that might be found necessary for the maintenance of law and order and for the distribution of food or other commodities as a result of prevailing conditions of political and economic unrest."[21] Hong Kong probably holds the record for the longest continual use of a mandatory national identity card system (among the democratic governments where they are currently in use). Even with its assimilation into the People's Republic of China, Hong Kong has no intention of discontinuing identity cards. On August 19, 2003 Hong Kong began a transition to "smart" ID cards,[22] a process that (as of July 2006) is ongoing.[23]

Considered by themselves, biometric identifiers have a longer history than identity cards. Fingerprints pressed in wax were used as far back as the third century B.C. to authenticate written documents. Documents from the Qin Dynasty in China are the oldest extant evidence of the use of biometrics (fingerprints) as identifiers.[24]

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[20] Gerard Noiriel, *The French Melting Pot: Immigration, Citizenship, and National Identity*, tr. Geoffroy de Laforcade (Minneapolis, University of Minnesota Press, 1996) xix, 45-90 (discussing the revolution in identity that occurred during this period and the critical role that identity cards played in making this happen).

[21] Hong Kong Special Administrative Region Identity Card Project, *Initial Privacy Impact Assessment Report* at 15 (Nov. 2000) [citing from Speech by Attorney General Moving the First Reading of the Registration of Persons Bill 1949 and Objects and Reasons for the Bill, Hong Kong Legislative Council Hansard, 1949, pp. 225-27] *available at* http://www.legco.gov.hk/yr00-01/english/fc/esc/papers/esc27e1.pdf (last visited Aug. 2, 2006).

[22] LEGISLATIVE COUNCIL PANEL ON SECURITY: POLICY INITIATIVE OF THE SECURITY BUREAU, LC PAPER NO. CB(2)64/05-06(01) at 6 (indicating that by the end of August 2005 an estimated 2.85 million residents had been issued new smart identity cards) *available at* http://www.legco.gov.hk (last visited Aug. 2, 2006).

[23] LEGISLATIVE COUNCIL BRIEF, APPLICATION FOR NEW IDENTITY CARDS (PERSONS BORN IN OR BEFORE 1942, IN 1990 TO 1992 OR 1997 TO 2003) ORDER, SBCR 1/1486/81 (setting out the schedule based on year of birth for mandatory smart card replacement for three additional groups of residents) *available at* http://www.legco.gov.hk (last visited Aug. 2, 2006).

[24] Two original (ancient) Chinese documents record the use of fingerprints. The first is by Prime Minister Hsiao He. In the text HAN DISCIPLINES, written approximately in 200 B.C., it was required that legal testimonials must be certified with "hand prints." The second source is from the Qin Dynasty (B.C. 248 to B.C. 206). In 1975 archeologists found bamboo slices (essentially ancient books where the writing was engraved on the bamboo) that describe the ancient science and technology of identifying murders and other criminals. In one case a thief is identified through footprints previously taken. (Personal communication from Professor Xiaoqiang Yang, Sun Yat-Sen University School of Law, Guangzhou, China, on file with author, and confirmed by Li-Huan (Joyce) Lin, Senior Tax Associate, Taxware, L.P.). *See also* David Lyon, *Identity Cards: Social Sorting by Databases*, Oxford Internet Institute, Internet Issue Brief No. 3

Fingerprints remain among the most reliable of all biometric identifiers,[25] and along with iris, and face recognition are the most easily digitized and incorporated into the memory chips on smart cards.

*Contemporary use of smart national identity cards.* Modern security concerns are digitally merging biometric identification into the traditional ID card – a move from paper to plastic.[26] Before Hong Kong converted to smart identity cards it surveyed

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(Nov. 2004) *available at* http://www.internet-institute.ox.ac.uk/resources/publications/IB3all.pdf (last visited Aug. 2, 2006); Johan Bloommé, *Evaluation of Biometric Security Systems Against Artificial Fingers* (PhD dissertation, Linkoping University, Sweden, 2003) at 10-11 (considering the history of fingerprints in more detail, and indicating their use not only in the Chinese Qin Dynasty, but in Babylon, as well as 14th century Persia; and also reviewing the work of Professor Marcello Malpighi at the University of Bologna in 1686, Sir William Hershel's fingerprinting of Indian natives in 1856, Dr. Henry Faulds' method of fingerprint classification devised in the 1870's, the work of Sir Francis Galton whose book "Fingerprints" in 1892 first observed that fingerprints were scientifically unique identifiers, and finally the work of the Argentine police officer Juan Vucetich, who is credited with the modern world's first criminal fingerprint identification case in 1892) *available at*: http://www.ep.liu.se/exjobb/isy/2003/3514/ (last visited Aug. 2, 2006).

[25] BIOMETRICS AT THE FRONTIERS: ASSESSING THE IMPACT ON SOCIETY, TECHNICAL REPORT FOR THE EUROPEAN PARLIAMENT COMMITTEE ON CITIZENS' FREEDOM AND RIGHTS, JUSTICE AND HOME AFFAIRS (LIBE), INSTITUTE FOR PROSPECTIVE TECHNOLOGICAL STUDIES (Feb. 2005) at 35 (indicating that biometric identifiers are commonly dividend into three broad categories: (1) physiological biometric features – height, weight, body odor, the shape of the hand, the pattern of veins, retina, or iris, the face and patterns on the skin of thumbs or fingers; (2) behavioral biometrics – voice patterns, signature and keystroke sequences and gait (the body movement while walking); (3) DNA) *available at* http://cybersecurity.jrc.es/docs/LIBE%20Biometrics%20March%2005/iptsBiometics_FullReport_eur21585en.pdf (last visited Aug. 2, 2006).

[26] Embedding a biometric (fingerprint) on a microchip in a card is an exceptionally easy task. A detailed and technical explanation of the process in the context of a biometrically secure credit card is provided by Jain and Pankanti:

> Here's how it would work. When activating your new card, you would load an image of your fingerprint onto the card. To do this, you would press your finger against a sensor in the card—a silicon chip containing an array of micro-capacitor plates. (In large quantities, these fingerprint-sensing chips cost only about $5 each.) The surface of the skin serves as a second layer of plates for each micro-capacitor, and the air gap acts as the dielectric medium. A small electrical charge is created between the finger surface and the capacitor plates in the chip. The magnitude of the charge depends on the distance between the skin surface and the plates. Because the ridges in the fingerprint pattern are closer to the silicon chip than the valleys, ridges and valleys result in different capacitance values across the matrix of plates. The capacitance values of different plates are measured and converted into pixel intensities to form a digital image of the fingerprint. Next, a microprocessor in the smart card extracts a few specific details, called minutiae, from the digital image of the fingerprint. Minutiae include locations where the ridges end abruptly and locations where two or more ridges merge, or a single ridge branches out into two or more ridges. Typically, in a live-scan fingerprint image of good quality, there are 20 to 70 minutiae; the actual number depends on the size of the sensor surface and the placement of the finger on the sensor. The minutiae information is encrypted and stored, along with the cardholder's identifying information, as a template in the smart card's flash memory.
>
> At the start of a credit card transaction, you would present your smart credit card to a point-of-sale terminal. The terminal would establish secure communications channels between itself and your card via communications chips embedded in the card and with the credit card company's central database via Ethernet. The terminal then would verify

similar programs in Finland,[27] Brunei[28] and Malaysia.[29] Smart cards in Finland are voluntary, whereas those in Brunei and Malaysia are mandatory. Biometric identification systems can be effectively certified, and their performance can be independently validated.[30]

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> that your card has not been reported lost or stolen, by exchanging encrypted information with the card in a predetermined sequence and checking its responses against the credit card database.
>
> Next, you would touch your credit card's fingerprint sensor pad. The matcher, a software program running on the card's microprocessor, would compare the signals from the sensor to the biometric template stored in the card's memory. The matcher would determine the number of corresponding minutiae and calculate a fingerprint similarity result, known as a matching score. Even in ideal situations, not all minutiae from the input and template prints taken from the same finger will match. So the matcher uses what's called a threshold parameter to decide whether a given pair of feature sets belong to the same finger or not. If there's a match, the card sends a digital signature and a time stamp to the point-of-sale terminal. The entire matching process could take less than a second, after which the card is accepted or rejected.

Anil K. Jain & Sharathchandra Pankanti, *A Touch of Money*, IEEE SPECTRUM ON-LINE (July 2006) *available at* http://www.spectrum.ieee.org/jul06/4123 (last visited Aug. 2, 2006).

[27] Implemented in December 1999, the Finnish cards are valid for three years. They are issued to Finish citizens and foreigners residing permanently in Finland. It is an official travel document in the EU and features a photograph and a microchip. The face of the card shows the ID card number, name, sex, personal identity code, date of expiration, nationality (Finnish citizens only), issuing authority, photograph of the holder and signature of the holder. The microchip digitally stores all of the data on the face of the card. In addition the microchip holds certificates that will allow the holder to make electronic transactions within administrations of social and health service organizations, perform on-line authentications as well as provide encryption and digital signature. Certificates hold the following information: name of the issuer of the certificate, name of the certificate holder, electronic transaction identifier of the certificate holder, validity of the certificate, data on the method for calculating the public key of the certificate holder, country code of the issuer of the certificate, serial number of the certificate data on the calculation method for signing the certificate, data on the certificate policy, data on the storage of the certificate, and other technical data needed for use of the certificate. BILLS COMMITTEE OF THE LEGISLATIVE COUNCIL: REGISTRATION OF PERSONS (AMENDMENT) BILL 2001, EXPERIENCE OF USING SMART IDENTITY CARDS IN OTHER COUNTRIES, LC PAPER NO. CB(2)2836/01-02(02) 1 & ANNEX 3-7 *available at* http://www.legco.gov.hk (last visited Feb. 23, 2006).

[28] As of July 2000, Brunei required identity cards for all citizens and permanent residents aged twelve or above, and all temporary residents staying in Brunei for longer than three months. The data collected for the Brunei card includes the name (including Chinese characters, if any) full address of place of residence, race, place and date of birth, physical abnormalities (if any), citizenship, blood type photograph, fingerprint impressions, and other information deemed necessary by the registration officer. Although confirmation was not provided by Brunei it is assumed that this information is both digitally stored on the embedded chip and available on the face of the card. *Id.* 1 & ANNEX 3-6.

[29] As of July 2001, Malaysia required identity cards for all Malaysian citizens or permanent residents aged twelve or above (approximately 18 million cards). The face of the card includes the card number, name resident address, citizenship, sex, religion (only for those of Muslim faith), the old ID card number and a serial number. The microchip stores all of the data on the face of the card, and includes a digital photo, digital fingerprint, driving license information, passport number, and expiration of passport, e-cash information. *Id.* at 1 & ANNEX 3-7.

[30] Satat Dass, Yongfang Zhu & Anil Jain, *Validating a Biometric Authentication System: Sample Size Requirements*, IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE (forthcoming 2006) *available at* *http://biometrics.cse.msu.edu/Publications/GeneralBiometrics/DassZhuJain_SampleSize_PAMI06.pdf* (last visited Aug. 2, 2006).

*European Application – The Smart ID card in the E.U.*

Accelerated by the US move to incorporate biometric identifiers in U.S. visas and a U.S. mandate that similar technology be used in foreign passports under the Visa Waiver Program,[31] European governments redoubled existing efforts toward the

[31] Theodore H. Cohen, *Cross-Border Travel in North America: The Challenge of U.S. Section 110 Legislation,* CANADIAN AMERICAN PUBLIC POLICY NO. 40 (Oct. 1999) Occasional Paper Series of the Canadian-American Center, University of Maine at Orono (noting that the automated entry-exit system for all U.S. border crossing was mandated in 1996, and that the Immigration and Naturalization Service was to have in place an operational database (without biometric identifiers) by the end of 1998 (Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), Pub. L. No. 104-208, § 110, 110 Stat. 558-59 (1996), 8 U.S.C. 1221), but that the deadline for this database assembly was pushed back in October 1998 in response to opposition from U.S. business groups bordering Canada when concerns were raised by U.S. automakers at the Detroit-Windsor crossing where just-in-time production lines crossed the border).

Because the volume of data, even with smart card technology, exceeded INS capacity Congress amended section 110 and limited the entry-exit system to the 50 most highly trafficked land ports by the end of 2004, and all ports of entry by the end of 2005 (Immigration and Naturalization Service Data Management Improvement Act of 2000 (DMIA), Pub. L. 106-215, § 2, 114 Stat. 337 (2000), 8 U.S.C. 1365a). The visa tracking system that existed prior to September 11, 2001 was improving, however it primarily covered passengers arriving by airplane and consisted of a paper form stamped at the port of entry, returned to the airline, and then entered manually into the database.

This paper-based, manual data entry system was transformed into a highly automated system of machine-readable, tamper-resistant visas and passports with digitized biometric identifiers after September 11, 2001. By October 26, 2004 all U.S. visas were required to incorporate a biometric identifier. Facial recognition (digital photo) and fingerprint scanning (electronic fingerprints) were taken of all non-immigrant visa applicants at U.S. embassies and consulates. Upon arrival the biometrics on the visa could then be compared with the biometrics of the person presenting the visa (Enhanced Border Security and Visa Entry Reform Act of 2002 (EBSVER), Pub. L. No. 107-173, §§ 301-03, 116 Stat. 552-53 (2004), 8 U.S.C. 1731-32) The database may be made available to other Federal, State and local law enforcement officials. (8 U.S.C. 1365a(f))

Citizens of the twenty-seven countries that participate in the U.S. Visa Waiver Program, many of them European (Andorra, Australia, Austria, Belgium, Brunei, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Liechtenstein, Luxembourg, Monaco, the Netherlands, New Zealand, Norway, Portugal, San Marino, Singapore, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom) are treated differently. Because individuals holding passports from these countries are allowed to enter and stay within the U.S. for 90 days without a visa, these countries were required to issue machine-readable, tamper-resistant passports containing biometric data. The deadline for biometric passports was the same as the deadline for the issuance of biometric visas, October 26, 2004. (EBSVER §303(b)(1), 116 Stat. 553, 8 U.S.C. 1732(b)(1)) With this set of requirements, all persons entering and leaving the U.S. were now subject to the same biometric data requirements.

The U.S. is pushing for comprehensive biometric identification at the borders as fast, or faster than technology and inter-governmental relations will allow. For example, the deadline of October 26, 2004 set by EBSVER for biometrics identifiers in passports issued by the countries in the Visa Waiver Program was too ambitions, and needed to be extended for one year to October 26, 2005. (Pub. L. 108-299, 118 Stat. 1100, 8 U.S.C. 1732 (August 9, 2004). But even with this extension two of the twenty-seven countries in the Visa Waiver Program (France and Italy) failed to meet the deadline, and as a result citizens of these countries will be required to secure a visa to enter the U.S. if they hold non-electronic passports issued prior to October 26, 2005. These passports are required to have digitized biometric identifiers. Valid machine-readable passports issued prior to this date are still accepted. (eGovernment News, *France and Italy Miss U.S. Passport Deadline* (Nov. 1, 2005) *available at* http://europa.eu.int/idabc/en/document/5095/355 (last visited Aug. 2, 2006).

The only exceptions to the requirement for biometrics in visas or passports to enter the U.S. involve citizens (but not permanent residents) of Canada, and citizens of the British Overseas Territory of Bermuda (unless criminally ineligible or have previously violated the terms of their immigration status).

development of an integrated system of mutually recognized passports and national identity cards, both with embedded biometric identifiers.[32] The push and pull of security and privacy concerns are more than evident in the E.U. debates. The Madrid bombings further underscored the need for immediately accurate national identity cards.[33] At the same time, longstanding concerns over the creation of new centralized databases and the digital integration of pre-existing databanks were heightened as the scope of the privacy threat posed by digital ID's was now global in scope, rather than purely local.[34]

Italy currently leads all European governments in the use of smart card technology for identification. Over 13.1 million cards have been issued as of October 2005.[35] The rest of Europe has issued about 1.8 million smart cards with Estonia (800,000) and Belgium (585,000) falling a distant second and third.[36]

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Citizens and permanent residents of Mexico must secure a Border Crossing Card (also known as Laser Visa), which is a biometric, machine-readable document obtained like a visa at US Embassies and Consulates. None of these exceptions are universal. Exceptions-to-these-exceptions apply in each instance.

[32] Thessaloniki European Council, Presidency Conclusions at 3 (Jun. 19 & 20, 2003) ("… [A] coherent approach is needed in the EU on biometric identifiers or biometric data, which would result in harmonized solutions for documents for third country nationals, EU citizens passports and information systems (VIS and SIS II). The European Council invites the Commission to prepare the appropriate proposals, starting with visas, while fully respecting the envisaged timetable for the introduction of the Schengen Information system II.") *available at* http://europa.eu.int/constitution/futurum/documents/other/oth200603_en.pdf (last visited Aug. 2, 2006).

[33] *See* REBEKAH ALYS LOWRI THOMAS, BIOMETRICS, INTERNATIONAL MIGRATION AND HUMAN RIGHTS 4 (Global Commission on International Migration, Global Migration Perspectives, No. 17, Jan. 2005).

[34] The following sequence of events is instructive. (1) On February 18, 2004 the European Commission submitted a draft resolution on standard security features and biometrics in E.U. citizens' passports. In this draft the Commission proposed that passports and other travel documents should include a storage medium with a digital facial image. Although the facial image was mandatory, Member States were allowed to add digital fingerprints into the passports by national law. The draft regulation suggests the fingerprints be stored in a national database. (COM(2004) 116 final, O.J. (C 98) 39). (2) On October 25-26, 2004 the text of the proposal was changed as a result of input from the Justice and Home Affairs Council so that both facial and fingerprint biometrics were incorporated as mandatory features. (COM 15139/2004). (3) The European Parliament's non-binding resolution of the Commission's proposal for a Council regulation was adopted on December 2, 2004 with 471 votes in favor, 118 votes against and 6 abstentions. However, the Parliament rejected both the mandatory inclusion of biometric fingerprints, and the creation of a central database of E.U. passports and travel documents. (4) On December 13, 2004 the Council adopted Regulation (EC) No. 2252/2004 which did not take into account the suggestions of the Parliament. The regulation came into force on January 18, 2005 and envisages the inclusion of digital facial images within 18 months and digitized fingerprints within 36 months after the adoption of technical specifications and standards. (5) Technical specifications and standards were adopted on February 28, 2005. (COM(2005) 409 final).

[35] IDABC [Interoperable Delivery of European e-Government Services to Public Administrations, Businesses and Citizens] E-GOVERNMENT NEWS (OCT. 13, 2005) reporting on a study published in CARD TECHNOLOGIES (indicating that of the 13.1 million smart cards 10 million are National Service Cards for the online authentication of citizens and another 2 million are electronic identity cards that include a digital photo and fingerprint of the holder, and that beginning in January 2006 these e-ID cards will replace all paper IDs with the expectation that each citizen will have one within five years) *available at* http://europa.eu.int/idabc/en/document/4985/355 (last visited Aug. 2, 2006).

[36] *Id,* at text & summary table.

*The tax impact of digital ID's in Europe.* It is not surprising therefore that the recently completed IDABC e-Government Observatory[37] benchmarking survey placed the tax administrations of Italy, Estonia and Belgium at the forefront of technological applications of e-government tax services. Each country has a national electronic portal linked to the tax administration through which taxpayers can enter into secure, encrypted, fully transactional tax relationship with the authorities. The digital capacity of each tax administration's web site facilitates far more than the mere submission of digital returns. These sites allow a full range of declarations, payments, and comprehensive forms downloading capabilities, authentication, full case handling, decision requests, confidential document deliveries and notifications.

The critical component facilitating this comprehensive range of digital tax services is the ability of the tax administration to rely (with legal certainty) on government-issued smart ID cards to accurately and securely identify taxpayers.[38]

It is clear that this comprehensive range of digital taxpayer services, accessed through e-government web portals is the consequence of the receptivity of tax administrations to technology in conjunction with the appearance of the "smart" ID. When the comparable web services of the American RSTs are examined the range of tax services provided are nowhere near as comprehensive as those in the E.U. Although American tax administrations appear equally receptive to tax technology as their E.U. counterparts, none of the American web portals can be considered fully transactional, a standard achieved in eighteen of the twenty-five E.U. Member States. The reason is clear. The U.S. lacks a nationally recognized digital ID.

*Benchmarking Digital Tax Service in the E.U.* The IDABC benchmarking survey has assessed European adoption of smart card technology for national ID's and government e-services each year for the past five years. The European Commission announced the creation of IDABC on February 22, 2001, and the Internal Market Council agreed upon the benchmarks and measured functionalities of the survey.[39] On March 23-24, 2001 the Stockholm European Council endorsed the Commission's benchmarking methodology (a grading scale from 1 to 4[40]) and the public services measured (20 basic public services – 12 for citizens and 8 for businesses). Four of the twenty public services concern tax matters – government/taxpayer relations in personal income tax, corporate income tax, VAT and customs administration.

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[37] IDABC stands for Interoperable Delivery of European e-Government Services to public Administrations, Businesses and Citizens.

[38] In Belgium and Estonia smart ID cards are mandatory for all citizens. In Italy after 2006 traditional paper ID's are no longer issued and have been replaced with smart ID's.

[39] European Commission, eGovernment Indicators for Benchmarking eEurope (Feb. 22, 2001) *available at* http://ec.europa.eu/idabc/servlets/Doc?id=18401 (last visited Aug. 2, 2006).

[40] The four benchmarks are:

1. **Informational** (only): online information about public services is provided.
2. **Interactional**: online information about public services plus downloadable forms.
3. **Two-way interactional**: online information and downloadable forms plus full processing of forms, including authentication functions.
4. **Fully Transactional**: online information, downloadable forms, full processing, authentication, plus full case handling, decision, and delivery functions, including payment.

The fifth IDABC report[41] issued in May 2006 draws three important conclusions: (1) E.U. adoption of smart ID card technologies is very fast growing. Of the twenty-five E.U. Member States: (a) seven already have national smart card ID's (five are voluntary,[42] two are mandatory[43]); (b) fourteen have smart ID card programs under development;[44] and (c) only four have no announced plans for national smart ID cards.[45] (2) All E.U. countries have web portals. Most allow direct and secure interaction between citizens and government agencies through these portals either with digital signatures contained in smart ID cards or with digital certificates issued by accrediting agencies. (3) Tax administrations have aggressively adapted to smart ID card technological opportunities. With only seven exceptions,[46] all E.U. tax administrations are benchmarked at stage "4" across all taxes – they have fully transactional relationships with taxpayers over the net. [47] Each of the seven "exceptional" cases are countries that are benchmarked at stage "4" for some, but not all, taxes.

*American Application (RST only).*

Setting out an American matrix for a comparative U.S.-E.U. assessment of smart card technologies (so that the RST and VAT can be compared) is complicated by a number of factors: (a) the jurisdictional level and number of jurisdictions at which the American RST is imposed, (b) the absence of any significant degree of national coordination of the sub-national RSTs (other than an occasional and very high-level constitution inquiry), and most significantly (c) the lack of a government-authorized e-infrastructure – a digital national ID and government-certified digital signature.

Thus, at the outset, the American states are necessarily behind the E.U. in both (1) the adoption of smart ID cards and in (2) the correlative depth of their government-taxpayer technology interface.

The American retail sales tax is a sub-national (and frequently a sub-state level) tax. Where the E.U. has twenty-five national VAT regimes coordinated by the Sixth

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[41] IDABC e-Government Observatory, e-Government in the Member States of the European Union, 5th Edition (May 2006) *available at* http://europa.eu.int/idabc/egovo (last visited Aug. 2, 2006).

[42] The five countries are: Austria, Finland, Italy, the Netherlands, and Sweden.

[43] The two countries are: Belgium and Estonia.

[44] The fourteen countries are: Cyprus, France, Germany, Hungary, Ireland, Latvia, Lithuania, Malta, Poland, Portugal, Slovakia, Slovenia, Spain and the United Kingdom.

[45] The four countries are: Czech Republic, Denmark, Greece, and Luxembourg

[46] The exceptional countries and their benchmarks in personal and corporate income taxes, VAT and customs are listed below (if not specified the benchmark is "4"):

**Czech Republic** – customs is benchmarked at 3.
**Hungary** – personal income tax is benchmarked at "3," VAT and customs benchmarked at "2."
**Latvia** – personal income tax, corporate income tax, and VAT are all benchmarked at "1."
**Luxembourg** – personal income tax and corporate income tax are benchmarked at "2."
**Poland** – personal income tax, corporate income tax, and VAT are all benchmarked at "2."
**Slovakia** – VAT is benchmarked at "2," and customs is benchmarked at "1."
**Slovenia** – customs is benchmarked at "2."

[47] The IDABC report is nearly 600 pages in length. The critical tax observations made under each of the 25 Member States are summarized *infra* APPENDIX A.

Directive, the U.S. has forty-five relatively independent States (and the District of Columbia) where RSTs are imposed. But, there are not just forty-six RSTs in the U.S. – there are 7,588.[48] The RST is found at the state, county, city, and district levels of government. These RSTs are constructed on non-harmonized bases, employ non-uniform rates, and are built upon fundamentally conflicted foundations of both destination and origin design.

Thus, although there is a structural similarity among the American RSTs there is an exceptional degree of diversity in the details. Neither federal legislation nor a significant series of constitutional rulings control the contours of these taxes.[49] This is not to say that the RSTs lack all harmonization. The sheer number of these levies has always made some coordination essential. Almost since the beginning, some states have coordinated their local level RSTs thorough "one-stop-shops" where many (or all) of the RSTs in a single state are managed through a single set of reporting rules, tax base measures, and rate restrictions.[50] These state-coordinated systems are frequently automated for reporting and payment purposes. But this assemblage of non-comprehensive one-stop-shops is a far cry from the type of control that arises in the EU VAT under the Sixth Directive where all Member States must adhere to a single set of rules, occasionally with clearly defined optional methodologies, and where derogations from standards require Commission approval.

Finally, the U.S. has no national ID, and certainly has no government standard for digital identification – it has no e-government infrastructure that will facilitate easy citizens-to-government digital correspondence. Thus, the kinds of secure digital correspondence that most citizens in the E.U. expect to have with their government as a matter of course are simply not the norm in the U.S.

The events of September 11, 2001 have changed American perceptions about digital IDs. The U.S. is far more concerned today with embedding biometric identifiers in national IDs through smart card technologies than ever before. There have been two notable U.S. pushes for these kinds of IDs – the first is for secure identity documents at

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[48] This figure is based on a recent count with the best available information, and represents 46 state level jurisdictions (including Washington, D.C.), 1,732 counties, 5,571 cities, and 229 districts. At one extreme is Texas with 1,370 taxing jurisdictions (124 counties, 1,141 cities, and 104 districts in addition to the state itself), and at the other extreme are states like Connecticut, Hawaii, and Maine where there is only one taxing jurisdiction at the state level.

[49] Walter Hellerstein, *U.S. Subnational State Sales Tax Reform: The Streamlined Sales Tax Project*, 6 (International Tax Dialogue VAT Conference, Rome, Italy (March 14-15, 2005) (indicating that, "[I]n the absence of federal legislation requiring the states to conform to some national norm, the American constitutional structure not only tolerates diversity among the states, it tends to celebrate it. … To be sure, there are constitutional constraints on the states' fiscal powers when they burden the national common market. But these restraints are limited and, in contrast to state corporate and personal income taxes that conform closely to the national model, there is no national consumption tax that serves as a similar model for the states.") *available at* http://www.itdweb.org/VATConference/Pages/Home.aspx (last visited Aug. 2, 2006).

[50] Richard T. Ainsworth, *The One-Stop-Shop for VAT and RST: Common Approaches to EU-US Consumption Tax Issues*, 2005 TAX NOTES INT'L 693 (Feb. 21, 2005).

the borders (passports and visa documents of foreigners[51]) – the second is for domestic IDs of Americans (the Real ID Act of 2005).

Based on the E.U. experience, American RST taxpayers should expect to see some changes when the American "smart" IDs are in place. The Real ID Act should significantly change the way Americans relate to their taxing authorities – even though improving this relationship was certainly not one of the stated or intended benefits of the Real ID Act. Once digital ID's (complete with biometric identifiers and encrypted digital signatures) become commonplace in America, it will only be a matter of time before taxpayers (and tax authorities) demand that a fully digital, fully transactional web portal be opened.

*The Real ID Act of 2005: An American smart ID card.* Long before September 11, 2001 some Americans saw the basic components of an American national ID system being put in place (informally). Five very large databases holding a great deal of information about Americans were constructed in the late 1980's and 1990's.[52] A national ID could be established by linking these databases. It would simply require the assignment of a unique digital identifier to every American and then merger of the databases. To make this into a useful tool against terrorist one or more biometric identifiers associated with each person would need to be added.

If done covertly such a "constructed" national ID would likely produced a public outcry – similar to the outrage seen in France when the magazine Le Monde exposed a similar French undertaking (March 21, 1979).[53] This event remains one of the reasons that smart ID cards are encountering more resistance in France than elsewhere in Europe. It also accounts for the French insistence that biometric data on smart ID cards be stored anonymously and in separate files.[54]

The American smart ID card is not being developed covertly, but it is being constructed indirectly. On May 11, 2005 President Bush signed the Real ID Act of 2005 into law.[55] The Act sets minimum document requirements for state driver's licenses, without which "… a Federal agency may not accept, for any official purpose, a driver's

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[51] Cohen *supra* note 31.

[52] Sobel, *supra* note 16, at 323, n. 10, 11, 12 & 13 (identifying these five databases as: (1) the Immigration Reform and Control Act of 1986 ("IRCA) Pub. L. No. 99-603, 100 Stat. 3359 (1986); (2) the Illegal Immigration Reform and Immigrant Responsibility Act of 2996 ("IIRIRA") Pub. L. No. 104-208, 110 Stat. 3009-546 to 3009-724 (1996); (3) the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 ("Welfare Reform Act") Pub. L. No. 104-193, 110 Stat. 2105 (1996); (4) the Health Insurance Portability and Accountability Act of 1996 ("HIPAA") Pub. L. No. 104-191, 110 Stat. 1936 (1996) and (5) the Federal Aviation Administration ID requirement and Computer Assisted Passenger Screening system ("CAPS"), and indicating that this assembly of databanks can be enhanced with data from the FBI's National Crime Information Center 2000, the Department of Transportation, the Social Security Administration and a whole series of educational databanks.).

[53] IDABC Report *supra* note 47 & *infra* APPENDIX A, at France.

[54] IDABC Report *supra* note 47 & *infra* APPENDIX A, at France.

[55] The Real ID Act started out as H.R. 418, which passed the House. It was attached to a military spending bill (H.R. 1268) and was enacted as Pub. L. No. 109-13.

license or identification card issued by a State to any person …"[56] The minimum requirements are:

(1) The person's full legal name.
(2) The person's date of birth.
(3) The person's gender.
(4) The person's driver's license or identification card number.
(5) A digital photograph of the person.
(6) The person's address of principle residence.
(7) The person's signature.
(8) Physical security features designed to prevent tampering, counterfeiting, or duplication of the document for fraudulent purposes.
(9) A common machine-readable technology, with defined minimum data. [57]

Two parts of this federal legislation make the Real ID into a *de facto* national ID in the minds of many: (1) the standardized requirements specifying how the states must verify the minimum required data on driver's licenses[58] and the related requirement that the source documents for this verification be retained in digital files,[59] and (2) the requirement that all states link their databases.[60]

There is opposition to the Real ID Act of 2005.[61] But there are also significant levels of support. Some states, Tennessee and Utah for example, complied with the licensing aspect of this legislation well in advance of its effective date (May 11, 2008).[62] However, the more costly aspect, the scanning of all source documents and the assembly of the digital database, is not being carried out early.[63] States are waiting for federal funding and regulation.[64] California passed legislation several times[65] that closely (but

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[56] *Id.* at § 202 (a)(1).
[57] *Id.* at § 202 (b).
[58] *Id.* at § 202 (c)(2)(B) & (3).
[59] *Id.* at § 202 (d)(1).
[60] *Id.* at § 202 (d)(12).
[61] The NH House and Senate passed a resolution, "…declare[ing] its opposition to the federal Real ID Act of 2005, Public Law 109-13, and urges Congress to enact its repeal keeping the State out of the Real ID Act." The reason for the resolution was specifically that "… the collection of biometric identifying information, … is an intrusion of privacy; … [that it] creates a de facto national identification card … [and that ] the costs imposed on the states by the Real ID Act … may run well into the hundreds of millions of dollars over the next 5 years;" 2006 N.H. S. Con. Res. 8.
[62] Both Utah S.B. 227 amending the Utah Code [Utah Code § 53-3-207 (1)(b)] effective March 8, 2005 and Tennessee S.B. 3430 [Tenn. Code Ann. § 55-50-102 (18)] effective May 29, 2004 passed laws to implement the Real ID Act before the Real ID Act was signed into law federally. hat are issuing driving privilege, or certificate cards under the Real ID Act, § (c)(2)(C) for individuals who cannot prove their legal status in the U.S. to obtain liability insurance, although with a "temporary diver's license." These documents are valid for one year and are clearly marked an not qualifying as a "real ID."
[63] The legislation in Tennessee has no provision for retaining a digital record of source documents, and the law in passed in Utah only requires that the Social Security Numbers (SSN) or Temporary Identification Number (ITIN) be retained in digital files. [Utah 53-3-205(9)(b)].
[64] Real ID Act *supra* note 55, at §204(a) & (b).
[65] AB 2895. Passed Aug. 27, 2004. Vetoed Sept. 22, 2004. Re-introduced as S.B. 60, passed Sept. 8, 2005, vetoed Oct. 10, 2005. Re-introduced as S.B. 1160 Jan. 10, 2006. S.B. 1160 does not contain a provision that would make the temporary licenses visibly different from regular licenses.

not exactly) conformed to the Real ID Act. The California legislation failed to include a provision on "temporary drivers' licenses" (those issued to people who failed to meet the data verification requirements – primarily illegal immigrants) that would make these documents visibly different from the standard license. Governor Schwarzenegger vetoed the earliest version of this legislation on cost considerations (September 22, 2004) and then vetoed the follow-up legislation (October 7, 2005). Legislation has been reintroduced.

*The Function Creep Effect (Linear and Hyper)*

The Hong Kong survey observed that function creep was one of most notable characteristics of national identity smart cards. E.U. documents refer to this characteristic as "the diffusion effect."[66] Function creep occurs when new technology (in this instance biometrics in identity cards) becomes so established or accepted in a society that adaptations both unforeseen and unintended by the technology initiators become commonplace.[67]

In many respects, this paper is all about function creep – function creep with beneficial[68] tax applications. Its major premise is that when a jurisdiction with a technology-receptive tax administration adopts a national identity smart cards system, changes will be seen in the basic delivery of tax services – pre-existing online information, downloadable forms, processing, and authentication services will be supplemented with fully digital case handling, decisions, and delivery functions.

However, there are two distinct kinds of function creep – one is passive and predictable (*linear function creep*), while the other is active and dynamic (*hyper function change*). Linear function creep is a natural and intuitive extension in digital form of a formerly non-digital process. Comparing the tax functionality of the e-government interface in the E.U. with the similar interface in the states of the U.S one can predict the direction of change. The U.S. portals are not nearly as robust as those in the E.U., and the reason is the absence of a national ID with secure digital features in the U.S. Thus, a

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[66] BIOMETRICS AT THE FRONTIERS, *supra* note 25, at 10.

[67] John T. Cross, *Comment: Age Verification in the 21st Century: Swiping Away Your Privacy*, 23 J. MARSHALL J. COMPUTER & INFO. L. 363 (2005) (discussing the common use of driver's licenses for age verification at bars and convenience stores by swiping the license through a scanning machine that then records name, address, expiration date, and sometimes social security number, electronic fingerprint and the electronic image of the holder, and the lack of state of federal laws protecting the data); Rina C.Y. Chung, *Hong Kong's "Smart" Identity Card: Data Privacy Issues and Implications for a Post-September 11th America*, 4 ASIAN-PACIFIC L. & POL'Y J. 442 (2003) (discussing instances where bar management uses scanned ID data to "… develop customer lists based on specific characteristic, and target groups of customers for a particular event (e.g., an 'all-male-performer show" that would appeal to women in the 21-34 age range)," an example which is based on a news report by Jennifer Lee, *Welcome to the Database Lounge*, N.Y. TIMES, MAR. 21, 2002, at G1.)

[68] REBEKAH ALYS LOWRI THOMAS, GLOBAL MIGRATION PERSPECTIVES : BIOMETRICS, INTERNATIONAL MIGRANTS AND HUMAN RIGHTS 11-13 (Global Commission on International Migration, Research Paper No. 17, Jan. 2005) (indicating that function creep's downside is the privacy concerns raised by increased profiling, skimming of data, private companies improperly obtaining [retaining] data, and the use of comprehensive cross-data-base searching all because biometrics embedded in national identity cards provide the "handle" to do so, resulting in abusive 'stop and search' procedures for migrants). *See supra* note 14.

predictable result of the adoption of a national smart ID with encrypted digital signature functionality in the U.S. would be advances in tax services through the U.S. e-portals along lines of the E.U.

The Malaysian identity card provides several good examples of linear function creep. Formally called the Government Multi-Purpose Card (GMPC) the Malaysian card is the product of an open-ended collaboration of five government agencies, the National Registration Department, the Road Transportation Department, the Immigration Department, the Ministry of Health and the Royal Malaysian Police. The Malaysian card functions as a passport, a driver's license, and an access card to government facilities. The open infrastructure of the card allows it to serve in the private sector – and this is the function creep effect – as E-cash and an Automated Teller Machine (ATM) access card, as well as a vehicle for the payment of fees for public transport services, and "Touch and Go" auto toll and parking services. The implementation of Public Key Infrastructure (PKI) within the cards in 2003 allows e-commerce transactions and ensures the authenticity and integrity of data.[69] The ID card legislation in Malaysia does not restrict future incorporation of additional non-government data on the card.[70] The same is true in Finland and Brunei.[71]

But more than linear function creep is possible. With active intervention the government can merge the digital ID with other marketplace technologies to not only improve the basic delivery of tax services, but to reform the system itself – a wholesale re-composition of the structure of the consumption tax. This intervention can transform the consumption tax into a truly and independently progressive tax. National IDs with smart chips will allow the surgical identification of taxpayers-in-need, those who are entitled to tax exempt status when purchasing necessities. This can be done without compromising the broad base of the tax on the same supplies made to members of society. This is a reform that will target the regressvity that is inherent in all contemporary consumption tax regimes (VATs as well as RSTs). This is more than a *linear function creep* it is a *hyper*[72] *function change*.

*Prediction – Linear function creep in state RST administration.* If funding for the construction of the American digital database is made available to the States, and if political opposition remains mild, then it seems reasonable that some time between 2008 and 2010 the U.S. will have a smart national ID card. In addition, because the Real ID

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[69] REGISTRATION OF PERSONS (AMENDMENT) BILL 2001, EXPERIENCE OF USING SMART IDENTITY CARDS IN OTHER COUNTRIES *supra* note 27 at 3 & ANNEX 15-16.

[70] REGISTRATION OF PERSONS (AMENDMENT) BILL 2001, EXPERIENCE OF USING SMART IDENTITY CARDS IN OTHER COUNTRIES *supra* note 27 at ANNEX 15-16.

[71] REGISTRATION OF PERSONS (AMENDMENT) BILL 2001, EXPERIENCE OF USING SMART IDENTITY CARDS IN OTHER COUNTRIES *supra* note 27 at ANNEX 15-16.

[72] Joe Burns, *Basic HTML*, in HTML GOODIES (defining "hyper" in the context of the **H**-T-M-L initials that stand for **H**yper **T**ext **M**arkup **L**anguage. "… **Hyper** is the opposite of linear. It used to be that computer programs had to move in a linear fashion. This [comes] before this, this [comes] before this, and so on. HTML does not hold to that pattern and allows the person viewing the World Wide Web page to go anywhere, any time they want.") *available at* http://www.htmlgoodies.com/primers/html/article.php/3478141 (last visited Aug. 2, 2006).

Act only sets minimum standards for card content, the American card, like most smart ID cards globally, will be open for new uses and new data elements. The addition of a legally recognized, state or federally certified digital signature embedded in the card is only the most obvious addition – the Real ID Act only demands that an individual's physical signature be captured.[73] Thus, based on E.U. and other country experiences with open technology smart IDs, once the ID becomes widely held, is easily and frequently used by a large portion of the population, at low or no cost to government and citizen, then tax delivery services begin to change. To measure the extent of the change that should be expected in the U.S. one simply needs to benchmark the current system and project developments along the E.U. trajectory.

*Benchmarking Digital Tax Services in the American RSTs.* Applying the benchmarks developed by IDABC e-Government Observatory to the U.S. states, the difference in the level of technical facility is striking. The most extreme case are the two states that still do not allow e-filing of any sales and use tax returns (Colorado and Michigan). No E.U. country is at this level. More generally however, the place where divergence is most apparent is the observation that the E.U. tax administrations were commonly benchmarked at "stage 4, " whereas the U.S. states are all benchmarked at "stage 3" or lower.[74]

In all cases what is missing from the U.S. systems is the digital handling of the full range of case activities,[75] decision requests, confidential document deliveries and notifications, declarations, and authentications that are standard in the E.U. systems. All of these functions require secure identity verification, something readily found in smart ID cards with an embedded, encrypted digital signature.

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[73] Real ID Act *supra* note 55, at §202(b)(7).

[74] The results from applying the four-part IDABC benchmarking standard at the U.S. state level are summarized *infra* APPENDIX B. This summary only applies to the RST. Thus, it covers only forty-five states plus the District of Columbia. In APPENDIX A the comparable analysis for the E.U. was much broader. It included all taxes, and was divided into three categories: *(1) Smart ID Cards*; *(2) Electronic Portal*; and *(3) Tax Administration & Technology*. The same scope and breakdown is not followed in APPENDIX B. The scope is more limited, and the analysis is focused on category three: *Tax Administration & Technology*. The first category (*Smart ID Cards*) is applicable in no state, and the second category (*Electronic Portal*) has been fully functional in every state for some time. The issue considered was whether a state's tax web site operates at "stage 1," "stage 2," "stage 3," or "stage 4" with respect to the state-level consumption tax, a *Tax Administration & Technology* question. The information is a "snapshot" collected on July 18, 2006. Changes are occurring so rapidly in this area that this profile will be out-of-date shortly. [NOTE: A new category of "almost stage 3" seemed appropriate, and was used on occasion.]

[75] N.Y. DEP'T. OF TAX & FINANCE, RELEASE (Sept. 23, 2003) *at* http://www.tax.state.ny.us/press/archive/2003/nelectronicserv.htm (last visited Aug. 2, 2006). Although the State of New York announced in September 2003 that taxpayers would be allowed to access a new electronic service for sales taxes through the Business Service Center. Taxpayers can request a password to view or pay open assessments. After requesting a password on-line, taxpayers can log into the Business Service Center and view their "Consolidated Statement of Tax Liabilities" which will display the real-time status of a taxpayer's open assessments, including any balance due.

Considered as a whole, there is considerable variation in the U.S. systems. Some remain reliant on paper processes (Arizona,[76] Arkansas,[77] Connecticut,[78] and Missouri[79]), while others make state e-payments dependent on the taxpayer's federal e-payment commitment (Rhode Island,[80] and Vermont[81]). In other states e-filing and e-payment solutions are offered selectively. Some discriminate based on tax type (Washington[82]), while others discriminate within a tax type based on types of sales and use tax returns (California,[83] Illinois,[84] Kentucky,[85] New Mexico,[86] and Utah[87]). Some states allow e-filing only when the taxpayer is making e-payments (Illinois,[88] South Dakota,[89] and

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[76] All e-filed returns must be maintained on paper for six years. ARIZ. REV. STAT. § 42-1105(F)

[77] Paper signature cards must be retained for electronically filed returns. ARK. Reg. 2000-2(1) (E) & (F) & 5(A). amended returns must be filed on paper with "Amended" printed or stamped at the top of the return. (KY. REV. STAT. ANN. § 45.345;

[78] Registration requires a form to be downloaded, completed and then mailed to the tax office. The tax office then mails the taxpayer a user ID and password providing access to the eTSC site. OFFICE OF TAX & REV., NOTICE REGARDING ELECTRONIC FILING REQUIREMENTS (Jan. 15, 2004). Similar requirements can be found widely: Florida requires completion of the Registration/Authorization Form (Form DR-600F) and the Electronic Filing Agreement (Form DR-653).

[79] Missouri Department of Revenue web site: http://www.dor.mo.gov/tax/business/payonline.htm (last visited Aug. 2, 2006) (requiring a duplicate set of paper returns for all returns filed electronically).

[80] R.I. DIV. OF TAXES, FEDERAL/STATE ONLINE FILING, *at* http://www.tax.state.ri.us/elf/on-line.htm (last visited Aug. 2, 2006) (indicating that, in order for the Rhode Island e-filing and e-payment system to work a taxpayer must file both a federal and state return, and that if a taxpayer has already filed a federal return using another electronic filing service, state returns cannot be filed electronically).

[81] VT. STAT. ANN. tit. 32, §§ 9243 (indicating that the Commissioner can mandate state e-payment if a taxpayer is making federal e-payments).

[82] The Washington taxes subject to the EFT requirement include all taxes administered by the Department of Revenue under WASH. REV. CODE § 82.32, with the following exceptions: city and town taxes on financial institutions (WASH. REV. CODE § 82.14A); county tax on telephone access lines (WASH. REV. CODE § 82.14B; cigarette tax (WASH. REV. CODE § 82.24); enhanced food fish tax (WASH. REV. CODE § 82.27); leasehold excise tax (WASH. REV. CODE § 82.29A); and forest tax (WASH. REV. CODE § 82.33).

[83] CA. SBE TAX INFO. BULL. No. 12-1-05 (Dec. 1, 2005) (indicating that e-filing is not allowed in California for taxpayers required to make prepayments or to pay taxes by electronic funds transfer (EFT)).

[84] 20 ILL. COMP. STAT. ANN. 2505/39c-1a; ILL. ADMIN. CODE tit. 86, § 760.100 (indicating that e-filing is voluntary in Illinois, and limited to two sales and use tax forms, Form ST-1 (Sales and Use Tax Return) and Form ST-2 (Multiple Site attachment for Form ST-1)).

[85] KY. REV. STAT. ANN. § 45.345 (indicating that amended returns must be filed on paper with "Amended" printed or stamped at the top of the return).

[86] 13th month returns, those using special rates, and all amended returns. These returns must be filed on paper forms. *See* "Who can use this system" at https://ec3.state.nm.us/crs-net/help/WhoUse.htm (last visited Aug. 2, 2006).

[87] UTAH STATE TAX COMMISSION, ONLINE SALES AND USE TAX FILING *at* http://tax.utah.gov/sales/salestaxonline.html (last visited Aug. 2, 2006) (indicating that sales and use tax returns that must be filed on paper include TC-61F, TC-61FV, TC-61T, and TC-61W, and that in addition amended returns and late-filed returns remain paper-based even though most but not all sales and use taxpayers are able to make payments on line).

[88] Although voluntary the Illinois system limits e-filing to two sales and use tax forms, Form ST-1 (Sales and Use Tax Return) and Form ST-2 (Multiple Site attachment for Form ST-1) (20 ILL. COMP. STAT. ANN. 2505/39c-1a; ILL. ADMIN. CODE tit. 86, § 760.100). Voluntary electronic funds transfer are also limited, but not in a harmonious manner. E-payments are voluntary with the following forms: ART-1 (payment only); PST-1 (payment only); PST-3, (for accelerated sales tax filers); RR-3 (for accelerated sales and use tax filers). (ILL. ADMIN. CODE tit. 86, § 750.500(e)).

[89] 2006 S.D. LAWS H1048, §1; S.D. CODIFIED LAWS § 10-46E-7; S.D. CODIFIED LAWS § 10-59-39 (recent legislation linking e-payment and e-filing by requiring taxpayers to e-file a return by the 23rd day of the

Texas[90]), while others do the reverse allowing e-payments, but not the e-filing of the related return (Michigan[91]). Still other states view e-payment requirements in tax-enforcement rather than purely tax-efficiency terms (Vermont[92]).

This is not to say that American jurisdictions could not achieve E.U. levels of performance without national smart ID cards. A number of E.U. Member States use agency-specific certifications of digital signatures to achieve "stage 4" benchmarking, but this is normally a temporary accommodation as the country moves toward a national digital ID and a single electronic portal facilitating all citizen-to-government and government-to-citizen correspondence.[93] With 7,588 RST jurisdictions however, the U.S. cannot move ahead with multiple "smart" IDs, one for each jurisdiction. What the U.S. needs is a single federal level "smart" ID and authenticated digital signature regime. This will allow the U.S. to move strongly to "stage 4" benchmarking. When the Real ID provides this functionality the linear function creep of this technology – something that has been observed from Hong Kong to the E.U. – will have a significant impact on State tax administrations. Much more is possible however, if national IDs are linked to a fully digital consumption tax operating with certified compliance software.

## PART II:
## FULLY DIGITAL CONSUMPTION TAX REGIMES

"Smart" national IDs are part of a larger technology context that is having a dramatic effect on consumption tax administration. Both mandatory and voluntary national identity smart card systems are being developed simultaneously with E.U. and U.S. experimentation in fully digital VATs and RSTs (on a voluntary business participation basis). The Digital Sales Directive in the E.U. provides for a paperless VAT reporting and payment environment for non-established businesses selling to final consumers in the E.U.[94] In similar fashion the Streamlined Sales Tax under the certified service provider (CSP) model allows businesses to enter a paperless world of RST compliance. It will soon be time for these "pilot" programs to be expanded, and to be linked with the "smart" ID.

### *Digitizing the VAT in the E.U.*

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month following each monthly period if they e-pay the tax by the second to the last day of the month following each monthly period).

[90] TEX. TAX CODE ANN. tit. 111, § 626 (providing for mandatory e-filing linked to mandatory e-payment, and therefore the e-filing of a sales and use tax return is required if the tax payments are required under EFT).

[91] MICH. COMP. LAWS §§ 205.56(3); 205.96(3).

[92] VT. STAT. ANN. tit. 32, §§ 9243 (providing the Commissioner with the authority to mandate state e-payments if prior payments by the taxpayer were with checks that were uncollectible)

[93] IDABC Report *supra* note 47 & *infra* APPENDIX A, at Cyprus, Czech Republic, France, Germany, Greece, Luxembourg, Malta, Portugal, Slovakia, Spain, and the United Kingdom (indicating that in these countries there is a "stage 4" tax web site without a national ID, thus the certification of the digital signature is by the tax administration).

[94] Set to expire on June 30, 2006 the Digital Sales Directive was extended to December 31, 2006. Council Directive 2006/58/EC of 27 June 2006 amending Council Directive 2002/38/EC as regards the period of application of the value added tax arrangements applicable to radio and television broadcasting services and certain electronically supplied services, 2006 O.J. (L 174) 5

Digitizing the VAT in Europe is part of a broad effort to bring the efficiencies of an information society to the E.U. Dubbed the "Lisbon Strategy,"[95] this is an effort to make the E.U. a more competitive, dynamic knowledge-based economy, with improved employment and social cohesion by 2010.[96] A number of changes have been made in the Sixth Directive in line with this movement. Council Directive 2001/115/EC of December 20, 2001[97] and Council Directive 2002/38/EC of May 7, 2002[98] were two of the key decisions moving the European VAT in the digital direction.

*Digital notices, digital returns, digital periodic and recapitulative statements.* Council Directive 2002/38/EC of May 7, 2002 made four significant changes to the Sixth Directive with respect to digitizing the VAT. First, the requirement to provide notice that taxable activity has begun, or has terminated,[99] can now be performed in every Member State electronically, and if a Member State wants to it can require all taxpayers to do so.[100] Secondly, VAT returns that formerly were entirely paper, may now be filed in every Member State electronically. And as with the notices of activity beginning and ending, a Member State has the option to require that all VAT returns be filed electronically.[101] Similar changes were made in provisions relating to both periodic statements, and recapitulative statements. Each may be filed electronically, or may be subject to a Member State's requirement that all such statements be electronically filed.[102]

There is a common theme in these modifications of the Sixth Directive. In each instance Council Directive 2002/38/EC applies a two-part structure, first allowing any taxpayer throughout the EU (at their own election) to file documents electronically

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[95] European Commission, eEurope - An Information Society for all, COM(2000)0130 final *available at* http://europa.eu.int (last visited Aug. 2, 2006) (indicating that the "Lisbon Strategy" is a shorthand expression for the broad e-commerce policy objectives set out at the Lisbon European Council of March 24 and 24, 2000).

[96] Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, *eEurope 2005: An Information Society for All. An Action Plan to be Presented in view of the Sevilla European Council, 21/22 June 2002.* COM(2002)263 final, *available at* http://ue.eu.int (last visited Aug. 2, 2006) (presenting the specific steps expected to be taken to achieve the "Lisbon Strategy" by 2010).

[97] Council Directive of 20 December 2001 amending Directive 77/388/EEC with a view to simplifying, modernizing and harmonizing the conditions laid down for invoicing in respect of the value added tax. 2001/115/EC, 2002 O.J. (L 15) 24, *available at* http://europa.eu.int (last visited Aug. 2, 2006) [The Invoicing Directive].

[98] Council Directive of 7 May 2002 amending and amending temporarily Directive 77/388/EEC as regards the value added tax arrangements applicable to radio and television broadcasting services and certain electronically supplied services, 2002/38/EC, 2002 O.J. (L 128) 41 *available at* http://europa.eu.int (last visited Aug. 2, 2006) [The Digital Sales Directive].

[99] *Sixth Council Directive* 77/388/EEC of May 17 1977, at Former Art. 22(1)(a), 1977 O.J. (L 145) 1, *available at* http://europa.eu.int (last visited Aug. 2, 2006).

[100] *Id.* at (New) Art. 22, added by The Digital Sales Directive, *supra* note 98.

[101] *Id.* at (New) Art. 22(4)(a), as amended by The Digital Sales Directive, *supra* note 98.

[102] *Id.* at (New) Art. 22(6)(a), as amended by The Digital Sales Directive, *supra* note 98. (on periodic statements); Article 22(6)(b), as amended by The Digital Sales Directive, *supra* note 98 (on recapitulative statements).

instead of on paper, and secondly, permitting Member States to go further, mandating electronic submission of these documents by all taxpayers.

*Digital invoices.* Far more important to digitizing the VAT are the efforts made under Council Directive 2001/115/EC to begin the process of digitizing the invoice.[103] The bedrock principles of the European VAT are embedded in the invoice.[104] Almost all critical legal, accounting, reporting, and enforcement issues are tied to information found on the invoice.[105] An invoice performs three basic functions: (1) it contains the information needed to determine which VAT regime is applicable to a particular transaction, (2) it enables tax authorities to carry out enforcement controls, and (3) it allows the purchaser to prove their right to deduction.[106]

There is nothing in the original Sixth Directive that considers electronic invoicing. Old Article 22(3)(c) is silent.[107] Through Article 28h Council Directive 2001/115/EC amends Article 22(3)(c) to unambiguously authorize the use of electronic invoices, subject to a customer's acceptance.[108] The amendments of Article 28h go to great lengths to establish a new legal framework within which Member States must accept electronic invoices. "Invoices sent by electronic means shall be accepted by Member States provided that the authenticity of the origin and integrity of the contents are guaranteed [either] by means of advanced electronic signature[109] … or by means of electronic data interchange[110] (EDI)…"[111]

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[103] Proposal for a Council Directive amending Directive 77/388/EEC with a view to simplifying, modernizing and harmonizing the conditions laid down for invoicing in respect to value added tax. (November 17, 2000) COM(2000)650 final at 6, *available at* http://europa.eu.int (last visited Aug. 2, 2006) (referencing a study carried out for the Commission estimated the cost of an electronic invoice at EUR 0.28 to 0.47, as against EUR 1.13 to 1.65 for a traditional invoice resulting in a savings per invoice could between EUR 0.66 to 1.37).

[104] *Sixth Directive*, *supra* note 99, at (New) Art. 22, as amended by The Digital Sales Directive, *supra* note 98 (listing seven other critical administrative aspects of the European VAT as: (1) registration, (2) identification numbers, (3) keeping accounts, (4) keeping a register, (5) submitting a return, (6) submitting a statement, and (7) submitting a recapitulative statement).

[105] ALAN SCHENK, ABA SECTION OF TAXATION, VALUE ADDED TAX – A MODEL STATUTE AND COMMENTARY, 120 n. 172 (1989) ("The seller's invoice is a key element in an invoice VAT. At levels before the retail sale, the VAT listed on the seller's invoice can be used to cross-match the seller's output tax liability against the buyer's input credit on its purchases. … Experience in Europe suggests that civil servants do not have much time to cross-match invoices. *See* Carlson, *Value Added Tax: European Experiences and Lessons for the United States*, reprinted in 1980 Department of Treasury (Office of Tax Analysis) 51. Korean and Taiwan have relied on an elaborate computer system of cross-matching invoices sent to the government by the seller and the buyer.").

[106] Case 123/87, Léa Jorion, née Jeunehomme v. Belgian State, 1988 E.C.R. 4517 (AG Sir Gordon Slynn famously characterized the invoice as "the 'ticket of admission' to right to deduct.").

[107] *Sixth Directive*, *supra* note 99, at (New) Art. 22(3)(c), as amended by Article 28h added by The Digital Sales Directive, *supra* note 98 ("The Member State shall determine the criteria for determining whether a document serves as an invoice.").

[108] *Id.* at (New) Art. 22(3)(c), as amended by Article 28h added by The Digital Sales Directive, *supra* note 98 ("Invoices issued pursuant to point (a) may be sent either on paper or, subject to an acceptance by the customer, by electronic means.").

[109] *Id.* at (New) Art. 22(3)(c), as amended by Article 28h added by The Digital Sales Directive, *supra* note 98 (specifically referencing the electronic signatures rules in Article 2(2) of Directive 1999/93/EC, of 13

It is clear that conditions are expected to develop, to change over time. The amendments to Article 22(3)(c) made by Article 28h include a provision that: "The Commission will present, at the latest on December 31, 2008, a report, together with a proposal, if appropriate, amending the conditions on electronic invoicing in order to take account of possible future technological developments in this field."

The two-part theme of Council Directive 2002/38/EC (allowing any taxpayer at their own election to file electronically and then permitting Member States to mandate an electronic submission) is not carried over into the invoicing adjustments made by Council Directive 2001/115/EC. Missing is the authority for a Member States to mandate electronic invoices. Additionally, electronic invoicing is not left entirely to the seller's discretion. It is the buyer's acceptance of an electronic form of invoicing that is the critical pre-condition to usage.

Two additional modifications to Article 22 by Council Directive 2001/115/EC have a direct impact on electronic invoicing. These adjustments pave the way for standardization of the electronic invoicing process – first by allowing for third-party involvement in preparation of invoices (outsourcing the invoice) – secondly by setting out exclusive, uniform legal requirements for valid invoices.

Original Article 22(3) required the taxable person to issue his or her own invoice. Council Directive 2001/115/EC amends Article 22(3)(a) in the following manner (additions in italics):

(a) Every taxable person shall *ensure that an invoice is issued, either by himself or by his customer or, in his name and on his behalf, by a third-party*, in respect of goods and service which he has supplied or rendered to another taxable person or to a non-taxable legal person. Every taxable person shall also *ensure that an invoice is issued either by himself or by his customer or, in his name and on his behalf, by a third party,* in respect of the supplies of goods, …

Similarly, original Article 22(3)(b) referred to a non-exhaustive list of statements that needed to be mentioned on the invoice. The list could be extended by any Member State if it wished. Amended Article 22(3)(b) harmonizes the statements required on an invoice[112] and removes the authority of local administrations to require additional

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December 1999 on a Community framework for electronic signatures, 2000 O.J. (L 13)12, *available at* http://europa.eu.int (last visited June 9, 2006)).

[110] *Id.* at (New) Art. 22(3)(c), as amended by Article 28h added by The Digital Sales Directive, *supra* note 98 (specifically referencing electronic data interchange (EDI) as defined in Article 2 of Commission Recommendation 1994/820/EC of 19 October 1994 relating to legal aspects of electronic data interchange 1994 O.J. (L 338) 98, *available at* http://europa.eu.int (last visited June 9, 2006)).

[111] *Id.* at Art. 22(c)(second paragraph), as amended by The Invoicing Directive, *supra* note 97.

[112] *Id.* at Art. 22(3)(b), as amended by The Invoicing Directive, *supra* note 97 (listing the 12 items that must appear on an invoice, and two more (13 and 14) that may occasionally appear:

(1) the date of issuance of the invoice;
(2) a sequence number that uniquely identifies the invoice;
(3) the VAT identification number of the seller;

statements. In addition, the third subparagraph of Article 22(3)(b) stipulates that: "Member States shall not require invoices to be signed." The Explanatory Memorandum to the Proposal indicated that this provision was needed to remove yet another potential barrier to electronic invoicing.

*The Test Case: The Digital Sales Directive – Article 26c.* The Lisbon European Council focused the Commission's attention on one particularly troublesome aspect of digital commerce, the sale of digital products to non-taxable EU customers by non-EU businesses. The technical issue was sourcing, the place of supply. The Sixth Directive sourced these supplies outside the EU, making them not subject to VAT. Consumption (use and enjoyment) however, was clearly occurring within the EU.[113]

The solution worked out by the Commission had technical and practical aspects. On the technical side, as of May 7, 2002 all electronically supplied services from non-EU businesses were listed within the exceptions of Article 9(2)(e). A special rule dealing with similar B2C transactions was added in Article 9(2)(f). Thus, VAT now became due on these sales. The place of supply had been moved within the EU.

Working out the practical side of this solution was more complicated – involving the first application of a completely digital solution to a theoretical VAT problem in E.U. VAT law. There are several aspects of the solution. First, B2B transactions (non-E.U. businesses supplying E.U. businesses), by far the largest part of e-commerce in monetary terms, were handled rather simply through a reverse charge procedure.[114] The second aspect dealing with B2C transactions (non-E.U. businesses supplying E.U. final consumers) promised to be a bigger problem. Because consumers do not file VAT returns (they are not "taxpayers" in VAT terms) a reverse charge procedure is not

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(4) the VAT identification number of the buyer (if the customer is required to pay VAT on the transaction);
(5) full name and address of the buyer;
(6) the quantity and nature of the good/ extent and nature of the services supplied;
(7) the date on which the supply was completed, or the date on which the payment was made – in so far as that date can be determined and differs from the date of issuance of the invoice, (1) above;
(8) the taxable amount; unit price exclusive of tax, discounts, and rebates;
(9) the VAT rate applied;
(10) the VAT amount payable;
(11) where either an exemption applies, or where the buyer is liable self-assess the VAT, reference to the section of the *Sixth Directive* or the national law that allows this procedure;
(12) special rules for the supply of new means of transportation require particulars under Article 28a(2);
(13) special rules related to margin schemes require reference to national laws;
(14) in instances where a tax representative is used, then the VAT identification number as well as the name and address of that representative needs to be listed).

[113] *Id.* at Art. 9(1) (presenting the specific sourcing issue, the fall back sourcing provision, that placed any service not covered in the series of exceptions that make up the rest of Article 9 into a residual category that sourced the supply where the supplier was located, thereby placing the supply in the US for digital sales by many US companies into the EU).

[114] *Id.* at Art. 21 (indicating that a reverse charge is a self-assessment obligation imposed on businesses purchasing taxable supplies).

possible. The only solution for B2C sales was to require the non-EU business to collect and remit the tax.

Under the then current rules, for those businesses willing to comply there were essentially two options. They could either (1) establish themselves in a Member State,[115] or (2) register in each Member State where they made taxable supplies.[116] Neither option was optimal. Although under the first option all digital sales would be sourced to one EU jurisdiction, the place where the business was established (Article 9(1)), establishment itself led to direct tax obligations. The formerly non-EU business would become a real EU business for tax and regulatory purposes. Sourcing of sales under this option would be origin-based. The second option also had disadvantages. Under this option a business could conceivably be required to register in 25 Member States, file 25 sets of VAT returns, and do so in as many as 20 different languages. Sourcing of sales under this option would be destination-based.

Article 26c was adopted to provide a third alternative. This was a one-stop-shop option. It allowed non-EU established businesses to select a single "Member State of identification" where they could register, but not be established, under a simplified arrangement. VAT from sales made throughout the EU would be determined on a destination-basis using the rates and rules of the jurisdiction where the customer resided. However the VAT collected on these sales would be paid over to the Member State of identification on a single electronic return.

Importantly, Article 26c requires all communication between the taxpayer and the Member State to be electronic, if the taxpayer elects to file according to this special scheme.[117] Registration and all notifications about changes in status,[118] statements and recapitulative statements,[119] filing of returns,[120] payments of VAT amounts due and collected,[121] and even communications by the Member State to the non-established

[115] *Id.* at Art. 9(1) (indicating that in this instance the place of supply for digital services would be the Member State where the supplier is established, thereby subjecting the business to direct taxation in that state).
[116] *Id.* at Arts 9(2)(f) & 21 (indicating that the place of supply of digital services is where the customer resides, and requiring registration and the filing of returns in as many as 25 States).
[117] *Id.* at Art. 26c(B)(1).
[118] *Id.* at Art. 26c(B)(2) ("The non-established person shall state to the Member State of identification when his activity as a taxable person commences, ceases or changes to the extent that he no longer qualifies for the special scheme. Such a statement shall be made electronically.").
[119] *Id.* at Art. 26c(B)(9) ("The non-established taxable person shall keep records of the transactions covered by this special scheme in sufficient detail to enable the tax administration of the Member State of consumption to determine that the value added tax return referred to in (5) is correct. These records should be made available electronically on request to the Member State of identification and the Member State of consumption.").
[120] *Id.* at Art. 26c(B)(5) ("The non-established taxable person shall submit by electronic means to the Member State of identification a value added tax return for each calendar quarter …").
[121] *Id.* at Art. 26c(B)(7) ("The non-established taxable person shall pay the value-added tax when submitting the return. Payment shall be made to the bank account denominated in Euro, designated by the Member State of identification.").

taxpayer,[122] must be in electronic form. Article 26c therefore presents in microcosm a fully functional digital VAT. If elected by the taxpayer, Member States are required to accept and engage in this fully digital relationship.[123] It is estimated that approximately 617 taxpayers participate in the Article 26c digital VAT.[124]

*Digitizing the RST in the U.S*

Digitizing the American RST is a daunting task. The minimum standard for a digital consumption tax is an e-filed tax return. However, in a significant number of U.S. states with RSTs there are limited provisions for e-filing returns, to say nothing of all the other e-functionalities that constitute a fully transactional ("stage 4") e-tax system under IDABC benchmarking – the capacity for a full range of digital declarations, comprehensive forms downloading capabilities, digital authentication, full case handling, decision requests, confidential document deliveries and notifications all through a secure digital medium and uniform web portal. In a 2006 survey the Federation of Tax Administrators examined e-filing options in sales and use taxes in the forty-five states (plus the District of Columbia). The FTA identified thirteen states[125] (containing 854 discrete RST jurisdictions[126]) that had significant paper return filing requirements.

In the majority of states that do have e-filing functionality, the system is voluntary – paper filing remains a common practice. Many states have made e-filing mandatory for "large" taxpayers, although the definition of a "large taxpayer" varies from state to state.[127] At the present time the three main electronic solutions for RST e-filing in the

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[122] *Id.* at Art. 26c(B)(3)(second paragraph) ("The Member State of identification shall notify the non-established taxable person by electronic means of the identification number allocated to him.").

[123] Proposal for a Council Directive Amending Directive 77/388/EEC as regards the rules governing the right to value added tax, 1998 O.J. (C 219)16, *available at* http://europa.eu.int (last visited Aug 2, 2006) (proposing a similar digital scheme, without provision for a single payment of EU-wide VAT obligations, but with a single return and filing obligations has been proposed by the Commission under Article 22b).

[124] European Commission, Amended Proposal for a Council Directive Amending Directive 77/388/EEC as regards the place of supply of services (submitted by the Commission pursuant to Article 250(2) of the EC Treaty) COM(2005)334 final at 13.

> Member states have provided the Commission with information showing that on 30 June 2004 there were 617 live registrations for non-established taxable persons availing themselves of the simplified scheme. In the year to 30 June 2004, these non-established persons paid VAT totaling 90,315,000 euro.

[125] FEDERATION OF TAX ADMINISTRATORS, STATE EC SNAPSHOTS (updated April 18, 2006) *available at* http://taxadmin.org/fta/edi/ecsnaps.html indicates that Alabama, Arkansas, Georgia, Kentucky, Maryland, Michigan, Mississippi, Nebraska, Nevada, New Jersey, Utah, Vermont and West Virginia require some or all RST returns to be filed on paper. This determination is not a dire at it may seem. In many of these states many sales and use tax returns can be e-filed, and in most cases there is a commitment by the state to move toward fully digital filing options.

[126] The 854 jurisdictions are comprised of 12 states [Alaska has no state level RSTs but numerous sub-state level RSTs], 281 counties, 559 cities and 2 districts.

[127] For example, the following eight states have mandatory e-filing and e-payment systems in place for "large" consumption tax filers. These filing requirements are frequently reported on the state web pages. In Connecticut electronic filing is mandatory if annual liabilities exceed $100,000. (http://www.drs.state.ct.us/electronicservices/fastfiling.htm). In Florida all zero returns must be filed electronically as well as the returns for filers who have in excess of $30,000 in annual liability in the prior year. (http://www.state.fl.us/dor/forms/dr15inst.html). In Louisiana businesses with liabilities in excess of $20,000 must pay by EFT. (http://www.rev.state.la.us/sections/eservices/default.asp#efbt). Missouri has a

U.S. are: extensible markup language – XML,[128] electronic data interchange – EDI,[129] and Internet based.

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mandatory e-filing system for all taxpayers who had in excess of $15,000 in liability in 6 of the previous 12 months, *available at* http://www.dor.mo.gov/tax/business/payonline.htm (last visited Aug. 2, 2006). New York has a mandatory e-filing system, called Propfile, for taxpayers with liabilities in excess of $500,000 annually *available at* http://www.tax.state.ny.us/prompt/Sales_Tax/sttoc00.htm (last visited Aug. 2, 2006). Oklahoma has a mandatory e-filing program for taxpayers with in excess of $100,000 in liability per month *available at* http://www.oktax.state.ok.us/oktax/quicktax.html (last visited Aug. 2, 2006). In Texas electronic filing is mandatory for filers with a past year sales tax liability of $100,000 or more. This filing must be through EDI if there are more than 30 Texas locations *available at* http://www.window.state.tx.us/webfile/index.html (last visited Aug. 2, 2006). Utah requires taxpayers with liabilities in excess of $96,000 to e-file *available at* http://www.tax.ex.state.ut.us/sales/salestaxonline.html (last visited Aug. 2, 2006).

[128] *XML (extensible markup language):* XML is a newer technology and one that shows promise of coming closest to the goal of a universal language for electronic commerce. In XML, a "tag" is attached to each data element within a transaction, giving information concerning both the semantic meaning of the data element itself, but also its structure within the tax-reporting document. Because the "tags" are not pre-determined by any generic XML standard, XML is "extensible"- meaning that the user may extend the language through the definition of any document. A tax return document definition may be transmitted along with the data or stored in a database. The databases would be that of the taxpayer and the tax administration.

XML capability is built into leading Internet browsers. Taxpayers with Internet access and a browser can 'interpret' XML by linking to the database server containing the document definition. An XML transmission can be associated with a "style sheet" indicating how the data is to be displayed and manipulated. Thus, XML allows the taxing authority to create an Internet filing application, control how the taxpayer interacts with the application through the browser, and specify unambiguously the meaning and structure of the data within the tax return.

The State of California currently offers sales and use tax filing over the web using XML. http://www.boe.ca.gov/elecsrv/efiling/srvprovider.htm (last visited Aug. 2, 2006).

[129] *EDI (electronic data interchange):* EDI is a computer application to computer application system. Information is transmitted in standardized format. Consensus bodies set EDI standards. EDI is best used in the following situations:

- Large volume transmitters (EDI is very receptive to large data volumes)
- Self-programmers
- Third-party bulk filers
- Batch applications (where real time responses are not expected)
- Industry segments (where a large EDI commitment has been made)

Prior to the emergence of new electronic technologies to transact business, EDI was the best way for a business to reduce its paper processing cost, as well as the costs, errors and time delays associated with data entry. Large corporations, their customers and suppliers implemented EDI in the mid-1980's and 1990's. The use of EDI for tax filing was a natural extension.

One of the drawbacks to EDI is that specialized software is needed to translate normal business records into EDI format for transmission. Small and mid-sized businesses saw this as a barrier for tax filings. Thus, software vendors (California offers taxpayers the ability to file through two companies that are electronic returns operators; *see*: http://www.boe.ca.gov/elecsrv/efiling/srvprovider.htm (last visited Aug. 2, 2006); participation is voluntary) and tax administrations (Indiana's e-filing system, called "Trust File," involves a software program that is offered free of charge; *see*: http://www.in.gov/dor/electronicservices/insite/btef.html (last visited Aug. 2, 2006); as well as Kansas, *see*: http://www.ksrevenue.org/rcuwebfile.htm (last visited Aug. 2, 2006) (participation is voluntary) developed applications that made EDI a viable option for these businesses. Because the EDI technology is embedded in the tax filing software, no knowledge of the technical specifications involved in creating an EDI-formatted data file are needed.

An additional barrier to EDI concerns the transmission of the tax data from the taxpayer to the tax authority. EDI has traditionally made use of the "value added network" (VAN) for data transmission. Both

*Streamlined Sales and Use Tax Agreement (SSUTA).*[130] Although nowhere near as advanced as the E.U. by IDABC standards, efforts are underway in the U.S. to strengthen e-government capabilities. In the RST the most notable example is the Streamlined Sales Tax. This effort broadly seeks technological solutions to the problems that beset the RST.

The Streamlined Sales Tax Project (SSTP) was organized in March 2000, largely in response to the states' perception that they were losing sales tax revenue from increasing online sales.[131] After five years of effort, SSUTA came into effect on October 1, 2005. It has an initial Governing Board of nineteen states.[132]

Of the thirteen states that were identified by the FTA as having significant paper return obligations for the RST, five of them are among the thirteen founding "full" members of the SSUTA.[133] Two others are "associate" founding members of the SSUTA.[134] Participation in SSUTA by these states is significant, because SSUTA states have agreed to harmonize their tax bases, standardize their electronic reporting requirements, [135] restrict jurisdictional reporting obligations for local RSTs to state level

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the tax authority and the taxpayer must maintain a "mailbox" provided by the VAN. The taxpayer transmits EDI tax filings to the tax authority's mailbox, and receives acknowledgements in the taxpayer's mailbox. The VAN has advantages and disadvantages. The advantage is that the tax authority needs to maintain only one communications interface. It does not have to maintain communications lines to support a large volume of taxpayer calls, nor does it have to support a variety of communications speeds and protocols. The VAN also enforces the security of the transmissions. However, VAN costs generally include not only the monthly mailbox fee, but also the costs of the toll calls and a per-character transmission charge. To overcome this some tax administrations pay the toll and transmission charges for taxpayers (Florida's Easy Link VAN is explained at: http://www.state.fl.us/dor/forms/dr15inst.html (last visited Aug. 2, 2006); South Carolina's Easy Link VAN is explained at: http://www.sctax.org/Electronic+Services/default.htm (last visited Aug. 2, 2006).

[130] The Streamlined Sales and Use Tax Agreement, *available at* http://www.streamlinedsalestax.org (last visited Aug. 2, 2006).

[131] Sellers without a physical presence in a state could not be compelled to collect tax on sales destined for that state, according to the U.S. Supreme Court's decision in *Quill Corp. v. North Dakota*, 504 U.S. 298 (1992). The stated goal of the SSTP is to simplify and modernize sales and use tax administration in member states with an eye toward getting Congress to overturn this decision.

[132] These nineteen states are divided into two groups, the full members, and the associate members. A full member state is a state that is in compliance with the Streamlined Sales and Use Tax Agreement through its laws, rules, regulations, and policies. Those states are: Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Nebraska, New Jersey, North Carolina, North Dakota, Oklahoma, South Dakota, and West Virginia. An associate member state is either (a) a state that is in compliance with the Streamlined Sales and Use Tax Agreement except that its laws, rules regulations and policies to bring the state into compliance are not in effect but are scheduled to take effect on or before January 1, 2008, or (b) a State that has achieved substantial compliance with the terms of the Streamlined Sales and Use Tax Agreement taken as a whole, but not necessarily each provision, and there is an expectation that the state will achieve compliance by January 1, 2008. Those states are: Arkansas, Nevada, Ohio, Tennessee, Utah and Wyoming, *see* http://www.streamlinedsalestax.org (last visited Aug. 2, 2006).

[133] Those states are Kentucky, Michigan, Nebraska, New Jersey and West Virginia, *see* http://www.streamlinedsalestax.org (last visited Aug. 2, 2006).

[134] Those states are Arkansas and Utah, *see* http://www.streamlinedsalestax.org (last visited Aug. 2, 2006).

[135] Streamlined Sales and Use Tax Agreement, *supra* note 130, at § 318(D) (indicating that the intent of the SSUTA is to facilitate electronic filing of returns in all jurisdictions under the agreement.)

filings, and generally streamline the collection of state and local RSTs. [136] A standardized system for refunds is also established, both for end consumers, and for businesses remitting the tax.[137]

On October 1, a centralized online registration system, [138] and an amnesty[139] for qualifying sellers came into effect. Registration constitutes an agreement by sellers to collect and remit tax for sales into all full member states. This registry will function like the registration system under the Digital Sales Directive where non-established taxpayers (non-E.U. businesses) receive a unique identification number that is recognized for VAT purposes throughout the E.U. In a very real sense the SSUTA is an agreement between governments and business to technologically simplify and harmonize the RST in exchange for a sincere effort by business to increase voluntary collection.

*Digital Intermediaries – Certified Service Providers (CSPs).* The concept of a digital intermediary is the most innovative aspect of the SSUTA. There are two aspects to the digital intermediary, both involve certified software programs – the first is the certified service provider (CSP)[140] – the second is the certified automated system (CAS)[141] or certified proprietary system (CPS).[142] Only the CSP will be considered here. The CSP, CAS and CPS are considered in more detail in PART III.

SSUTA provides for the certification of third-party service providers (CSPs),[143] entities that will provide point of sale, automated tax determination systems for businesses. CSPs file returns and make tax payments for taxpayers.[144] Because the CSPs

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[136] *Id.* at §§ 318(A); 318(B)
[137] *Id.* at §§ 325
[138] *Id.* at §§ 303; 401(A); 401(C); 404.
[139] Member states must provide an amnesty for uncollected or unpaid sales and use tax (together with penalty or interest) to a seller that registers under the Agreement, provided the seller was not registered in that state in the 12-month period preceding the state's participation in the Agreement. Sellers must register within 12 months of the state's participation to benefit, and the amnesty does not apply to matters for which the seller has received notice of the commencement of an audit.
[140] Streamlined Sales and Use Tax Agreement, *supra* note 130, at § 203 (defining a Certified Service Provider (CSP) as "[a]n agent certified under the Agreement to perform all the seller's sales and use tax functions, other than the seller's obligation to remit tax on its own purchases.").
[141] *Id.* at § 202 (defining a Certified Automated System (CAS) as a "[s]oftware certified under the Agreement to calculate the tax imposed by each jurisdiction on a transaction, determine the amount of the tax to remit to the appropriate state, and maintain a record of the transaction.").
[142] *Id.* at § 207 (defining a Certified Proprietary System (CPS) as the system owned by "[a] seller that has sales in at least five member states, has total annual sales of at least five hundred million dollars, has a proprietary system that calculates the amount of tax due each jurisdiction, and has entered into a performance agreement with the member states that establishes a tax performance standard for the seller.").
[143] In 2001 four states (Kansas, Michigan, North Carolina, and Wisconsin) participated in a pilot project to test the CSP concept. Three firms applied to participate as CSP's, (Taxware International, Pitney-Bowes/Vertex, and esalestax), two were certified as CSPs, (Taxware International, Pitney-Bowes/Vertex). The pilot project was successful in establishing the viability of the CSP concept. The Streamlined Sales Tax Project web site indicates: "The pilot project established that the use of a third-party provider was viable. Systems and procedures were established that resulted in the actual collection and remittance of sales and use tax by a vendor on behalf of a retailer. Knowledge and experience was obtained by the participating states and vendors." *see* http://www.streamlinedsalestax.org (last visited Aug. 2, 2006).
[144] Streamlined Sales and Use Tax Agreement, *supra* note 130, at §§ 501(A), (B), (C) and (D).

will function in this manner with respect to all RST obligations of the taxpayer in each of the Streamlined States, the CSP is essentially a private sector multi-jurisdictional one-stop-shop.

If the SSUTA were to be adopted by all the states with RSTs, then the CSP would handle RST obligations for all 7,588 jurisdictions. The CSP would be the equivalent of the "Member State of identification" under Article 26c of the Sixth Directive. In both instances the taxpayer enters into a voluntary relationship with a third party who then interface with each of the governments concerned. The three critical differences between the EU and US approaches are: (1) where Article 26c uses the Treasury of one of the Member States as the intermediary, the SSUTA uses a private sector third-party provider, (2) where the taxpayer under Article 26c remains the party obligated to determine the tax amount due, under the SSUTA it is the CSP who actually performs the calculations with software certified by the government concerned, and (3) where taxpayers under Article 26c remain subject to normal audit in all jurisdictions, under the SSUTA the taxpayer will be subject only to limited audit for fraud.[145]

Under both Article 26c and the SSUTA the use of intermediaries (the government or the private sector) comes at no cost to the taxpayer.[146] However, under the SSUTA there is a clear expectation of cooperation between the taxation authorities and the CSP in terms of providing accurate and timely information about changes in rates or other critical tax determinants.[147] CSP's are expressly relieved of liability from having charged and collected an incorrect amount of tax, if the error was due to erroneous data provided by the state.[148]

Thus, while Article 26c offers breadth of digital intermediary functionality (all 25 E.U. countries are covered) for non-established businesses selling to final consumers, the SSUTA's CSP offers depth of digital intermediary functionality (full calculation, reporting and payment of obligations) for all of the states joining the SST. As would be

[145] Uniform Sales and Use Tax Administration Act [USUTA] (as approved on Dec. 22, 200, and as amended on Jan. 22, 2001) § 9(a) (indicating that, "A seller that contracts with a Certified Service Provider is not liable to the state for sales or use tax due on transactions processed by the Certified Service Provider unless the seller misrepresented the type of items it sells or committed fraud. In the absence of probable cause to believe that the seller has committed fraud or made a material misrepresentation, the seller is not subject to audit on the transactions processed by the Certified Service Provider. A seller is subject to audit for transactions not processed by the Certified Service Provider.") The USUTA is the "enabling" legislation that authorizes a State's participation in the SSUTA.

[146] However, depending on the payment arrangements, the taxpayer may (but not necessarily) looses the value of the "float" on monies drawn from the taxpayer's account to pay the taxes due. The interest earned between the time of this withdrawal and the due date of the payment to the government may be a "cost."

[147] Streamlined Sales and Use Tax Agreement, *supra* note 130, at § 328 (indicating that the states have an obligation to provide a taxability matrix of rate and product or service taxability in a downloadable format. CSPs and sellers are relieved of liability for collecting the wrong amount of tax if they relied on erroneous data provided in the matrix); and § 304 (indicating that the state rate or base changes will only be effective on the first day of a calendar quarter, and are obligated to provide as much advance notice of changes as possible).

[148] *Id.* at § 306.

expected, efforts are underway in the E.U. to extend Article 26c to B2B transactions,[149] and under the SSUTA to expand state membership.

Consumption taxes, both VATs and RSTs, are on the cusp of a digital revolution. Pilot programs in the E.U. and U.S. have proven that this tax is particularly receptive to digitization. Efficiencies of the marketplace, demands of the tax administration as well as the sheer volume of transactions involved in these taxes make the digital solution optimal. Although the "smart" ID does not need a fully digital consumption tax regime to deliver a certificate of exemption, a fully digital consumption tax would make the operation of the system seamless. Both record-keeping and verification requirements would be far simpler. Thus, if the E.U. and U.S. "pilots" can be deemed a success, it is time to consider expansion of these digital regimes.

However, in all of these efforts to digitizing the consumption tax, both in the E.U. and in the U.S., the sticking point has never really been the ability to digitize, but it has rather been with verification – how do we know that what was digitized was accurate. In this regard, the final piece of the regressivity puzzle in consumption taxes is the certification of the tax calculation software.

## PART THREE:
## CERTIFIED TAX COMPLIANCE SOFTWARE

Almost all business information today – including the critical data needed for determining consumption taxes – is digitized. Digitizing business data has not been a problem for some time now. The problem has been in the controls – in what has been done with the data. The solution to this problem, one that has been broadly applied from tax administrations to security regulators, has been to certify (pre-audit and confirm) the accuracy of the software and computer systems that control the data.

Corporate governance reform on a global scale in the wake of Enron and other accounting failures have focused attention on the certification of financial data and processes – certifications of profits, losses and more comprehensively of the cash flow itself. In addition, certification is required of the internal controls over the data and systems. In this context therefore, it stands to reason that as traditional paper-based consumption tax regimes are being replaced by fully digital tax systems, that government certification of the accuracy of taxpayer's automated tax calculation systems are coming to the forefront of tax policy discussions. Tax compliance is, after all, simply a subset of the larger field of accurate enterprise-wide financial reporting.

### *The Digital Context*

In 2000 the University of California at Berkeley's School of Information Management Systems conducted the first study of newly created information, and demonstrated that 93 percent of the three billion gigabytes of data generated worldwide (using 1999 data) was computer generated.[150] Updated in 2002, a new study reached

[149] COM(2005)334 final *supra* note 124.
[150] Eric Woodman, *Information Generation: Berkeley Study measures gargantuan information boom*, EMC2, *at* http://www.emc.com (last visited Aug. 2, 2006) referencing SCHOOL OF INFORMATION

much the same conclusions, and indicated (using 2001 and 2002 data) that "… about 5 exabytes[151] of new information [was] created in 2002. Ninety-two percent of the new information was stored on magnetic media, mostly hard disks. … film represented 7% of the total, paper 0.01%, and optical media 0.002%."[152] Thus, it may be presumed that almost all enterprise source data content for operations, accounting, audit, as well as tax filing, financial reporting, regulatory submissions, and almost all other purposes is digitized both in generation and in storage. In other words, there is no paper and ink parentage for most source documents.

Thus, if the provenance of almost all enterprise data is digital, not physical, it makes sense to determine, collect, report, and enforce transaction tax obligations digitally. In addition, if the trend in transaction taxes is for fully digital VATs and RSTs, then it only makes sense for tax administrations to move in the direction of certifying the output of the systems that determine and report the taxes that are due. The OECD has proposed a multi-jurisdictional certification for automated VAT systems, and the Streamlines Stales and Use Tax has begun certifying RST systems in the U.S. The certification of transaction tax compliance systems is especially welcomed by businesses, particularly the large multinationals that are being pressed to certify enterprise-wide financial processes by the Sarbanes-Oxley Act of 2002 and related foreign governance rules.

*Certification of Enterprise Data – the 90-day certification cycle of Sarbanes-Oxley and other governance regulations.* For the largest businesses, the certification of tax data is a subset of a larger movement compelling the business, the C.E.O., and the C.F.O. to certify[153] the accuracy of financial records.

The Sarbanes-Oxley Act of 2002 mandates wide-ranging reforms in the public company financial reporting process. The Act attempts to restore confidence in the management of public companies following the post-Enron outcry over the accounting problems that shook investor confidence in the US securities market. Identifying trusted providers of essential tax services for global businesses is close to the heart of this legislation.[154]

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MANAGEMENT AND SYSTEMS AT THE UNIVERSITY OF CALIFORNIA AT BERKELEY, HOW MUCH INFORMATION? (2000).

[151] Peter Lyman and Hal R. Varian, *Executive Summary*, SCHOOL OF INFORMATION MANAGEMENT AND SYSTEMS AT THE UNIVERSITY OF CALIFORNIA AT BERKELEY, HOW MUCH INFORMATION? (2003) (Oct. 27, 2003) *available at* http://www.sims.berkeley.edu (last visited Aug. 2, 2006) ("How big is five exabytes? If digitized, the 19 million books and other print collections in the Library of Congress would contain about ten terabytes of information; five exabytes of information is equivalent in size to the information contained in half a million new libraries the size of the Library of Congress print collections.").

[152] *Id.* at *Executive Summary*.

[153] The Sarbanes-Oxley Act of 2002 (P.L. 107-204, 116 Stat. 274.101) at § 906. (Amending the criminal code and imposing a fine of not more than $1,000,000 and 10 years in prison, or both, for a signing officer who certifies a report "knowing" it to be false. For a "willful" violation the penalties rise to not more than $5,000,000, 20 years in prison, or both.) The full text of the law is available at http://www.law.uc.edu/CCL/Soact/soact.pfd (last visited Aug. 2, 2006)

[154] *See* Wardell, Thomas, *International Accounting Standards in the Wake of Enron: The Current State of Play under the Sarbanes-Oxley Act of 2002*, 28 N.C. J. INT'L L. & COM. REG. 935 (2003); Note, *The Good*

Sarbanes-Oxley however, does not stand alone. Similar legislation has been enacted in France,[155] Australia[156] and Japan.[157] Additional legislation is planned in each of the 25 countries of the European Union following recent modification of the Eighth Corporate Directive.[158] In part, these countries are following a US lead, but they are also responding to their own domestic, Enron-like financial collapses. Australia witnessed the collapse of HIH (March, 2001)[159] and One.Tel (July, 2001).[160] In France there were serious corporate governance problems with Vivendi (July 2002), in the Netherlands there was the near bankruptcy of Ahold (February, 2003).[161] In Italy Parmalat (February, 2003) faced corporate fraud accusations and near collapse.[162]

Without question, management practices within the world's largest corporations are changing.[163] If regulatory authorities achieve a global convergence[164] of these

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*the Bad and Their Corporate Code of Ethics: Enron, Sarbanes-Oxley, and the Problems with Legislating Good Behavior*, 116 HARV. L. REV. 2123 (2003).

[155] France responded to Enron with the *Loi de Sécurité Financière*. It was approved 17 July 2003, and published 2 August 2003. The law is published in the Official French Journal, 2 August 2003. In French at: http://www.legifrance.gouv.fr/Waspad/UnTexteDeJorf?numjo=ECOX0200186L (last visited Aug. 2, 2006).

[156] Australia began a comprehensive corporate law economic reform program in 1997 (the CLERP initiative). The ninth package reforms in this initiative took up the Enron issue of auditor independence. *Corporate Disclosure: Strengthening the Financial Reporting Framework*, is referred to as CLERP 9. The reform program was presented to Parliament on December 2, 2003. The complete legislations package can be found at http://www.treasury.gov.au/documents/700/PDF/CLERP_Bill.PDF (last visited Aug. 2, 2006).

[157] Japan's response had two aspects: (a) it amended the "Certified Public Accountant Law" (*Kouninkaikeishihou* 1948-8-1) through "An Act to Amend Part of the Certified Public Accounting Law" (*Kouninkaikeishihou no ichibu wo kaisei suru houritsu* 2004-4-1), and (b) it issued Cabinet Office Ordinances (*Naikakuhurei* 2004-4-1). In the law, promulgated June 6, 2003, a new government oversight and inspection agency, the CPA and Auditing Oversight Board (CPAAOB) was established. In Article 5 of the related Cabinet Ordinance, rules on auditor independence were published. These rules are a literal translation of SOX. The Japanese law and ordinances were effective April 1, 2004.

[158] Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts, amending Council Directives 78/660/EEC and 83/349/EEC and repealing Council Directive 84/253/EEC, 2006 O.J. (L157) 87 *available at* http://europa.eu.int/eur-lex/lex/JOHtml.do?uri=OJ:L:2006:157:SOM:EN:HTML (last visited Aug. 2, 2006).

[159] HIH was the largest general insurance company in Australia. Accounting entries hid claims that exceeded accounting reserves, forcing the company's liquidation. *See* HIH Royal Commission (Justice Neville Owen), *Report of the HIH Royal Commission*, 2003 at http://www.hihroyalcom.gov.au/finalreport/ (last visited Aug. 2, 2006), and M. De Martinis, *Do directors, regulators, and auditors speak, hear and see no evil? Evidence from the Enron, HIH and One.Tel collapses*, 15 AUST. J. CORP. L. 66 (2006).

[160] One.Tel was one of Australia's largest telecommunications companies. One.Tel paid high performance bonuses to the directors as the company was on the verge of collapsing. That internal incentives could have rewarded directors of a failing company outraged Australians and accelerated reform efforts there.

[161] In Ahold earnings were overstated due to improper booking of supplier discounts.

[162] In Parmalat $3.5 billion in false assets were recorded in Caymen Island subsidiaries.

[163] Brian Kim, *Recent Development: Sarbane-Oxley Act*, 40 HARV. J. ON LEGIS. 235 (2003).

[164] Considerable academic debate has focused on the global convergence of corporate governance practices. *See* Lucian A. Bebchuck & Marc J. Rowe, *A Theory of Path Dependence in Corporate Ownership and Governance*, 52 STAN. L. REV. 127 (1999); Amir. N. Licht, *The Mother of All Path Dependencies Toward a Cross-Cultural Theory of Corporate Governance Systems*, 26 DEL. J. CORP. L. 147 (2001); Larry E.

standards the contours of this change may be uniform. Without convergence, certification requirements become more cumbersome and may vary depending on where business is conducted and which financial markets are accessed. However, regardless of the specific rules, the means employed to comply with these certifications is not in doubt. It will be a digital compliance conducted as often as possible through certified systems. The reason for this is (a) the timing of the certifications (every 90 days in some instances) and (b) the severity of the penalties.

Consider just the U.S. legislation. § 302 of Sarbanes-Oxley required the SEC to adopt rules mandating that the principal executive officer(s) and the principal financial officer(s) certify in each quarterly and annual report that there are no untrue statements of material fact or omission, and that the financial statements fairly present the financial condition and operation of the company. In addition, § 404 of Sarbanes-Oxley requires an annual certification of the "effectiveness of the internal control structure and procedures for financial reporting." Thus, there are quarterly certifications of the results and annual certifications of the system.

Transaction taxes are a major aspect of this certification, because final SEC regulations consider financial control over cash flow[165] to be as important as financial

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Ribstein, *Politics, Adaptation and Change*, 8 AUST. J. CORP. L. 246 (2001); Roberta Romano, *A Cautionary Note on Drawing Lessons from Comparative Corporate Law*, 102 YALE L. J. 2021 (1993).

Some have seen this convergence "coinciding with the civil/common law divide," *see* Paul von Nessen, *Corporate Governance in Australia: Converging with International Norms*, 15 AUST. J. CORP. L. 1, 47, n. 73 (2003) citing further to Paul G. Maloney, *The Common Law and Economic Growth: Hayek Might Be Right*, 30 J. LEG. STUD. 503 (2001).

[165] The concern with cash flow accountability constitutes a change in emphasis for the SEC. Securities and Exchange Commission, *Final Rule: Certification of Disclosure in Companies' Quarterly and Annual Reports*, (RIN 3235-AI54) at II(B)(3) indicating:

> The certification, as adopted, states that the overall financial disclosure fairly presents, in all material respects, the company's financial condition, results of operations and cash flows. We have added a specific reference to cash flows even though Section 302 of the Act does not include such an explicit reference. We believe that it is consistent with Congressional intent to include both income or loss and cash flows within the concept of "fair presentation" of an issuer's results of operations.
>
> The certification statement regarding fair presentation of financial statements and other financial information is not limited to a representation that the financial statements and other financial information have been presented in accordance with "generally accepted accounting principles" and is not otherwise limited by reference to generally accepted accounting principles. We believe that Congress intended this statement to provide assurances that the financial information disclosed in a report, viewed in its entirety, meets a standard of overall material accuracy and completeness that is broader than financial reporting requirements under generally accepted accounting principles. In our view, a "fair presentation" of an issuer's financial condition, results of operations and cash flows encompasses the selection of appropriate accounting policies, proper application of appropriate accounting policies, disclosure of financial information that is informative and reasonably reflects the underlying transactions and events and the inclusion of any additional disclosure necessary to provide investors with a materially accurate and complete picture of an issuer's financial condition, results of operations and cash flows. (Emphasis added).

control over profit and/ or loss.[166] Transaction taxes – calculated on a percentage of gross sales (normally between 10 and 25 percent) – are almost always material cash-flow figures.

False certifications under §§ 302 and 404 are criminalized.[167] New penalties have been created; traditional penalties have been expanded. The penalties are directed at both individuals and companies. If financial statements need to be restated due to material non-compliance senior management may have to return bonuses,[168] and profits must be disgorged.[169] Violators can be barred from future public company service.[170] Fines are increased,[171] sentences increased,[172] and sentencing guidelines have been tightened.[173] Systemic errors that point to the design of internal controls over cash flow need to be disclosed and quickly remedied. To fail to do so would risk the delisting of corporation from exchanges.[174]

The reach of Sarbanes-Oxley (to say nothing of the related foreign legislation) is global – §§ 302 and 404 and related penalty provisions apply not only to domestic companies, but extend to foreign issuers.[175] And to make matters even more serious, § 3 of Sarbanes-Oxley makes any violation of the Act also a violation of the Securities Exchange Act of 1934,[176] opening the door for shareholder suits under § 10b-5.

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*available at* http://www.sec.gov/rules/final/33-8124.htm (last visited Aug. 2, 2006).

[166] U.S. Securities and Exchange Commission, RIN 33-8124: "Final Rule: Certification of Disclosure in Companies' Quarterly and Annual Reports," (August 29, 2002, effective date) at www.sec.gov/rules/final/33-8124.htm (last visited Aug. 2, 2006).

[167] Sarbanes-Oxley Act of 2002, *supra* note 153, at § 906 (indicating that a knowing violation of the certification provisions carries up to a $1,000,000 fine, 10 years imprisonment, or both, and that willful violations carry up to a $5,000,000 fine, 20 years imprisonment, or both).

[168] *Id.* at § 304.

[169] *Id.* at § 308.

[170] *Id.* at § 1105.

[171] *Id.* at § 804.

[172] *Id.* at § 1106.

[173] *Id.* at § 1106.

[174] Nasdaq, Summary of Nasdaq Corporate Governance Proposals As of February 26, 2003 (2003) (revising the earlier November 20, 2002 proposals) at 4-5 *available at* http://www.nasdaq.com (last visited Aug. 2, 2006); New York Stock Exchange, Corporate Governance Rule Proposals Reflecting Recommendations from the NYSE Corporate Accountability and Listing Standards Committee (As Approved by the NYSE Board of Directors August 1, 2002) at 17-18 *available at* http://www.nyse.com/pdfs/corp (last visited Aug. 2, 2006).

[175] Sarbanes-Oxley Act of 2002, *supra* note 153, at § 302 (setting out the requirement that there must be quarterly "discloser controls and procedures" by CEO and CFO's); U.S. Securities and Exchange Commission, RIN 3235-AI54 "Certification of Disclosure in Companies' Quarterly and Annual Reports" (August 28, 2002, release date; August 29, 2003, effective date) (expressly extending this rule to foreign issuers and their CEO's and CFO's) *available at* www.sec.gov/rules/final/33-8124.htm (last visited Aug. 2, 2006).

Sarbanes-Oxley Act of 2002, *supra* note 153, at § 404 (setting out the requirements for "internal controls over financial reporting" by CEO's and CFO's); U.S. Securities and Exchange Commission, RIN 3235-AI66 "Management's Report on Internal Control Over Financial Reporting and Certification of Disclosure in Exchange Act Periodic Reports" (June 5, 2003, release date; August 14, 2003, effective date) (similarly expressly extending this rule to foreign issuers and their CEO's and CFO's) *available at* www.sec.gov/rules/final/33-8238.htm (last visited Aug. 2, 2006).

[176] Securities Exchange Act of 1934, 15 U.S.C. Sections 78 et seq.

*Tax Application -- Certification of Automated Consumption Tax Software Solutions.*

To satisfy VAT and RST collection and reporting obligations globally, multinational companies have for a long time turned to software solutions. Two parallel efforts are underway to develop comprehensive certification regimes for transaction tax software, one for VATs under the direction of the OECD, and another for the RST under the SSUTA. The regimes are similar, but reflect the different realities of the multi-national effort in VAT certification and the purely domestic, multi-state effort in the U.S. RSTs.

*OECD – From Ottawa to Tax Software Certification.* The availability of software packages that effectively determine the full range of global VAT obligations has been a recognized fact of business life for over a decade. These packages automatically identify taxable transactions, make an accurate calculation of tax, and provide for the automated production of returns, or perform electronic filing. Tax payments, refunds, and tax audits can all be carried out electronically.

These software solutions have been a topic of continued interest in the OECD The 1998 Ottawa Ministerial Conference initiated a public discussion on issues in e-commerce with the *Taxation Framework Conditions*.[177] The Ottawa Conference was followed by a series of reports that broadly examined tax law applications and the administrative impact of digital technology.[178] Throughout its work the OECD's primary concern has been with the cross-border aspect of digital commerce. Businesses pressed

[177] OECD, ELECTRONIC COMMERCE: TAXATION FRAMEWORK CONDITIONS 5 (Oct. 8, 1998) (setting out the framework principles of a consumption tax as: (a) taxation should be in the place of consumption, (b) digital goods should be taxed as services, (c) imported services and intangible products should be reverse charged, and (e) cooperative systems be put in place to collect taxes. In tax administration the Framework established principles (a) to develop electronic signature IDs, (b) to reach international agreement on accepting digital signatures, and (c) to develop internationally compatible information requirements for record retention, record format, access to third party database arrangements, and agreed periods for record retention) *available at* http://www.oecd.org (last visited Aug. 2, 2006).

[178] OECD, REPORT BY THE CONSUMPTION TAX TECHNICAL ADVISORY GROUP (TAG) (Dec. 2000) (considering place of consumption, tax collection options, consumption tax barriers to e-commerce development, and a simplified interim approach) *available at* http://www.oecd.org (last visited Aug. 2, 2006); OECD, REPORT BY THE TECHNOLOGY TECHNICAL ADVISORY GROUP (TAG) (Dec. 2000) (considering the technological implications of various e-commerce collection models, and making recommendations for further research) *available at* http://www.oecd.org (last visited Aug. 2, 2006); OECD, CONSUMPTION TAX ASPECTS OF ELECTRONIC COMMERCE: A REPORT FROM WORKING PARTY NO. 9 ON CONSUMPTION TAXES TO THE COMMITTEE ON FISCAL AFFAIRS (Feb. 2001) (assessing and consolidating the work of the TAGs completed the previous year) *available at* http://www.oecd.org (last visited Aug. 2, 2006); OECD, IMPLEMENTATION OF THE OTTAWA TAXATION FRAMEWORK CONDITIONS (2003) (assessing progress since Ottawa and setting out the research goals in third party providers, certified software, audit interface for remote enforcement in consumption taxes) *available at* http://www.oecd.org (last visited Aug. 2, 2006); DIRECTORATE FOR FINANCIAL, FISCAL AND ENTERPRISE AFFAIRS, COMMITTEE ON FISCAL AFFAIRS, OECD REPORT ON AUTOMATING CONSUMPTION TAX COLLECTION MECHANISMS, (DAFFE/CFA(2003)43/ANN5) (July 1-2, 2003) *available at* http://www.oecd.org (last visited Aug. 2, 2006).

strongly, [179] and the OECD conceded early, that globally effective e-solutions to consumption tax problems were already in place, and that these solutions, in aggregate, contained the elements of a fully digital compliance model.[180] Participation in global commerce was and is synonymous with participation in e-commerce and e-tax compliance.

During the opening months of 2005 the OECD issued further reports. This time they focused on the use of certified intermediaries for determining, reporting and remitting cross-border consumption taxes. The OECD expressly anticipates the "emergence of global intermediaries" and is proposing standards for their certification in consumption tax matters.[181] Guidance Notes are available on the proper structure, format, and application of an e-tax audit file,[182] as well as on the evaluation of tax accounting software.[183] These OECD *Guidance Notes* are a first effort to develop a tax-specific international software certification regime.

It is clear that the OECD anticipates the development of software certification programs similar to those under the SSUTA. Some VAT system certifications may be single-jurisdiction based, while others may be multi-jurisdictional. The OECD's work expressly references the software certification aspects of SSUTA[184] They also expressly link the VAT software-standard setting effort to the rules of corporate governance under the Sarbanes-Oxley Act, and the International Financial Reporting Standards that became mandatory throughout the E.U. by the close of 2005.[185]

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[179] OECD, CONSUMPTION TAG, *supra* note 178, at 8 (discussing how "business members feel strongly the simpler the solution, the greater the level of compliance would be and that future requirements should leverage the developments of commercial business models.")

[180] OECD, TECHNOLOGY TAG, *supra* note 178, at 14-90 (considering collection models, jurisdiction verification systems, party identification and classification systems, credit card applications, registration systems, the tax at source and transfer model, trusted third party models, hybrid tax and transfer and clearinghouse models, electronic payments, electronic invoicing, electronic remittance and reporting, electronic record integrity systems and electronic database solutions.)

[181] OECD, ELECTRONIC COMMERCE: FACILITATING COLLECTION OF CONSUMPTION TAXES ON BUSINESS-TO-CONSUMER CROSS-BORDER E-COMMERCE TRANSACTIONS 9 (Feb. 11, 2005) ("A global intermediary may be based in one country and would undertake intermediary activities in as many countries as suppliers are required to collect and remit consumption taxes on behalf of e-commerce suppliers. In cases where satisfactory levels of approval or financial security are evident, countries could be more relaxed …") *available at* http://www.oecd.org (last visited Aug. 2, 2006).

[182] OECD, GUIDANCE NOTE: GUIDANCE FOR THE STANDARD AUDIT FILE – TAX (May, 2005) *available at* http://www.oecd.org (last visited Aug. 2, 2006).

[183] OECD, GUIDANCE NOTE: GUIDANCE ON TAX COMPLIANCE FOR BUSINESS AND ACCOUNTING SOFTWARE (May 2005) *available at* http://www.oecd.org (last visited Aug. 2, 2006).

[184] OECD FACILITATING COLLECTION, *supra* note 181, at 10 & 17-21; OECD, AUTOMATING CONSUMPTION, *supra* note 178, at 10-14 *available at* http://www.oecd.org (last visited Aug. 2, 2006).

[185] OECD, GUIDANCE NOTE: ACCOUNTING SOFTWARE 11 (indicating that, "[t]his guidance is published at a time when corporate governance is under scrutiny as never before, as Governments worldwide demonstrate a firm resolve to increase corporate responsibility and accountability through legislations such as the Sarbanes-Oxley Act in the US, and the EU ruling that all listed companies in Europe must adopt the International Financial Reporting Standards by 2005 at the latest. This guidance does not deal with Corporate Governance issues specifically, but its key principles, especially in the establishment of internal controls and access to data entry for compliance and substantive testing of these controls will be a useful

*SSUTA – Reality of RST Software Certification*. The SSUTA provides three models for software certification: the certified service provider (CSP); [186] the certified automated system (CAS); [187] and the certified proprietary system (CPS).[188] In 2001 the viability of the CSP model was successfully tested in a pilot project,[189] and on June 1, 2006 three software companies, Taxware, L.P., Exactor and Avalara, became the first three CSPs. Taxware additionally was certified as a CAS.

The other certifications provided by the SSUTA, the Certified Automated System (CAS) and the Certified Proprietary System (CPS), allow for the certification of automated systems that are kept in-house.[190] In these cases the relief from liability is dependent on the taxpayer properly using the certified system.[191] Questions about liability allocation among all these systems (CSP, CAS and CPS) remain, and as with all yet-to-be-fully-implemented programs, are best considered as "works-in-progress" until they become fully operational in the States.[192]

The SSUTA certification process involves measuring software against three third party standards; (1) the AICPA's SAS 94[193] and (2) the US- GAO Federal Information Systems Control Audit Manual.[194] In addition, CSP's and CAS software developers must

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tool in enabling businesses to meet the essential requirements of this type of legislation.") *available at* http://www.oecd.org (last visited Aug. 2, 2006).

[186] Streamlined Sales and Use Tax Agreement, *supra* note 140 at § 203.

[187] Streamlined Sales and Use Tax Agreement, *supra* note 140 at § 203.

[188] Streamlined Sales and Use Tax Agreement, *supra* note 142 at § 207.

[189] In 2001 four states (Kansas, Michigan, North Carolina, and Wisconsin) participated in a pilot project to test the CSP concept. Three firms applied to participate as CSP's, (Taxware International, Pitney-Bowes/Vertex, and esalestax), two were certified as CSPs, (Taxware International, Pitney-Bowes/Vertex). The pilot project was successful in establishing the viability of the CSP concept. The Streamlined Sales Tax Project web site indicates: "The pilot project established that the use of a third-party provider was viable. Systems and procedures were established that resulted in the actual collection and remittance of sales and use tax by a vendor on behalf of a retailer. Knowledge and experience was obtained by the participating states and vendors." *See* http://www.streamlinedsalestax.org (last visited Aug. 2, 2006).

[190] Streamlined Sales and Use Tax Agreement, *supra* note 130 at § 501 (C) and (D).

[191] Uniform Sales and Use Tax Administration Act, *supra* note 145 at §§ 9(b) and (c) (for CAS and CPS respectively).

[192] Stephen Moore, *An Uneasy Marriage: Sellers and Certified Service Providers*, 21 J. STATE TAX'N 65, 72 (2003). ("The relationship [between sellers and service providers] is inherently adversarial and each party needs to develop audit strategies for protecting itself from the other party in what may prove to be an unhappy marriage for these partners in commerce. … Can CSPs audit sellers to determine whether there is probably cause to believe that a seller has committed fraud or made a material misrepresentation?" Moore asks what would happen if a seller simply provides faulty information to the CSP without, rising to the level of misrepresentation or fraud, but there tax collection was short nevertheless?).

[193] AMERICAN INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS, PROFESSIONAL STANDARDS, Vol. 1 AU § 319 *The Effect of Information Technology on the Auditor's Consideration of Internal Control in a Financial Statement Audit*, as amending SAS No. 55 *Consideration of Internal Control in a Financial Statement Audit*.

[194] U.S. GOVERNMENT ACCOUNTING OFFICE, ACCOUNTING AND INFORMATION MANAGEMENT DIVISION, FEDERAL INFORMATION SYSTEMS CONTROL AUDIT MANUAL, (FISCAM) Vol. 1 (GAO-AIMD12.19.6) *available at* http://www.gao.gov/special.pubs/ai12.19.6.pdf (last visited Aug. 2, 2006).

comply with (3) ISO Number 17799[195] of the International Organization for Standardization.[196] A similar expectation for objective standards for certification is discussed in the OECD materials.[197]

Essentially the SSUTA certification is conducted in two steps; (1) an extensive security check of the software system, the developer and the service provider, and (2) a comprehensive test of tax calculation and return preparation capabilities is carried out by running hypothetical tax scenarios through the system.

It is a relatively easy matter for an automated tax calculation system to match up the skew code of a good or service purchased with a tax rate to determine the tax due. It is not at all a large leap in technology for a tax calculation system to be programmed to recognize that a different rate should be applied where an exemption (or zero-rating) code is received from a "smart" ID that is passed during the purchasing process. From a systems perspective the question presented is no different than that presented when the same item is processed through a system, but for multiple taxing jurisdictions. Different jurisdictions frequently have different rates and reporting requirements for the same items. This is no different. Rather than performing a multi-jurisdictional discrimination for the same product, in this instance the system is asked to discriminate within the same jurisdiction among both products and purchasers based on a certificate embedded in a "smart" ID.

Thus, because highly discriminatory, multi-jurisdictional tax calculation systems are currently being certified today under the SSUTA, it is not difficult to imagine that the same type of discrimination function (within a single jurisdiction) can similarly be certified as accurate. This functionality only waits for the embedding of certificates of exemption into "smart" IDs.

The certified automated tax calculation system therefore completes the circle. For the first time, a consumption tax can now be designed that is progressive, and which will utilize exceptionally broad bases without burdening the poor. This new breed of consumption taxes can be simplified through the imposition of a single rate for all consumption. The only exceptions will be for transactions where a digital exemption certificate is passed through a scanner when the purchase of goods or services is consummated. If the tax system itself is set up to accept digital processing of returns,

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[195] INTERNATIONAL ORGANIZATION FOR STANDARDIZATION, ISO 17799: INFORMATION TECHNOLOGY, SECURITY TECHNIQUES, CODE FOR INFORMATION SECURITY MANAGEMENT (ISO/IEC 17799:2005).

[196] STREAMLINED SALE TAX PROJECT, CERTIFICATION STANDARDS (rev. 5/17-04) (provides a detailed application of SAS 94, FISCAM and ISO 17799 to the SSUTA) *available at* http://www.streamlinedsalestax.org/ (last visited Aug. 2, 2006).

[197] OECD FACILITATING COLLECTION, *supra* note 181, at 17-18 (discussing a range of government "approvals" for tax accounting software and indicating that at one extreme is "accreditation" – an approval process functions simply as a mechanism to "formally identify" software that meets certain criteria of acceptability – while at the other extreme is "certification" – an approval process that designates software as "an officially authorized mechanism to perform specified functions" – reaching a conclusion that the SSUTA the OECD uses the term "certification" in this same manner even though the OECD discussion is broader than that found in SSUTA documents) *available at* http://www.oecd.org (last visited Aug. 2, 2006).

digital invoices, and electronic funds remission as well as the other myriad of compliance requirements, then a robust and certified tax calculation system will assure not only the accuracy of the tax, but the accuracy of all reporting obligations in a real-time, pre-audited format.

## PART 4:
## CONCLUSION AND PROPOSAL
## SURGICALLY TARGETING CONSUMPTION TAX RELIEF

Regressivity is an inherent problem of the consumption tax. In traditional form consumption taxes burden the poor more heavily than the wealthy because the poor consume all of their income whereas the wealthy consume only a portion of it. What the wealthy save is not taxed.[198]

Although surgical options that would exempt specific individuals-in-need when they purchase identified products have been considered before, the volume of transactions that pass through a broad-based consumption tax simply exceed the capacity of paper-intensive systems to handle them. As a result, when a consumption tax provides relief to those in need, it does so through universal exemptions and/ or multiple rates. Even though these relief mechanisms are themselves a problem, there is little aside from tax theory to oppose them. These relief efforts either drastically compromise the base,[199] or seriously complicate the taxing mechanism.[200]

Technology offers an answer. Consumption taxes (both VATs and RSTs) can benefit from three technological advances: (1) widespread adoption of national identity smart cards embedded with biometric identifiers; (2) fully digital consumption tax regimes; and (3) certified consumption tax software solutions. The tax policy opportunity is to harness these developments – to do more than passively observe the linear function creep of this technology into the consumption tax field. The opportunity is to use technology to design the first broad-based, single rate consumption tax that is truly and independently progressive.

### INVERTING THE ARGUMENT

The argument of this paper can be summarized by turning it on its head. If we consider the establishment of a truly progressive consumption tax from the perspective of the barriers that have prevented it, rather than from the perspective of the technology that now enables it, we see three distinct problems. (1) *The fraud problem* – how to assure that only those entitled to make exempt purchases are allowed to do so. (2) *The surgical capacity problem* – how to design a system that is capable of sifting through thousands of transactions, selecting only those that qualify for exemption, and then taxing the rest without interrupting the efficient flow of commerce. (3) *The audit/ compliance problem*

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[198] *See supra* note 11 and accompanying text.

[199] DUE & MIKESELL, *supra* note 8 at 74 (indicating that the exemption for food products for human consumption reduces the tax base by 20-25%).

[200] BIRD & GENDRON, *supra* note 8 at 10, Table 2.1 (listing the French VAT rates at 19.6%; 5.5% and 2.1%; with regional rates of 0.9%, 2.1%, 8.0% 13.5% and 19.6% in Corsica; rates of 1.05%, 1.75%, 2.1% and 8.5% in the French Overseas Departments with the exception of French Guyana).

– how to effectively audit a system where exempt transactions are not singularly tied to the type of good or service provided by the supplier, but are instead tied to the dual requirements of an entitled individual and a designated supply.

*The fraud problem:* There are two aspects to the fraud problem[201] – targeting and verification. The tax system is compromised if unauthorized individuals or entities are able to bypass security, and enroll in the group targeted for exemption. Thus, targeting must be accurate. In addition, once the target group is identified fraud prevention requires controls so that only individuals (or entities) within the target group are allowed to benefit from the exemption.[202] Thus, verification must be accurate.

*Targeting*. Targeting is a difficult and time-consuming task. It is not fully susceptible to automation. The most difficult part is making case-by-case entitlement judgments, a function normally performed by social services agencies, not the tax administration. In developing countries this targeting function has proven particularly difficult to carry out for a number of reasons,[203] the most significant being that many of those in most need do not carry identity documents. [204]

In this respect, a mandatory national ID, like that currently in use in Hong Kong, Brunei, Malaysia,[205] Belgium and Estonia[206] would be helpful. A voluntary national ID,

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[201] The range of possible difficulties here should not be minimized. Accuracy is at a premium. "False positives" and "false negatives" are possible under both criteria. It is a problem if ineligibles enroll, just as it is a problem if eligible individuals or entities are not able to enroll. Secondly, even if an accurate target population is identified the system must accurately verify that only those individuals are actually making the purchases – a second chance for false negatives and positives to impact the system.

[202] Unresolved, the fraud problem alone is sufficient to kill a program of targeted exemptions. For example, after examining the costs of the government's general subsidy on propane, the Dominican Republic determined in 2001 that it would replace this subsidy with a program of coupons that would target the poor who used propane for heating an cooking. Others would pay market prices for propane. The coupon program was projected to be a less costly and more economically rational way to provide assistance. Within two years the program failed. The failure was due in part to the inability of the government to effectively target individuals in need (an effort that needs to begin well in advance of the termination of the subsidy), and in part due to official corruption. Government subsidy coupons soon became available on the black market. Those with access to coupons effectively split the value of the discount with commercial enterprises. In 2003 the general subsidy was reintroduced, even though it was clear that 70% of all propane consumption was by businesses (transportation, hotels and other private industries) and 30% was consumed by households (the rich, middle class and poor combined). Litigation in various fraud enforcement actions is ongoing. Personal communication, Ramon Frias, (former) Deputy Director of the General Directorate on Internal Taxes (Dominican Republic) July 5, 2005 (on file with author).

[203] FERDINANDO REGALIA & MARCOS ROBLES, SOCIAL ASSISTANCE, POVERTY AND EQUITY IN THE DOMINICAN REPUBLIC 10-13 (Inter-American Development Bank, RE2-05-007, Dec. 2005) (indicating that targeting can work in developing countries, but that design and implementation details have a considerable effect on the final distributional outcome of the effort, and emphasizing the importance of (1) a consolidated national database, (2) proper identification of individuals, (3) updating an re-certification of databases, and (4) database management needs to be flexibly designed).

[204] *Id.* at 12 & n. 25 (indicating that targeting social programs to the poor in the Dominican Republic was difficult because as much as 25% of the population that would qualify as poor lacked personal identification documents, and that in other countries (Mexico and Nicaragua) this targeting process was greatly facilitated by holograms and pictures on IDs issued by the social service agency).

[205] *See supra* note 28 & 29 and accompanying text.

like those now in use in Austria, Finland, Italy, the Netherlands, and Sweden[207] and soon to be implemented in Cyprus, France, Germany, Hungary, Ireland, Latvia, Lithuania, Malta, Poland, Portugal, Slovakia, Slovenia, Spain, the United Kingdom, and the United States[208] would be nearly as effective. If the "voluntary" nature of these IDs is tied to other necessary privileges, like a driver's license (as under the Real ID Act of 2005) or the receipt of welfare entitlements (as in the Los Angeles welfare fraud prevention program) then these IDs would become *de facto* mandatory IDs.

*Verification.* Once the target population is identified the success of smart ID's with biometric identifiers in preventing fraudulent entitlement claims is very good. This was the case in Los Angeles where over 3,000 fraudulent welfare cases were identified between 1991 and 1994 through the use of fingerprint biometrics in welfare-IDs. Saving over $14 million, the Los Angeles success story quickly lead to similar programs in Connecticut, Illinois, Massachusetts, New Jersey, New York, Pennsylvania and Texas.[209] Biometric IDs can solve the fraud problem once the target group is identified. Thus, verification of consumption tax exemptions is easily within the grasp of present technology.

It is important to note that the biometric ID is being asked to perform a verification function not an identification function.[210] Verification is cost effective and technologically viable today. Identification, although technologically possible usually requires multiple biometric identifiers and extensive data-base matching,[211] is not presently financially manageable.[212]

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[206] *See supra* notes 43 and accompanying text, 47, & *infra* APPENDIX A at Belgium and Estonia.

[207] *See supra* notes 42 and accompanying text, 47 & *infra* APPENDIX A at Austria, Finland, Italy, the Netherlands, and Sweden.

[208] *See supra* note 47, *infra* APPENDIX A at Cyprus, France, Germany, Hungary, Ireland, Latvia, Lithuania, Malta, Poland, Portugal, Slovakia, Slovenia, Spain, and the United Kingdom, & note 55 and accompanying text.

[209] ELECTRONIC BENEFITS TRANSFER *supra* note 13 and accompany text.

[210] Richard Hopkins, *supra* note 1, at 338-39 (indicating that,"[v]erification by biometrics asks the question 'Am I who I say I am?' It works by comparing a previously stored piece of biometric data against an actual physical biometric as read by a scanner. Typical applications for this technology are for gaining access to buildings or for proving entitlement to welfare payments. … Identification by biometrics asks the wider question of 'Who am I?" It works by comparing a scanned biometric against a library of stored biometric data. In the idea form of the process each individual in the library is compared and the question 'Am I this person?" is asked. Identification is therefore like a very long series of individual verifications. Each such verification is known as a 'match.'").

[211] ARUN A. ROSS, KARTHIK NANDAKUMAR & ANIL K. JAIN, HANDBOOK OF MULTIBIOMETRICS (2006) (discussing the current state of the science of digital identification systems operating through multibiometric identifiers).

[212] Richard Hopkins, *supra* note 1, at 338-39, 347,& 362. This study contrasts the feasibility of biometric verification and biometric identification systems for a country with a population of approximately 25 million people. He concludes that a verification system is viable, but an identification system would be difficult to put in place today.

Essentially, "[b]iometric verification performs the same function as a PIN number, password or signature, but involves measurements performed on a physical biometric … it is usually deemed to be more secure … [and has] a high degree of accuracy. …

However, in a biometric identity system, just to be completely successful in determining that there are no duplicate identities, the system would effectively have to compare a new enrollee against all the

*The surgical capacity problem*. The concept of surgically exempting an identified segment of the population from a consumption tax is not new; having the technical capacity to do so is.

In 1972 Selma J. Mushkin considered a very similar problem; the problem of exempting a target population on a graduated scale (based on family income) from government fees and charges imposed on necessary services. Mushkin proposed using a variety of paper IDs, credit cards, coupon books, stamps, tokens or punch cards. Limitations based on frequency of use, a period of time, age criteria, as well as adjustments for changes in income levels, probability of unauthorized use, and overall quantitative limits on benefits were accommodated as variables.[213]

Mushkin presented an "experimental demonstration" in the context of a school lunch program. The critical variable in this program was that bills for lunches would be sent home monthly to parents. This mechanism allowed time for making adjustments in the charges based upon family income levels. Some would pay in full, others would pay at a discount, and still others would be fully exempt. She indicated:

> The experiment might be designed more or less as follows. Each child in a school might be issued a numbered plastic card that could be read by a machine. On inserting the card in a computer card reader, the child is admitted to the lunchroom. The machine would scan each number presented to ensure (if repeated use is considered a problem) that the number had not been presented before during that particular meal period.
>
> If there are problems regarding card exchanges, or thefts, a random number generator can provide the basis for a quality control check on the match between card user and card ownership. The information is stored to be used to prepare monthly billing to all parents. The bill would be adjusted for the income of the parents on a

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people already enrolled in the database. Thus, to enroll a single individual into a population of 1 million people, 1 million individual verifications would effectively need to be performed. Imagining a system where 25 million people are enrolled at a steady rate of 5 million people per year over 5 years would require in the fifth year that each one of the 5 million people enrolled would have to be compared to over 20 million people already in the system. During this year over 100 million matches (asking 'Am I this person?') will need to take place. "If we assume human experts were employed to operate the system and each individual match took 5 seconds for a highly trained person, over 3 million experts working round the clock would be necessary to cope with the workload!" … [Thus,] [w]hat seemed at first to be a perfectly reasonable request: 'establish unique identities for 25 million people within 5 years using biometrics' now seems unreasonable." Under Hopkins' "reasonable assumptions" the underlying requirements of this identification system for 25 million people is in fact a request to implement a system that performs 3.5 million biometric comparisons per second, and at this throughput the system should ensure that for each comparison (a) only 1 in 20 true matches are missed and that (b) only 1 in 1,000 million non-matches are wrongly construed as matches. Based on these requirements Hopkins believes that it is "… unlikely that the US or an EU country will adopt a biometrically enabled identity system in the foreseeable future."

[213] Each of these limitation can be encoded on a "smart" chip in an ID: frequency of use, a period of time, age, changes in income levels, overall quantitative limits can be set as operative parameters determining whether or not the individual presenting the card will be allowed to purchase exempt from tax.

> sliding scale. Thus, for example, lunch might be "free" to all children in families with an income equal to less than one and one-half times the current welfare maximum allowance for that size of family …[214]

This experiment contains the germ of the surgical exemption principle. Its expression is hampered by the technology of the day. Even though "… the proposed approach depends heavily upon a central computer with inexpensive remote readers," micro-capacity chips and the flexibility of contemporary software applications are not contemplated. These missing pieces limit the vision of her experiment.

There is no expectation that a single, secure ID with biometric identifiers is possible; no vision that IDs will have the capacity to record and immediately display qualifications to entitlement programs. Thus, the horizon of the experiment is pulled back – simple credit purchases with time-delayed billings is what this example is all about. Secondly, the prospect of an instantaneous exemption for a cash point-of-sale transaction is not imagined. The experiment does not anticipate that software programs will automate both the sales and exemption/ adjustment aspects of the transaction in real time.

However, today we have the technical capacity to surgically exempt individuals from state-imposed charges on necessities in real time. It is technically no different for an individual to make a purchase with a credit card than it is for a person to swipe a national ID authorizing a consumption tax exemption for designated purchases. Thus, today's technology removes the surgical capacity barrier to the establishment of a truly progressive consumption tax.

*The audit/ compliance problem.* Although Mushkin's experimental demonstration depends heavily upon a central computer with inexpensive remote readers, she does not speculate on the capacity of the digital economy. It would have been valuable if she had. Fully automated transactional compliance, remote digital audits of businesses extending exemptions, is not contemplated.

However, fourteen years earlier, in 1959, Benjamin Higgins, Director of the MIT Center for International Studies saw the contours and the tax compliance implications of a fully digital economy. Higgins observed that such a system would allow for the dramatic streamlining of tax determination. The context was a tax advisory mission to Indonesia. Higgins indicates,

> It became apparent that conceptually simple extensions of existing statistical operations would permit the government to follow the flow of goods through every stage of the economy, providing the base for a completely efficient system of income, sales and excess inventory taxes. … With these materials an appropriate system of coding and [IBM

[214] Marjorie C. Willcox & Selma J. Mushkin, *Public Pricing and Family Income: Problems of Eligibility Standards*, in PUBLIC PRICES FOR PUBLIC PRODUCTS, 395, 407-08 (Selma J. Mushkin, ed., 1972).

> computer] cards, it would be technically possible to compute for any period after the starting date, the average stocks, sales, and incomes of every firm.[215]

As the UC Berkeley studies have made clear, the digital economy that Benjamin Higgins foresaw is here today: (a) because 93 percent data generated worldwide is computer generated – based on three billion gigabytes of global data observed in 1999, and the five exabites of global data observed in 2002, and (b) because 92 percent the new information generated is stored on magnetic media, mostly hard disks (2002 study).[216] Because there is no paper and ink parentage for most source documents today, the economy is, for all practical purposes, a digital one.

It only makes sense then that today's audit and compliance functions should be performed digitally. A certified tax determining system is a pre-audited, real time compliance system. In the consumption field systems like this are currently in place and operational under the Streamlined Sales Tax.[217] Proposals to extend certification to VAT compliance are under study by the OECD,[218] and have been advanced as a solution to the E.U.'s carousel fraud problem.[219]

Therefore the final barrier to the establishment of a truly progressive consumption tax, the audit and compliance problem, also falls away with technology, when the software performing the tax determination is certified in advance of its use.

## THE PROPOSAL

This paper proposes a technological re-thinking of consumption taxes (VATs and RSTs) to resolve the inherent regressivity problem of these taxes. Three proven technological developments (1) exemption certificates tied to biometric data and embedded in national identity smart cards, (2) fully digital consumption tax regimes, and (3) certified tax determination software make it possible for the first time to design a broad-based, single rate consumption tax that is truly and independently progressive.

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[215] Benjamin Higgins, *Self-Enforcing Incentive Tax System for Underdeveloped Countries*, in ECONOMIC DEVELOPMENT: PRINCIPLES, PROBLEMS AND POLICIES (1959) 531-532.
[216] *Supra* at notes 150, 151, & 152 and accompanying text.
[217] *Supra* notes 130 to 148 and accompanying text.
[218] *Supra* notes 177 to 185 and accompanying text.
[219] Richard T. Ainsworth, *Carousel Fraud in the EU: A Digital VAT Solution*, 42 TAX NOTES INT'L. 443 (May 1, 1006).

The point-of-sale is where most of the activity under this proposal will occur.[220] At the point-of-sale a final consumer (who qualifies to purchase exempt of the consumption tax) will present a national ID smart card to a retailer when making a purchase of otherwise taxable goods or services. Biometric identifiers in the card[221] will confirm that the person presenting the card is a person who qualifies for an exempt purchase under the RST, or for a zero-rated[222] purchase under the VAT.[223] A secure communications channel will then be established via a communications chip in the card.[224] The smart chip in the ID, interacting with retailer's financial system through the digital interface, will identify the goods and services (limited as necessary by quantity or dollar amount) that the final consumer may purchase without paying consumption tax.

Because the consumption tax system under this proposal is fully digital,[225] and because all tax determinations are made by a certified service provider (or a certified automated system purchased by the retailer, or a certified proprietary system developed independently by the retailer) exemptions will be processed and recorded

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[220] There are exceptions in both VAT and RST systems. In both systems final consumers can be legal persons. These entities sometimes qualify for exemption from the consumption tax. *See* SIXTH DIRECTIVE *supra* note 99, at Art. 14(1)(g) (importation of goods under diplomatic or consular arrangements, international organizations); MASS. GEN. LAWS ch. 64H, § 6(e) (exempting purchases by any corporation, foundation, institution, or other organization if the organization is exempt from federal income tax under IRC § 501(c)(3)). In these instances an institutional ID with a smart card exception certificate will need to be issued.

In addition, under both systems there are instances where sales made by certain institutions are exempt from either the VAT or RST. In these transactions an ID with a smart card exemption certificate will need to be issued. *See* SIXTH DIRECTIVE *supra* note 99, at Art. 13A(1) (exempting supplies by the postal service, and hospitals); MASS. GEN. LAWS ch. 64H, § 6(cc) (exempting sales by a church or synagogue of meals prepared by its members and served on its premises by its members to members or guests if the proceeds of the sales are to be used for religious or charitable purposes).

[221] Embedding biometrics in an identity card is neither a complicated or expensive process.

[222] The purchase would be zero-rated not exempt. A zero-rated transaction allows the retailer to claim back all input VAT paid. When making an exempt sale a retailer cannot claim an input credit and as a result the purchased item is carries with it the cost of the VAT paid by the retailer to the wholesaler.

[223] The cost for a biometric scanner (fingerprint) is minimal, and like all technology is continually going down. A. K. Jain, A. Ross & S. Prabhakar, *An Introduction to Biometric Recognition*, 14 IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS FOR VIDEO TECHNOLOGY, SPECIAL ISSUE ON IMAGE-AND-VIDEO-BASED BIOMETRICS 4, 9 (Jan. 2004) (indicating that finger print scanners cost about $20 US when ordered in large quantities). In instances where an individual did not have his national ID with him, it would be technically possible to extend the right for an exemption through biometrics alone. Doing this would require maintaining records of an individual's exemption qualifications within the retailer's computer system similar and allowing access to this data through just the application of a biometric identifier at the retailer's sales terminal. Systems like this are regularly applied on college campuses where access is granted to university facilities through biometrics alone. Vincent Kiernan, *Show Your Hand Not Your ID: Colleges use biometric scanners to screen for access to dining halls, labs, dorms, gyms, and computer networks* 52 CHRON. HIGH'R ED. A-28 (Dec. 2, 2005) (indicating that biometric scanning technology is widely used in higher education, and that it is not only less expensive than standard IDs per student, but more accurate).

[224] *Supra* note 26 and accompanying text.

[225] *Supra* PART II.

automatically.[226] As in biometric credit card transactions today, this process will take less than a second.[227]

The participation of sellers in this system could be either voluntary or mandatory. Under a mandatory system all businesses making sales to final consumers, some of whom could qualify for exemption (RST) or zero-rated purchases (VAT), would be required to secure biometric readers and have their accounting and their consumption tax determination system set up to recognize certificates embedded in IDs. Third party providers could offer these services to retailers for a fee, or the government could provide these services at no charge, as under the Streamlined Sales Tax.[228] Transactions made outside the system as well as all transactions not associated with a qualifying "smart" ID would bear the full weight of the consumption tax – at the single standard rate.

Under a voluntary system two approaches are possible. Sellers who do not voluntarily participate could either be denied the right to honor exempt purchases, effectively making all sales from their establishments taxable at the single standard rate, or they could be required to keep auditable paper records of exempt transactions (recording the person who made the purchase, the item purchased, along with the government issued code that associates the person and the exempt purchase).[229]

This is an aggressive response to technological change. It suggests that rather than wait for gradual change brought about through the *linear function creep* of technology, tax policy professionals should be *hyper responsive*. They should respond in a manner that fundamentally redesigns the system. This is an old suggestion, but its time has come.

In 1961, a time probably very near the dawn of the computer age in tax policy discussions, the future Nobel economist, William Vickrey posed a rhetorical question about the electronic data processing (EDP) revolution that was just beginning. He asked: "Does EDP open up possibilities for reforming the way in which tax liability is defined?" Vickrey's answer was *hyper responsive*.

> What is required is a re-thinking of the problems of tax policy in terms of socially desirable goals. Once the problem has been defined and alternative choices explored, then the machines can be adapted to fit the requirements of the solution. As automation increases, the whole social structure of our environment will be subject to revolutionary change; tax administration must keep abreast of this change."[230]

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[226] *Supra* PART III.
[227] *Supra* note 26 and accompanying text.
[228] *Supra* note 146 and accompanying text.
[229] It would be expected that a voluntary system would most likely achieve the same end results as a mandatory system over time, particularly as the cost of a biometric reader is approximately $20.00 and if the certified service provider option is offered to retailers at no charge. Additionally, retailers making a high number of sales to potentially exempt final consumers would eventually find their customer base eroded as individuals went to a retailer who was equipped to provide the exemption.
[230] William Vickrey, *Electronic Data Processing and Tax Policy*, 14 NAT'L. TAX J. 271 at 271 and 285 (September 1961).

The problem (to re-state Vickrey) is how to exempt from the consumption tax (RST or VAT) select individuals when they purchase specifically determined goods or services, while at the same time maintaining a single rate broadly based on all other purchases of goods and services in the economy. If this problem is re-thought with modern technology in mind it can be solved.

It is a simple matter of embedding exemption certificates inside of "smart" IDs equipped with biometric identifiers, and then processing sales transactions through certified tax calculation software operating within the context of a digital VAT or RST regime. Not only is the technology to do this is available today but all the critical pieces have been part of successful pilot projects. The time has come to design the first truly and independently progressive consumption tax.

APPENDIX A

**Austria**. *(1) Smart ID Card*. A voluntary Citizen Card (Bürgerkarte), first issued in February 2003, contains an embedded electronic signature and digital certificates. Smart cards technology enables citizens to securely access electronic public services and complete administrative procedures electronically. Austria' concept of e-ID is original. There is not just one type of Citizen Card, instead any card, which makes it possible to sign electronically in a secure form, and to store personal data is suitable for use as a Citizen Card. Thus, membership cards issued by certain entities (e.g. the Austrian Computer Society, the Federal Economic Chamber, etc.) as well as bankcards can include Citizen Card functionality. In addition, a "light" Citizen Card service has been developed that can be used with mobile phones, enabling citizens to digitally sign documents and conduct secure transactions with the government. Thus, the Citizen Card is not dependent on a particular form of technology. Citizens select the technology to be used. The government certifies the digital medium – double-encrypted numeric identifiers and sector-specific personal identifies are required. *(2) Electronic Portal*. On May 19, 2004 the Austrian government launches an official electronic delivery service (Zustelldienst). The service allows citizens and officials to send secure e-mails with official acknowledgement of receipt. Registered e-mails have legal status. A digital signature is required for use of the system. (3) *Tax Administration & Technology*. FINANZOnline enables electronic filing (declaration and notification of assessment) of personal and corporate income tax returns, as well as the filing of VAT returns, declarations and notifications. Access at: https://finanzonline.bmf.gv.at/. The Austrian Federal Ministry for Economic Affairs and Labor (BMWA), as part of its "Paperless Foreign Trade Administration" (Papierlose Aussenhandelsadministration – PAWA), offers companies to obtain import licenses and submit customs declarations over the internet. Access at: https://www.pawa.bmwa.gv.at/. Personal and corporate income tax, VAT and customs administration are all benchmarked at "stage 4" compliance. *Id*. at 12, 14, 20, 27, 29, 33 & 34.

**Belgium**. *(1) Smart ID Card*.. A mandatory system of e-ID's was initiated in 2000, officially launched in March 2003 (as a pilot), and is expected to be completed by the end of 2009. Belgium expects that it will be the first European country to issue e-ID's to the entire population (10 million). Belgium was the first country in the world to issue electronic passports complying with the recommendations of the International Civil Aviation Organization (ICAO). The passports contained a facial image in a microchip. Fingerprints will be added after European legislation is passed. *(2) Electronic Portal*. On February 18, 200 the Belgian government began development of an e-government portal. The federal portal http://www.Belgium.be is launched in November 2002. *(3) Tax Administration & Technology*. Tax-On-Web enables electronic filing (declaration and notification of assessment) of personal income tax returns. Accessed at: http://www.taxonweb.be/. Similar e-filing for the corporate income tax is at http://www.minfin.fgov.be/. InterVAT enables the submission of digital VAT returns. EdiVAT allows submission via EDI conventions. An electronic Customs Declaration system has been in place since 1982, called SADBEL (Systeme Automatisé de Dedouanement pour la Belgique et le Luxembourg). The system allows businesses to

submit their declarations by communicating directly with the central computer of the Customs and Excise Administration by modem/telephone line. On January 1, 2006 this system was replaced with a web-based application. Use of the web-based system will be mandatory in 2008. Accessed at: http://fiscus.fgov.be/interfdafr/. The Customs and Excise Administration has developed a web-based application called WEB-N.C.T.S. for managing transit operations based on the EU's New Computerized Transit System (NCTS). On March 18, 2005 Belgium began implementation of an integrated system to process tax returns and collection for citizens and businesses. The system will centralize taxpayer data into a "Simplified Fiscal Account" to optimize management. The system will cover the entire tax management process – calculation, declaration, registration, collection, early payment, control and claims handling. Personal and corporate income tax, VAT and customs administration are all benchmarked at "stage 4" compliance. *Id.* at 39, 40, 53, 55, & 60-1.

**Cyprus**. *(1) Smart ID Cards*. Cyprus is not as advanced as other Member States. Cyprus plans on introducing e-ID smart cards, but has not done so yet. Statutory authority is in place for electronic signatures as of 2004. *(2) Electronic Portal*. The government portal, http://www.cyprus..gov.cy, is an institutional web site. A new multi-channel e-government portal is due to be launched. This portal will incorporate transactional capabilities. The gateway will provide security, authentication, encryption, decryption, as well as web-based workflow for interconnection of departmental back-end systems. The portal is expected in 2007. *(3) Tax Administration & Technology.* In tax areas Cyprus is much more advanced. TaxisNet permits electronic filing (declaration and notification of assessment) of personal income tax, corporate income tax and VAT. Accessed at: http://taxisnet.mof.gov.cy/. A similar system called Theseas allows traders or their authorized agents to submit import declarations for the clearance of goods. Accessed at: http://www.mof.gov.cy/ce/theseas/. Thus, the entire tax system in Cyprus is benchmarked at "stage 4." *Id.* at 69, 73, 74, 78, & 79.

**Czech Republic**. *(1) Smart ID Cards*. There is no central e-ID card infrastructure in the Czech Republic, and as of May 2006 there is no plan to adopt one. E-signatures are permitted, and three companies have been certified to issue valid e-signatures for citizens to use in their relations with the government (filing tax returns, submitting court petitions, etc.). In one area – health – there is an effort to replace existing health care cards with smart cards. *(2) Electronic Portal*. The public administration portal, http://Portal.gov.cz, was launched in October 2003 and is being implemented gradually in interlinked phases. Some limited transactional services are offered. *(3) Tax Administration & Technology*. In spite of the Czech Republic's seeming resistance to technology generally, the situation in tax is different. Personal and corporate income tax returns, as well as VAT and customs declarations may be filed electronically (declaration and notification of assessment). Accessed at: http://cds.mfcr.cz/. Although the customs administration is benchmarked at "stage 3," all other aspects of the tax administration is benchmarked at "stage 4." At stage 3 there is two-way interaction, processing of electronic forms (including e-signature), but not full case handling, decisions and delivery (including payments). *Id.* at 89, 91, 97, 99, & 103.

**Denmark**. *(1) Smart ID Cards*. Denmark has launched an ambitious program to issue (at no charge) digital signatures to all 1.3 million citizens. It does not have plans to introduce card-based electronic ID's. The software-based digital signature (OCES – Public Certificate for Electronic Services) can be used for both public and private sector transactions. Denmark does have medical e-ID's. All medical records (as far back as 1977) are available on-line through a secure e-service portal (http://www.sundhed.dk). *(2) Electronic Portal*. The national portal http://.Danmark.dk simply provides public information and limited services. *(3) Tax Administration & Technology*. With respect to matters of taxation Denmark is highly automated. Electronic filing (declaration and notification of assessment) of personal income tax is 100% automated. Almost all tax information is collected by the tax authority electronically, placed on a pro-forma electronic return, and sent to the taxpayer for modification and digital signature. Accessed at: http://www.toldskat.dk/. The same web site provides fully functional declaration and payment capabilities in corporate income tax and VAT. This site also provides the "Just-In-Time" web-based e-customs system. It allows import declarations through the Internet or EDI (Electronic Data Interchange). The entire tax system in Denmark is benchmarked at "stage 4" compliance. *Id.* at 108, 110, 114, 121-22, & 126-27.

**Estonia**. *(1) Smart ID Cards*. In January 2002 Estonia introduced a mandatory e-ID card for all citizens and permanent foreign nationals over 15 years of age. The card is the primary document for identifying citizens and foreign residents and its functions are to be used in any form of business, government or private communications. The cards have physical (biometric) identification functions as well as secure authentication and legally binding digital signature capability in a microchip that contains personal data, certificates, and a permanent e-mail address (Forename.Surname@eesti.ee). The cards have been issued to over 50% of the population (777,000 cards) and are expected to exceed 1 million cards by 2007. [In addition to the national e-ID card, Estonian citizens can access online public services through their Internet banking cards [more than 70% of Estonian residents use Internet banking, the highest proportion in Europe.] Estonia was the first country in the world to allow its citizens to vote (nationwide) over the Internet using national e-ID cards. Finland and Estonia signed an agreement in May 2003 to harmonize concepts and practices between the two countries regarding digital signatures. The project promotes the "universal digital signature." *(2) Electronic Portal*. Estonia's e-government portal is http://www.eesti.ee. It was launched in March 2003 and provides a single point of access to government information. Through authentication (via the national ID) the portal allows citizens to fill in forms and submit electronic forms access personal data, and perform transactions. *(3) Tax Administration & Technology*. In October 2000 Estonia developed the e-TaxBoard (e-Maksuamet, *available at* http://www.emta.ee/). The e-TaxBoard allows Estonian taxpayers to access their tax files, view, collect and submit personal, corporate and VAT returns on-line. VAT refund applications are also accepted. The Estonian Tax and Customs Board developed an e-Customs application (e-Toll) that enables on-line submission of customs declarations. The entire Estonian tax system is benchmarked at "stage 4" compliance. *Id.* at 131-32, 138-40, 143, 145, & 149-50.

**Finland**. *(1) Smart ID Cards*. Finland is a world leader in the adoption of e-ID cards. The Finnish card features biometric (facial) ID, an e-number that allows identification and digital signatures. The card is an official travel document within the EU. The chip in the Finnish card was upgraded in 2003. In 2004 citizens were allowed to volunteer to include health data on the single e-ID (a digital health card can be used instead of incorporating all information on one card.) Although the card is not mandatory, the number embedded in it is mandatory when conducting government business. Uptake of the e-ID remains low in Finland, and has inspired a series of government-sponsored upgrades, and modifications to improve demand. On November 24, 2004 the Population Registration Center and the telecom operator Sonera presented the Citizen Certificate, a mobile ID scheme. This mobile ID (m-ID) is a government-guaranteed electronic identity embedded in a SIM card that allows mobile phone users to identify themselves. Finland (similar to Estonia) has an online identification system based on identification codes issued by Finnish banks. *(2) Electronic Portal*. The citizen's portal was launched in 2002, http://www.Suomi.fi/. It provides a single access point to public information, administrative forms, and services. This new portal, replacing an earlier portal that was initiated in 1997, supports authentication base on both PKI and on the bank's authentication system for certain transactions. There is a central administrative forms service, http://www.Lomake.fi, and a dedicated business portal, http://www.YritysSuomi.fi. *(3) Tax administration & Technology*. The tax administration is very receptive to technology. Personal and corporate income tax as well as VAT returns, declarations and payments are fully digital. Access at: http://www.vero.fl/. The personal income tax return is pre-filled by the government similar to the system in Denmark. Fully digital customs declarations can be filed with the National Board of Customs at http://tulli.fl/. The entire Finish tax system is benchmarked at "stage 4" compliance. *Id.* at 154,-55, 157, 162, 167-68, &172-73.

**France**. *(1) Smart ID Cards*. There are plans in France for e-ID cards, but as yet there are no French cards. There is no centralized e-identification infrastructure for e-government in France. This is in part attributable to the public resistance spawned by reaction to a March 21, 1979 newspaper expose in Le Monde revealing the existence of a project by the Ministry of the Interior to interconnect electronic files containing personal data by using a unique personal identifier. Code named SAFARI (systeme automatisé pour les fichiers administratifs et le repertoire des individus) the revelation resulted in the Prime Minister prohibiting further development pending the development of rules. The French government has transposed the EU e-signature Directive into French law (March 2000) and has an e-signature framework policy (PRIS, July 2005). The government has launched an e-ID project called INES (Identité Nationale Electonique Sécuriséé) that was endorsed by the Prime Minister (April 11, 2005). The future French e-ID card will have a microchip containing all identity information about the holder, two biometric identifiers (facial and fingerprint), and an electronic signature. Personal information would be stored in a new database, and biometric data stored anonymously in a separate file. The French e-ID will be mandatory, and citizens will charged a fee. *(2) Electronic Portal*. The public portal http://Service-Public.fr/ provides a comprehensive single access point to information and services for citizens (since October 2002) and for businesses (since November 2003). However, it does no more than provide information. *(3) Tax*

*Administration & Technology*. In spite of French resistance to e-ID cards, in the tax area technology is welcomed. Personal and corporate income tax returns, declarations and payments are fully digitized. Accessed at: http://www.impots.gouv.fr/. Online declaration and payment of VAT obligations can be accomplished in full digital format. Accessed at: http://tva.dgi.minefi.gouv.fr/. A full service e-customs function for declarations and payments is also in place. Accessed at: http://www.douane.gouv.fr/. Thus, the entire French tax system is benchmarked at "stage 4" compliance. *Id.* at 177-80, 185, 195, 197, & 201-02.

**Germany**. *(1) Smart ID Cards*. Biometric passports were issued by Germany, beginning on November 1, 2005. The passports contained an embedded radio frequency identification (RFID) chip storing personal data as well as digital facial image, with a scan of the right and left index fingerprint scheduled added in March 2007. Other than this passport application, there is no e-ID infrastructure currently in use. However, an e-ID project has been launched with pilots carried out in 2002. The German e-ID card (Digitale Personalausweis) will include an electronic signature and biometric identifiers stored on a smart card. In March 2005 the German government presented a plan aimed at a common e-card strategy to coordinate the various e-card projects ongoing in Germany (e-health card, e-ID card and the jobs card). The German e-ID card will be introduced in 2007. *(2) Electronic Portal*. The German e-government portal http://www.Bund.de/ is passive, provides access to the services of the Federal Administration as well as entry into the state and municipality web sites. There is access to an online forms server. A December 1, 2001 survey identified 375 services that would be moved on line by 2005 (a figure that was surpassed by March 18, 2005). *(3) Tax Administration & Technology*. The tax-specific functionality on the Internet is interactional and transactional, exceeding the Internet functionality of government overall. The ELSTER website enables on-line filing and payment of personal and corporate income tax returns as well as VAT declarations, returns, and payments. Accessed at http://www.elster.de/. Comparable capacity for the submission of customs declarations and payments was launched in October 2002. Accessed at: http://www.zoll-d.de/. Thus, the entire German tax system is benchmarked at "stage 4" compliance. *Id.* at 206-07, 214, 221, 223, & 227-28.

**Greece**. *(1) Smart ID Cards*. There is no centralized e-ID infrastructure in Greece, and there is no plan to adopt one. The government has presented a digital strategy for the period 2006-2013 which would enable a "great leap," but nothing in the strategy considers e-ID's. Government sanctioned digital signatures are part of the strategic plan, and are expected in 2008. *(2) Electronic Portal*. The Greek approach to e-government has been decidedly less technology intensive that other Member States. Greece has establish a series of physical location – Citizen Service Centers (800 currently and expected to number over 1,000) that provide a "one-stop-shop" solution through a linked IP network that can be accessed through the Centers, or over the Internet. The Centers are open 8am to 8pm Monday through Friday, and with limited hours on Saturday. Internet access is at: http://www.kep.gov.gr/. However, the Greek approach has strong human service element. *(3) Tax Administration & Technology*. In the tax area the digital services theme is more in evidence than in the rest of the Greek approach to e-government. The personal and corporate income taxes as well as VAT (declarations and

notices of assessment) and customs clearance are facilitated through the TAXISnet service that was instituted in May 2000. Payment, return processing, electronic certificates, and downloadable forms are all available. Accessed at: http://www.taxisnet.gr/. Thus, the entire Greek tax system is benchmarked at "stage 4" compliance. *Id.* at 232, 234, 236, 242-43, & 247-48.

**Hungary**. *(1) Smart ID Cards*. There is currently no central e-ID infrastructure in Hungary, although the government does have plans for an e-ID card. In October 2002 a pilot project on e-signatures and e-ID cards was launched. Requirements and specifications for the e-ID card (HUNEID) were published in 2004. *(2) Electronic Portal*. On April 1, 2005 a transactional gateway was established called "Client Gate" (Ügyfélkapu) which allows access to transactional e-government services after a secure authentication registration (however authentications are not currently through a national e-ID). *(3) Tax Administration & Technology*. In the tax area Hungary is not keeping pace with e-solutions in other EU Member States. In the personal income tax forms can be downloaded and returns filed electronically. For the corporate income tax more functionality is available (conditional on a chip card and reader) provided by the tax office (using PKI technology). VAT forms can be downloaded from the website, but returns are only accepted by the largest taxpayers. Access at: http://www.apeh.hu/. In customs there are basic interactive tools available on line, certain forms can be downloaded, and with permission be submitted electronically, accessed at: http://www.vam.hu/. Only the corporate income tax is benchmarked at "stage 4" compliance. The personal income tax is rated at "stage 3." Both the VAT and the customs functions are benchmarked at "stage 2." *Id.* at 252-54, 257, 263-64, & 268-69.

**Ireland**. *(1) Smart ID Cards*. In June 2004 the Irish government established an expert group to introduce a standard framework for Public Service Cards (PPC), making use of the Personal Public Service (PPS) number in a manner that could be used for e-ID and authentication purposes. The intent is to design a single multi-purpose card. The Public Service Broker (PSB) coordinates the Irish e-government initiative. The PSB interfaces between the government and public, improving service delivery through conventional (in person and telephone) and self-service (on-line) electronic channels (the "Reachservices" portal). The PSB currently uses the PPS number as a unique identifier, even though it was initially intended for use for tax and social welfare purposes. An integrated smart card electronic ticketing system, as of March 21, 2005, is operational for all public transportation services in the country. *(2) Electronic Portal*. Reachservices is Ireland's e-government portal, accessed at: http://www.reach.ie/. It provides a single point of access for informational, interactive and transactional public services. The Reachservices portal is the PSB interface. The portal includes a single identification and authentication process and a single electronic payment facility. The portal allows registered users to conduct transactions with the government from one central access point at any time. *(3) Tax Administration & Technology*. Full compliance with personal and corporate income taxes as well as VAT and customs obligations – returns processing and payments can be achieved on line, accessed at: http://www,roe.ie/. The entire Irish tax system is benchmarked at "stage 4" compliance. *Id.* at 273-75, 281, 287-88, & 292-93.

**Italy**. *(1) Smart ID Cards*. On March 31, 2005 Italian Law mandated that all paper ID's be replaced with electronic ID's by the end of 2005. Only digital ID's were issued from 2006 forward. The Italian e-ID card (CIE) was launched in 2001, and after two experimental phases in 2003 and 2004, distribution to requesting citizens over 15 years old began, with the goal of total replacement by 2011 (40 million cards). The CIE has a microchip, optical memory and an ICAO machine-readable strip. The card contains personal data (fiscal code, blood group, and fingerprint scan). Data is stored on the card, not in a central database; it is released only with a PIN code. The optical memory does not allow fingerprint reconstruction. Before the full implementation of the CIE a National Services Card (CNS), smart card had been developed (as a temporary measure) to allow secure identity recognition on line. However the CNS did not constitute legal "proof" of identity, and was not a legal travel document like the CIE. *(2) Electronic Portal*. The Italian web portal is at: http://www.Italia.gov.it/. It is a comprehensive and secure e-government portal for all public services. *(3) Tax Administration & Technology*. Personal and corporate income tax and VAT returns, declarations, and payments can be made on-line, accessed at: http://fisconline.agenziaentrate.it/. Similarly for customs declarations and payment. The Customs Agency has a fully transactional on-line system, accessed at: https://telematico.agenziadogane.it/. The entire Italian tax system is benchmarked at "stage 4" compliance. *Id.* at 297-98, 301, 306, 311-12, & 316-17.

**Latvia**. *(1) Smart ID Cards*. There is currently no central e-ID infrastructure, but there is an e-ID card project. The Latvian Parliament passed a Law of Personal Identification Documents on May 23, 2002 requiring either an identity card or passport as an identity document for every citizen over 15 years of age. A regulation issued in 2004 provides for electronic chips in ID cards holding basic personal data, as well as a biometric (facial) and electronic signature. This regulation is not fulfilled at the moment because of the absence of a "certification service provider." On June 15, 2005 the Latvian government entered into an agreement with Latvia Post and Lattelekom LTD to fulfill the requirements of the law and regulation. The tax system in Latvia is considerably behind other Member States. *(2) Electronic Portal*. Latvia doe not currently have an e-government services portal. A state portal http://www.LVonline.lv/ had been launched in 2002 to provide a single access point for all government information and services, but had to be stopped because of lack of funding. A new development effort was undertaken in 2005. *(3) Tax Administration & Technology*. In the tax area the situation is (potentially) much better. An Electronic Declaration System (http://www2.vid.gov.lv) is available. It is designed to allow full service (return submission, payments, declarations, data checks, and e-mail confirmation) for tax transactions. However, regulations on the storage and circulation of electronic documents are not in place yet, thus all filings, payments and information requests must still be done on paper. Customs however has a fully digital functionality, as businesses can use the Computerized Transit Control System to submit customs declarations and payments, accessed at: http://www.vid.gov.lv/. As a result of these difficulties, the Latvian tax system is generally benchmarked at "stage 1" compliance. The customs function however, is benchmarked at "stage 4." *Id.* at 321, 323, 329, 333-34, & 339.

**Lithuania.**. *(1) Smart ID Cards*. There is no central e-ID infrastructure in Lithuania at the present time. However, a government "concept paper" adopted in December 2002 urges the development of an e-ID that will include personal data, social insurance details and medical records. E-signature legislation was enacted on July 11, 2000 setting out requirements for certification and the rights and obligations of service providers. A pilot program was initiated in May 2004. *(2) Electronic Portal*. In January 2004 the Lithuanian government opened a full service digital service portal for citizens and businesses, available at: http://www.govonline.lt. *(3) Tax Administration & Technology*. In the tax area, a fully transactional system operates in personal and corporate income tax as well as VAT. The system accepts all returns, provides notifications of assessment, and new forms, as well as allows monitoring and management of filings, accessed at: http://deklaravimas.vmi.lt/. The Lithuanian Customs Administration runs a similar web site that allows fully transactional submission of declarations and payments, accessed at: http://www.cust.ly/. The whole Lithuanian tax system is benchmarked at "stage 4" compliance. *Id.* at 344-45, 349, 355-56, & 360-61.

**Luxembourg**. *(1) Smart ID Cards*. There is no central e-ID system in Luxembourg, and there is no government plan to adopt one. In March 2003 the LuxTrust Economic Interest Group (a public-private partnership) was formed to manage the development of a public key infrastructure (PKI) for e-commerce and e-government. A new e-Government Master Plan presented on June 13, 2005 does not mention e-ID's. Electronic payments and digital signatures are authorized in legislation passed on August 14, 2000. *(2) Electronic Portal*. There is currently no full e-government services portal in Luxembourg. A one-stop portal is expected to go live some time in 2006. A business portal, http://www.entreprises.public.lu/, is already in operation. It provides a one-stop-shop for information and services. *(3) Tax Administration & Technology*. In the tax area Luxembourg is behind other Member States in direct taxes, but a fully transactional systems is in place in VAT and customs. Web sites allow forms to be downloaded for personal and corporate income taxes, accessed at: http://impotsdirects.public.lu/. The VAT functionality allows payments and submission of returns, accessed at: https://saturn.etat.lu/etva. A fully electronic Customs Declaration system has been operational for several years called SADBEL (Systeme Automatisé de Dedouanement pour la Belgique et le Luxembourg). Thus, the Luxembourg tax system has a dual benchmarking. It is considered at "stage 2" compliance for direct taxes, and at "stage 4" for customs and VAT. *Id.* at 364, 366, 370-71, & 374-75.

**Malta**. *(1) Smart ID Cards*. On March 18, 2004 the Maltese government launched its e-Identity (a secure network key enabling citizens to conduct interactive and transactional e-services where strong identity security is required). This is not an identity card, and a paper card system remains in place. *(2) Electronic Portal*. The government of Malta's portal is an institutional site, accessed at: http://www.gov.mt. It provides access to information and has some interactive and transactional services. *(3) Tax Administration & Technology*. In August 2004 the Maltese Inland Revenue then launched an on-line payment system based on the government's Electronic Payment Gateway (ePG). A digital signature law was passed on January 16, 2001. Personal and corporate income taxes are fully digitized for returns and payments, accessed at: http://www.ird.gov.mt/.

Similar functionality is available with the VAT accessed at: http://www.vat.gov.mt/, and with customs, accessed at: http://ces.gov.mt/. The entire Maltese tax system is benchmarked at "stage 4" compliance. *Id.* at 379-80, 384, 388-89, & 392-93.

**The Netherlands**. *(1) Smart ID Cards*. The Netherlands has an e-ID system (DigiD) in place, and intends to introduce an e-ID card (eNIK) by August 28, 2006. Apart from a user name/ password for citizens (basic level), a DigiD authentication method for businesses is being developed, and an internet banking methodology for digital signatures (medium level) is being incorporated. The e-NIK will supplement the biometric passport that was in trials beginning on September 1, 2004. The passport (and the e-NIK) include two biometrics (facial and fingerprint). On September 12, 2005 the Dutch government announced the creation of an Electronic Child File for all Netherlands children. As of January 1, 2007 each child born in the Netherlands will be assigned a unique numeric identifier and an electronic file that will initially contain medical information, domestic relations, and as the child grows the school records and social services and police will be able to add data (as relevant). Once operational, all previously issued paper files of Dutch children will be digitized. Unique and uniform identification numbers for citizens (Citizens Service Number – CSN) and for businesses (Companies and Institutions Number – CIN) are being introduced as of January 1, 2006. *(2) Electronic Portal*. The Netherlands portal at http://www.Overheid.nl/ provides access to a growing amount of information, as well as a one-stop-shop for a number of interactive and transactional services. *(3) Tax Administration & Technology*. The Netherlands tax system is benchmarked at "stage 2" compliance for VAT, because the web site only provides on-line downloadable forms, however in the other tax areas, both personal and corporate income taxes and customs the Netherlands is benchmarked at "stage 4" compliance. *Id.* at 397-98, 402, 407-08, & 414-15.

**Poland**. *(1) Smart ID Cards*. There is no central e-ID infrastructure in Poland. The development of a "Multifunctional Personal Document" (MPD) – an intelligent, PKI-ready smart card that could replace the current plastic ID card – is being studied. The e-ID would be based on the current identification numbers and reference databases (PESEL for individuals and REGON for businesses). *(2) Electronic Portal*. There is also no central e-government portal in Poland. This too, is a key project under development. *(3) Tax Administration & Technology*. Poland is behind many Member States in the tax area. For the personal and corporate income tax, as well as the VAT it is possible to download forms (only), accessed at: http://www.mf.gov.pl/. The Ministry of Finance announced on April 20, 2005 that e-tax filing services will commence in 2006, with a priority given to the largest taxpayers. Full e-filing is not expected for all taxpayers until 2012. For customs purposes the situation is better. Customs declarations can be made with Single Administrative Documents (SAD) using on-line forms, accessed at: http://www.mf.gov.pl/sluzba_celna/. The Polish tax system is benchmarked generally at "stage 2" compliance (personal and corporate income taxes and VAT). It is benchmarked at "stage 4" compliance in customs. *Id.* at 419-20, 420-21, 428-29, & 433-34.

**Portugal**. *(1) Smart ID Cards*. There is currently no central e-ID infrastructure in Portugal, although in April 2005 the new government announced plans for the creation of

a multi-purpose citizen card. The card will combine ID, tax, social security, health insurance and electoral information. Distribution is expected to start in 2006. *(2) Electronic Portal*. The Citizen's Portal was launched in March 2004, providing digital access to over 700 services (20% of which are fully transactional). *(3) Tax Administration & Technology*. In the tax area, personal and corporate income taxes are fully transactional over the Internet, as is the VAT, accessed at: http://www.e-financas.gov.pt/. Customs is similarly established as a fully transactional, digital system, accessed at: http://www.e-financas.gov.pt/de/jsp-dgaiec/msin.jsp. The Portuguese tax system is benchmarked at "stage 4" compliance. *Id.* at 438-39, 441, 444, 450-51 & 454-55.

**Slovakia**. *(1) Smart ID Cards*. There is currently no central e-ID infrastructure in Slovakia, but the government has announced plans to introduce high-tech ID's and passports, likely with multiple biometric identifiers. The e-ID cards will incorporate digital signatures. The passports issued as of April 2005 are "biometric-ready," with facial identifiers incorporated by September 2006 and fingerprint scans by March 2008. *(2) Electronic Portal*. The current electronic portal, accessed at: http://www.Obcan.sk, provides basic information on public services. It allows users to locate government officials who can help resolve a problem. A new central government portal (currently in the design stage) will offer more transactional services. *(3) Tax Administration & Technology*. In the tax area, a secure national tax portal "e-Tax" was made available March 7, 2005. The personal and corporate income tax is fully transactional for holders of the government guaranteed electronic signature, accessed at: http://www.drsr.sk/. VAT transactions can be handled at the same site, but functionality is limited to downloadable forms. The Customs Administration web site only provides information, accessed at: http://www.colnasprava.sk/. Thus, the Slovakia tax system is benchmarked at "stage 4" for income tax, "stage 2" for VAT, and "stage 1" for the customs administration. *Id.* at 459-60, 469-70, & 474-75.

**Slovenia**. *(1) Smart ID Cards*. A Public Key Infrastructure (PKI) has been deployed in Slovenia, and four certification authorities have been accredited. An e-ID card project has been launched, but is not yet operational. *(2) Electronic Portal*. In May 2006 a government-wide portal for e-services (eSJU) was launched, the Tax Administration had previously (March 1, 2004) established a dedicated tax portal "eDavki" (eTaxes). The Slovenian General Certification Authority (SIGEN-CA) began operation on July 9, 2001 and began issuing qualified digital certificates for natural and legal persons. *(3) Tax Administration & Technology*. In the tax area, personal and corporate income as well as VAT taxpayers can participate in a fully transactional digital interface with the government through the Internet, accessed at: http://edavki.durs.si/. The Customs Administration however only has forms available for download on the Internet, accessed at: http://carina.gov.si/. The Slovenian tax system is generally benchmarked at "stage 4" (income tax and VAT). Customs is benchmarked at "stage 2." *Id.* at 479-81, 490-91, & 494-95.

**Spain**. *(1) Smart ID Cards*. The Spanish government officially approved the creation and distribution of new e-ID cards containing biometric identifies (after pilot testing) on

February 13, 2004. The e-ID card was to be implemented in phases with distribution beginning in 2005. However, the pilot project was delayed until 2006, and card distribution is now expected in late 2007. The Electronic National Identity Document (DNI) project was initiated in 2001 to facilitate the use of digital signatures and digital identities (assigned by the Spanish Certification Authority (CERES)). The e-ID cards will permit digital signatures as well as provide biometric and other basic identification data. *(2) Electronic Portal*. Launched in September 2001, and revamped in May 2003 the portal, http://www.Administracion.es, is a gateway to information and services. As of October 2003 it provides a secure government notification service. As part of "Plan Conecta" for the development of e-government services (2004-2007) a new portal will be established: http://www.Ciudadano.es. Interactive and transactional services will be available on this portal. *(3) Tax Administration & Technology*. In the tax transactional and interactive services are already available in personal and corporate income taxes as well as VAT and customs. The regimes are in a fully transactional digital medium, accessed at: https://aeat.es/. The customs functionality is at https://aeat.es/aeatse.html?https://aeat.es/aduanet/aduanaie.html. The Spanish tax system is benchmarked at "stage 4" compliance. *Id.* at 499-00, 502, 504, 506, 511-12, & 515-1.

**Sweden**. *(1) Smart ID Cards*. Biometric passports and biometric e-ID's (nationellt identitetskort) were issued in Sweden on October 1, 2005. The passport has an RFID (Radio Frequency Identification) microchip. The e-ID is not mandatory, but functions as a valid travel document within the Schengen area. The biometric identifier is a digital facial image. The documents contain a traditional chip that permits secure access to e-government services. Swedish citizens can continue to use (for the time being) non-official electronic ID cards issued by the Swedish Post, that are based on standards approved in 1998 by the Swedish Standards Institute to access some government services as well as software based e-ID's (in particular the BankID developed by the largest Swedish banks.) *(2) Electronic Portal*. Launched in October 2004 the new Swedish e-government portal http://www.Sverige.se is not intended to be a single point of entry to the public sector. Instead it is an "intentions-based" orientation point for individuals looking for links to public sector sources of information and services. *(3) Tax Administration & Technology*. The tax administration sites are more transactional. Personal and corporate income tax as well as VAT obligations can be satisfied in fully transactional digital mediums, accessed at: http://skatteverket.se/. Similar full transactional digital access is available tin customs area, accessed at: http://www.tullverket.se/. Thus the whole Swedish tax system is benchmarked at "stage 4" compliance. *Id.* at 520, 526, 531-32, & 536-37.

**United Kingdom**. *(1) Smart ID Cards*. The e-ID card is controversial in the UK. Initially proposed by the government on November 11, 2003, an e-ID card bill [linking the e-ID database with the e-passport database] was introduced to Parliament in November 2004. The bill passed the House of Commons (February 10, 2005), but was not voted on by the House of Lords. It was re-introduced on May 25, 2005, passed the House of Commons (October 18, 2005), but the House of Lords uncoupled the e-ID from the e-passport database, thereby making significant portions of the e-ID data voluntary. This is unacceptable to the government, and the bill will be reintroduced. The

government would prefer e-ID cards with a microchip for storing personal data along with biometric identifiers (facial, fingerprint and iris scan) and an electronic signature. Distribution has been anticipated by 2008. Thus, the current e-ID infrastructure in the UK is based on either a digital certificate issued by an accrediting certification authority or through a user ID issued by the Government Gateway along with a password (chosen by the user). The Government Gateway was launched in February 2001. It is a central registration and authentication engine that enables secure authenticated e-government transactions over the Internet. On June 15, 2004 a biometric iris scan border control system was put in place at key airports to efficiently identify regular travelers and foreign work permit holders. *(2) Electronic Portal*. Launched in March 2004 http://www.Direct.gov.uk is the UK government's citizen portal. It is a single point of entry to government services. Since April 2004 the site is available via digital TV sets (10 million in the UK). *(3) Tax Administration & Technology*. In the tax area, personal income tax [http://www.hmrc.gov.uk/individuals/tmaself-assessment.html] and corporate income tax [http://www.hmrc.gov.uk/ctsa/index.html], VAT [http://customs.hmrc.gov.uk] and customs [http://www.hmrc.gov.uk/online] obligations can be satisfied though a full transactional digital interface with the government over the Internet. The U.K. tax system is benchmarked at "stage 4" compliance. *Id.* at 541, 543-44, 554, 561, 563, & 567-68.

APPENDIX B

**Alabama:** *Tax Administration & Technology.* Alabama is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.ador.state.al.us. (3) All sales and use tax returns are required to be filed electronically (ALA. ADMIN. CODE r. 810-1-6-.12(2)). Persons who are unable to utilize the electronic filing system must use the Department's telephone voice response system (ALA. ADMIN. CODE r. 810-1-6-.12(3)). In certain circumstances, a waiver is available from the Commissioner to file in another approved manner. Alabama uses an internet based system for filing returns and accepting tax payments. All taxpayers may pay electronically, but those with over $25,000 in liability are required to pay electronically (ALA. ADMIN. CODE r. 810-13-1-.01; ALA. ADMIN. CODE r 810-13-1-.20). (4) All ruling requests must be submitted in writing. No provision is made for electronic filing of these requests (ALA. CODE § 40-2A-5.(e)(1975)). In addition, because there is no provision for digital case handling, decision, and delivery functions, the system is not fully transactional.

**Arizona:** *Tax Administration & Technology.* Arizona is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.revenue.state.az.us. (3) Taxpayers may voluntarily file returns on line but must first register at http://www.AZTaxes.gov and are required to supply the state with a signature card (on paper) (ARIZ. ADMIN. CODE § R 15-10-504(A)(2); ARIZ. ADMIN. CODE § R 15-10-502). An electronic funds transfer system is in place, requiring registration and use of ACH debit (and in certain circumstances allowing ACH credit (ARIZ. ADMIN. CODE § R 15-10-301-07). Electronic return preparers must maintain paper documents (ARIZ. REV. STAT. § 42-1105(F)) that would otherwise be sent to the Department of Revenue for six years following the later of the return's due date or filing date. (ARIZ. ADMIN. CODE § R 15-10-502(B)). (4) All ruling requests must be submitted in writing. No provision is made for electronic filing of these requests (ARIZ. REV. STAT. § 42-2101). In addition, because there is no provision for digital case handling, decision, and delivery functions, the system is not fully transactional.

**Arkansas.** *Tax Administration & Technology.* Arkansas is a "stage 2" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.arkansas.gov/dfa/excise_tax_v2/et_su_forms.html. (3) The Commissioner is authorized to allow electronic filing of returns (ARK. CODE ANN. § 26-18-301), and has done so. These returns can be filed at https://www.ark.org/dfa/artax/salestax/index.php. There are significant signature requirements in Arkansas that have paper-based requirements. Form AR8453OL needs to be filed with the Arkansas Department of Revenue to support electronic filings. (ARK. Reg. 2000-2(1) (E) & (F) & 5(A)). An electronic funds transfer system is in place and is required for all taxpayer with liabilities in excess of $20,000 (ARK. CODE ANN. § 26-19-104 & 105(a)(1); ARK. Reg. 2000-5). (4) All ruling requests must be submitted in writing. No provision is made for electronic

filing of these requests, and all correspondence outside of the prescribed ruling request format are not binding (ARK. REG. § GR-75 & 76) *available at* http://www.arkansas.gov/dfa/rules/et1992_4.pdf. The Arkansas system is neither fully transactional, nor is it two-way interactional due to the paper-based signature requirements.

**California.** *Tax Administration & Technology.* California is a "stage 2" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.boe.ca.gov. (3) The California State Board of Equalization (SBE) launched its free electronic filing or "BOE-File" service for California sales and use tax returns of eligible taxpayers in 2005. It can be accessed under "E-file" at www.boe.ca.gov. Electronic filing of sales and use tax returns has been available since 2001 through third party service providers that charged fees ranging from $4.95 to $9.95. (CAL. REV. & TAX CODE § 6452; *News Release*, No. 63-C, Cal. State Board of Equalization, Sept. 20, 2005). An electronic funds transfer system is available, and is mandatory for taxpayers with an estimated tax liability of $10,000 per month (CAL. REV. & TAX CODE § 6479.3). There are some unusual aspects to e-filing in California which make it not a "stage 3" jurisdiction: (a) e-filing is limited to taxpayers who file Form BOE-401-A, with Schedule A only; or Form BOE-401-EZ, and who conduct business at a single location, and (b) e-filing is not allowed for taxpayers required to make prepayments or to pay taxes by electronic funds transfer (EFT). (CA. SBE TAX INFO. BULL. No. 12-1-05 (Dec. 1, 2005). (4) A person can request an opinion on the application of sales or use tax. These opinions are not rulings and are not issued or allowed to be requested electronically (CAL. REV. & TAX CODE § 6596; CAL. CODE REGS. REV. & TAX 1705(B)(1)). In addition, because there is no provision for digital case handling, decision, and delivery functions, the system is not fully transactional.

**Colorado.** *Tax Administration & Technology*. Colorado is a "stage 2" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.revenue.state.co.us/main/home.asp. (3) The executive director is authorized to prescribe (through rules and regulations) voluntary alternative methods for the making, filing, signing, subscribing, verifying, transmitting, receiving, or storing of returns (COLO. REV. STAT. § 39-21-120(1) & (3)). Although there are provisions for electronic filing of personal income tax and fuel tax, the is no authorization for e-filing sales and use taxes (COLO. REV. STAT. §§ 39-22-604960; 39-27-105). An exception is available for "zero" returns, sales and use tax returns where no tax is due. These returns may be filed electronically at http://www.taxview.state.co.us/zero/. Colorado has provisions for electronic payments on the main web site, and has a mandatory EFT program for taxpayers owing more than $75,000 that was put in place January 1, 2002 (COLO. REV. STAT. § 39-26-105(5); COLO. CODE REGS. § 39-26-105.5; COLO. PUB. DRP-5782). (4) There is currently no private letter ruling process in Colorado, although one had bee considered in 1999. Technically, the statutes only allows for an administrative hearing before the Director to produce a "ruling by the Director". (COLO. DEP'T. REV. ANNUAL LIAISON MEETING WITH CPA SOC., BAR ASSOC. ENROLLED AGENTS & PUBLIC

ACCOUNTANTS (Nov. 18, 1999). There is no provision for digital case handling, decision, and delivery functions. Thus, the Colorado system is neither fully transactional, nor is it two-way interactional.

**Connecticut.** *Tax Administration & Technology*. Connecticut is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.ct.gov/DRS/site/default.asp. (3) The Commissioner is authorized (by providing notice in the return instructions) to allow the filing on any tax return through any technology on an ongoing basis as that technology develops (CONN. AGENCIES REGS. § 12-690-1; CONN. GEN. STAT. § 12-690). This notice has been provided for the sales and use tax through the Department of Revenue's web site. EFT is available for persons who file sales or use tax return on a monthly or quarterly basis, and can be required by the Commissioner in instances where the prior year's liability exceeded $10,000 (CONN. GEN. STAT. § 12-686(a)(1)). (4) All ruling requests must be submitted in writing. No provision is made for electronic filing of these requests (CONN. GEN. STAT. § 12-2(a)(2); CONN. POLICY. STAT. 2000(7) PROCEDURES IN HANDLING REQUESTS FOR ISSUANCE OF RULINGS). In addition, because there is no provision for digital case handling, decision, and delivery functions, the Connecticut system is not fully transactional.

**District of Columbia.** *Tax Administration & Technology*. The District of Columbia is "almost a stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://otr.cfo.dc.gov/otr/site/default.asp. (3) Any registered taxpayer is allowed to file electronically (D.C. MUN. REGS. 105.11). This is a requirement for bulk filers, and taxpayers whose liability exceeds $25,000. Any tax payment may be made electronically (D.C. Code Ann. § 47-4402(c); D.C. MUN. REGS. 105.11). This system is not fully digital as the registration process requires a form to be downloaded at http://www.taxpayerservicecenter.com/GetStarted.jsp, and the completed form mailed to the address indicated. The tax office will then mail the taxpayer a user ID and password providing access to the eTSC site. After this process is completed, the site can be used to view the taxpayer's accounts, file monthly sales and use tax returns, and make monthly payments (OFFICE OF TAX & REV., NOTICE REGARDING ELECTRONIC FILING REQUIREMENTS (Jan. 15, 2004)). (4) All ruling requests must be submitted in writing. No provision is made for electronic filing of these requests on the D.C. web site. In addition, because there is no provision for digital case handling, decision, and delivery functions, the District of Columbia system is not fully transactional.

**Florida.** *Tax Administration & Technology*. Florida is "almost a stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.myflorida.com/dor/gta.html. (3) Any registered taxpayer is allowed to file electronically (FLA. STAT. ANN. §§ 212.11(1)(f)(1) & 202.30; FLA. ADMIN. CODE ANN. r. 12-24.003) but those filing a zero return, or a combined return, or who have multiple business locations in the state, or who have a liability exceeding $30,000 are required to file and pay electronically. All taxpayers may pay electronically, but those required to

file electronically are also required to pay electronically through EFT (FLA. STAT. ANN. §§ 213.755; FLA. TAX INFO. PUB. No. O1A01-14 (Oct. 8, 2001)). This system is not fully digital. To begin filing electronically, taxpayers must complete (signature required) the Registration/Authorization Form (Form DR-600F) and the Electronic Filing Agreement (Form DR-653) and mail them to the Department. (4) All ruling requests must be submitted in writing (FLA. ADMIN. CODE ANN. r. 12-11.003(1)). No provision is made for electronic filing of these requests on the Florida web site. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Florida system is not fully transactional.

**Georgia.** *Tax Administration & Technology.* Georgia is "almost a stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.etax.dor.ga.gov/salestax/st3forms/st3_indx.shtml. (3) In July 2006, Georgia expanded its e-File and e-Pay Program to include sales and use taxes (GA. IMPORTANT BULLETINS, May 2006). Taxpayers are required to file electronically if they are required to pay sales and use tax by electronic funds transfer (EFT). The e-File and e-Pay Program will also be available if taxpayers want to voluntarily file and pay electronically (GA. COMP. R. & REGS. r. 560-3-2-.26(5)). Electronic funds transfer must be used when the liability in connection with any return, report, or document exceeds $10,000 (GA. CODE ANN. § 48-2-32; GA. COMP. R. & REGS. r. 560-3-2-.26). This system is not fully digital. Payments are made through ACH debit or ACH credit after submission of paper forms (GA. FORM EFT 001; GA. FORM EFT 002) to the tax authority (GA. COMP. R. & REGS. r. 560-3-2-.26(3)(b) & (c)). (4) All ruling requests must be submitted in writing (GA. COMP. R. & REGS. r. 560-3-1-.04). No provision is made for electronic filing of these requests on the Florida web site. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Florida system is not fully transactional.

**Hawaii.** *Tax Administration & Technology.* Hawaii is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.ehawaiigov.org/efile. (3) As of 2002 the Internet filing program of the Hawaii Department of Taxation was expanded to the general excise (sales) and use tax return and reconciliation. HAW. TAX NEWS, 6:1 (Haw. Dept. of Taxation, Spring 2002). Statute authorizes the filing of tax returns and other tax-related documents by electronic, telephonic, or optical means (HAW. REV. STAT. § 231-8.5). Tax payments are accepted through various electronic media (HAW. REV. STAT. § 231-9.9). The program is mandatory for anyone with an annual tax liability exceeding $100,000. Persons not required to pay tax electronically may request permission to do so (HAW. ADMIN. CODE, No 18-231-9.9-03). Upon the issuance of regulations, the Department of Taxation will be able to accept tax payments by credit card or debit card (HAW. REV. STAT. § 231-9.4). (4) Written rulings are issued to taxpayers (HAW. REV. STAT. § 231-19.5) only on written request (HAW. ADMIN. CODE, No 18-231-19.5-08). No provision is made for electronic filing of these requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Hawaii system is not fully transactional.

**Idaho.** *Tax Administration & Technology.* Idaho is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.tax.idaho.gov/. (3) The State Tax Commission established rules for the filing of tax returns and other documents via electronic transmission (IDAHO CODE § 63-113). The system is voluntary, and available for anyone filing an Idaho return (IDAHO CODE § 63-115). Filing and payment of taxes must be made by electronic funds transfer when the amount due is $100,000 or greater (IDAHO CODE § 67-2026). The method of electronic funds transfer must be made through the automated clearing house system (ACH) operated by the federal reserve by the ACH debit or ACH credit method (IDAHO CODE § 67-2026). (4) Written rulings are issued to taxpayers (IDAHO CODE § 67-5255) only on written request (IDAHO CODE § 63-105). No provision is made for electronic filing of these requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Idaho system is not fully transactional.

**Illinois.** *Tax Administration & Technology.* Illinois is a "stage 2" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Even though forms documents and instructions are available on the web and can be downloaded at http://www.revenue.state.il.us/, their electronic use is limited. (3) E-filing is voluntary in Illinois, and limited to two sales and use tax forms, Form ST-1 (Sales and Use Tax Return) and Form ST-2 (Multiple Site attachment for Form ST-1). Illinois intends to eventually allow more extensive filing of returns and other documents (20 ILL. COMP. STAT. ANN. 2505/39c-1a; ILL. ADMIN. CODE tit. 86, § 760.100). Participation in the e-filing program results in a requirement that all associated payments must be made through electronic means (ILL. ADMIN. CODE tit. 86, § 760.220). Taxpayers with an annual tax liability of $200,000 or more must make all payments by electronic funds transfer. An annual tax liability is the sum of the taxpayer's liabilities reported on Form ST-1, Sales and Use Tax Return (20 ILL. COMP. STAT. ANN. 2505/2505-210; 35 ILL. COMP. STAT. ANN. 120/3; 35 ILL. COMP. STAT. ANN. 115/9; 35 ILL. COMP. STAT. ANN. 110/9). Not all taxpayers may pay electronically. Currently, the Department of Revenue is accepting voluntary electronic funds transfer payments of the following: ART-1, Automobile Rental Occupation and Use Tax Return (payment only); PST-1, Prepaid Sales Tax Return (payment only); PST-3, Prepaid Sales Tax Quarter-Monthly Payment (for accelerated sales tax filers); RR-3, Sales and Use Tax Quarter-Monthly Payment (for accelerated sales and use tax filers). (ILL. ADMIN. CODE tit. 86, § 750.500(e)). (4) Written rulings are issued to taxpayers only on written request (20 ILL. COMP. STAT. ANN. 2515/3; 5 ILL. COMP. STAT. ANN. 100/5-145; ILL. ADMIN. CODE tit. 86, § 1200). No provision is made for electronic filing of these requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Illinois system is not fully transactional.

**Indiana.** *Tax Administration & Technology.* Indiana is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.in.gov/dor/. (3)

Since 1998 the Indiana Department of Revenue has offered an electronic tax-filing program for retail sales and use taxes. Taxpayers are able to send tax returns and payments in a single transaction by using a compatible personal computer with a modem and a computer program named IN-S.I.T.E. The computer program and filing service are provided free of charge and are available to single return taxpayers or service providers (IND. TAX DISPATCH, Ind. Dept of Rev., 1:3 (Aug., Sept., Oct. 1998). E-payments are mandatory if estimated monthly sales and use tax liability exceeds $10,000 (IND. CODE § 6-2.5-6-1(g)). However, if a sales and use tax payment is made by electronic funds transfer, the taxpayer is not required to file a monthly return (IND. CODE § 6-2.5-6-1(h)). (4) Written rulings are issued to taxpayers, but only on written request. Even though the Commissioner has authority to do so through regulation (IND. CODE § 6-8.1-6-7), no provision is made for electronic filing of these requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Indiana system is not fully transactional.

**Iowa.** *Tax Administration & Technology.* Iowa is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.state.ia.us/tax/. (3) Businesses that are registered to collect Iowa sales or use tax must use the e-File & Pay system. Iowa sales and retailer's use taxes became available on e-File & Pay in July 2005, and consumer's use tax was added on October 1, 2005. The e File & Pay system allows taxpayers to file their return information by telephone or via the Internet. Paper returns will no longer be available. Tax payments are remitted electronically through e File & Pay. (IOWA TAX E-NEWS, Iowa Dept. of Rev., Mar. & June 2005). (4) Written rulings are issued to taxpayers, but only on written request (IOWA ADMIN. CODE r. 701-7.56(421). No provision is made for electronic filing of these requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Iowa system is not fully transactional.

**Kansas.** *Tax Administration & Technology.* Kansas is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms documents and instructions are available on the web and can be downloaded at http://www.ksrevenue.org/. (3) All Kansas sales and use tax returns can be filed through this web site. A taxpayer whose total sales tax liability exceeds $100,000 in any calendar year must remit tax payments by electronic funds transfer by the due date (KAN. STAT. ANN. § 75-5151). All remittances required under the retailers' sales tax act and the compensating (use) tax act, may be made to the Department of Revenue utilizing either ACH (Automated Clearing House) Credit or Debit procedures (KAN. REV. DEP'T. PUB. NOTICE No. 04-11 (Nov. 2, 2004). (4) Any person required to collect sales tax as a retailer may request a letter ruling seeking clarification of a tax issue (KAN. STAT. ANN. § 79-3646; KAN. ADMIN. REGS. 92-19-59). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Kansas system is not fully transactional.

**Kentucky.** *Tax Administration & Technology.* Kentucky is a "stage 2" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms,

documents and instructions are available on the web and can be downloaded at http://revenue.ky.gov/.
(3) Kentucky has allowance for electronic filing and payment, but the provisions are not comprehensive. Taxpayers holding a valid sales and use tax permit may file Kentucky sales tax returns electronically, but not use tax returns. Payments may also be made using E-check or credit card, in addition to debit card, electronic funds transfer (EFT), and regular check. Once a taxpayer begins filing electronically, paper returns will no longer be sent to the taxpayer. The filing system is not completely digital as amended returns must be filed on paper with "Amended" printed or stamped at the top of the return. (KY. REV. STAT. ANN. § 45.345; KY. SALES TAX FACTS, 5:1 (Dec. 2003); KY E-TAX FAQ'S, Ky. Rev. Cabinet. (Jan. 2004). EFT is required when payments exceed $10,000, or when aggregate filings are for 100 or more taxpayers. (KY. REV. STAT. ANN. § 131.155). (4) Kentucky does not have a provision for ruling requests in sales and use tax. No provision is made for electronic ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Kentucky system is not fully transactional.

**Louisiana**. *Tax Administration & Technology*. Louisiana is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.rev.state.la.us/. (3) Louisiana permits electronic returns and e-payments on voluntary basis and requires e-returns and e-payments for amounts over $10,000 (reduced to $5,000 after 2007) (LA. REV. STAT. ANN. § 47:1519; LA. ADMIN. CODE tit. 61, § 4910). (4) Any person required to collect sales tax as a retailer may request a letter ruling seeking clarification of a tax issue (LA. ADMIN. CODE tit. 10, § 101). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Louisiana system is not fully transactional.

**Maine.** *Tax Administration & Technology*. Maine is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.maine.gov/revenue/. (3) Maine permits electronic returns and e-payments on voluntary basis of all returns through the Maine Automated Tax System (MATS) (ME. TAX ALERT, Bureau of Taxation, Oct. 1993) and requires e-returns and e-payments for amounts over $400,000 (CODE ME. R. § 102). (4) Any person required to collect sales tax as a retailer may request a letter ruling seeking clarification of a tax issue (ME. REV. STAT. ANN. tit. 36, § 112). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Maine system is not fully transactional.

**Maryland.** *Tax Administration & Technology*. Maryland is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.comp.state.md.us/. (3) E-filing is generally available in Maryland to businesses collecting sales and use taxes. EFT is also voluntary, but required for

businesses with a tax liability in excess of $10,000 MD. CODE ANN. §13-104(A)(1); MD. CODE ANN. §2-105(3)). E-returns and e-payments are linked. A person making tax payments using the ACH credit, ACH debit, direct debit, or wire transfer method cannot file a corresponding (paper) return or report if the payment was for a Sales and Use Tax Report (COM/RAD-098), (MD. REGS. CODE § 03.01.02.05(B)(4). (4) The Comptroller is authorized to adopt reasonable regulations for the administration of the sales and use taxes (including letter rulings) (MD. CODE ANN. §2-103; MD. REGS. CODE 03.01.01.03). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Maryland system is not fully transactional.

**Massachusetts** *Tax Administration & Technology.* Massachusetts is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.dor.state.ma.us/. (3) The Commissioner is authorized to establish procedures providing for the payment, refund, or abatement of taxes, interest, or penalties by the electronic transfer of funds (MASS GEN. LAWS ch. 62C, § 78; MASS GEN. LAWS ch. 62C, § 5) and has done so. These voluntary options are mandatory if tax liabilities (including income, excise, room occupancy meals and telecommunications) exceed $10,000 in the preceding calendar year. Other thresholds apply. Once the taxpayer is required to file and pay electronically for one year all subsequent returns must also be filed and payments made electronically (MA. TECH. INFO. REL. Nos. 04-30 (Oct. 26, 2004); 03-11 (July 1, 2003); 02-22 Nov. 25, 2002)). All new businesses that are required to register with the Massachusetts Department of Revenue on or after September 1, 2003, must use electronic means to file certain returns and make tax payments (MA. TECH. INFO. REL. Nos. 04-30 (Oct. 26, 2004). (4) Any person required to collect sales tax as a retailer may request a letter ruling seeking clarification of a tax issue (MASS. REGS. CODE tit. 830, § 62C.3.2). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Massachusetts system is not fully transactional.

**Michigan.** *Tax Administration & Technology.* Michigan is a "stage 2" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.michigan.gov/treasury. (3) There is currently no provision for the Michigan sales and use tax return to be filed electronically, although there is authority for electronic funds transmission of taxes due. EFT payment obligations vary. For example, a retailer or other business that had a total Michigan sales and use tax liability (after certain subtractions) in the previous calendar year of $720,000 or more must remit to the Department, by electronic funds transfer (EFT) an amount equal to 50% of the tax liability (MICH. COMP. LAWS §§ 205.56(3); 205.96(3)). (4) Any person required to collect the sales tax as a retailer may request a letter ruling seeking clarification of a tax issue (MICH. ADMIN. BUL. 1989-34). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Michigan system is not fully transactional.

**Minnesota**. *Tax Administration & Technology*. Minnesota is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.taxes.state.mn.us/. (3) Sales and use tax returns and most other business tax return information must be filed electronically via the Internet, computer-to-computer, telephone, and other electronic methods. (MINN. SALES TAX NEWSLETTER, Minnesota Department of Revenue (Dec. 1999)). Payment through EFT is voluntary, however, taxpayers with $20,000 or more of sales and use tax liability in the state's fiscal year ending June 30, 2005, must pay their tax electronically for payments due in calendar year 2006. Taxpayers with $10,000 or more of sales and use tax liability in the state's fiscal year ending June 30, 2006, must pay their tax electronically beginning with payments due in calendar year 2007 (MINN. STAT. § 289A.20(4)). (4) Minnesota has no provision for letter rulings either in paper or electronic form. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Minnesota system is not fully transactional.

**Mississippi**. *Tax Administration & Technology*. Mississippi is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.mstc.state.ms.us/. (3) The Tax Commission requires sales and use taxpayers to who have liabilities over $20,000 or more to wire transfer funds through the Federal Reserve System or another approved electronic payment medium (MISS. CODE ANN. §§ 27-3-81 & 27-3-83; MISS. RULE 4). Through Rule 4 the Commission notifies in writing certain taxpayers and their agents (180 days in advance) that they are required to e-file and e-pay. Although the e-file and e-pay option is open to all taxpayers the Commission has determined that this approach would provide a gradual shift to full digital filing. (4) Any person required to collect sales tax as a retailer may request a letter ruling from the Department of Revenue requesting clarification of a tax issue (MISS. TAX COMM. ADMIN. PRACTICES & PROCEDURES Pt. 1, §108.03; MISS RULE 1). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Mississippi system is not fully transactional.

**Missouri.** *Tax Administration & Technology*. Missouri is a "stage 2" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.mstc.state.ms.us/. (3) Missouri provides a limited means for electronic filing of sales and use tax returns. It also facilitates the payment of sales and use taxes through electronic means. Because e-filing is limited to zero-returns (returns with zero gross receipts and zero tax liability) a full paper returns is still required for all taxpayers paying electronically. (MO. FORM 4789 INSTRUCTIONS – SALES TAX DETAILED INSTRUCTIONS AND INFORMATION BOOK (REV. 11-2005)). In addition, the Missouri web site provides that,

> Monthly, quarterly, or annual filers of sales and use tax returns can pay the amount due of a *currently filed* return by using this payment option. The Missouri Department of Revenue will still require a paper form of the tax

return. This payment option is only available to sales and use tax filers with an open account. Filers must enter the following information:

Missouri Tax ID
File period
Amount due for the *currently filed period*

This payment does *not* constitute filing of a Sales Tax Return (voucher form or Form 53-1) or a Use Tax Return (Form 53U-1). A paper filing of your sales and/or use tax returns are still required. (http://www.dor.mo.gov/tax/business/payonline.htm)

(4) Any person required to collect sales tax as a retailer may request a letter ruling from the Department of Revenue requesting clarification of a tax issue (MO. CODE REGS. ANN. tit. 12, §1-1.020). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Missouri system is not fully transactional.

**Nebraska.** *Tax Administration & Technology.* Nebraska is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.revenue.state.ne.us/. (3) The Tax Commissioner has authority to accept electronically filed applications, returns, and other documents (NEB. REV. STAT. § 77-1784(1)), and has the authority to require payment through electronic means (NEB. REV. STAT. § 77-1784(2)). Through its web site, the Commissioner has set out the rules for e-filing and e-payment of sales and use taxes. All taxpayers may use electronic processing. Electronically filed returns are given the same legal status as paper returns (NEB. REV. STAT. § 77-1784(6)). E-filing and e-payment are mandatory if tax amounts due exceed $20,000 (NEB. REV. STAT. § 77-1784). (4) Nebraska has no provision for taxpayer to request a letter ruling seeking clarification of a sales and use tax issue. No provision is made for electronic filing of such a request. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Missouri system is not fully transactional.

**Nevada.** *Tax Administration & Technology.* Nevada is a "stage 2" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.revenue.state.ne.us/. (3) Nevada is in the process of adding e-filing capabilities on its web site (July 7-27, 2006), but currently has functionality only for e-payments (NEV. UNCODIFIED REG., LCB File No. R062-05). When completed, all taxpayers will be able to file on-line by affixing the taxpayer's electronic signature to an e-return. E-payments may be submitted only by ACH debit or ACH credit. If a return is submitted electronically but payment is mailed, a copy of the printout of the electronic return confirmation page must be submitted with the payment and must be postmarked by the return due date (NEV. ADMIN. CODE § 360.22 (R062-05); NEV. ADMIN. CODE § 360.23 (R062-05). (4) Nevada provides that taxpayers seeking advice may request a letter ruling clarifying a sales and use tax issue (NEV. REV. STAT. ANN. §§ 372.725: 374.725). No provision is made for electronic filing of such a request. In addition, because there is no

provision for digital case handling, decision, and delivery functions, the Nebraska system is not fully transactional.

**New Jersey.** *Tax Administration & Technology.* New Jersey is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.state.nj.us/treasury/taxation/. (3) E-filing is voluntary and mandatory. A registered sales and use taxpayer whose gross receipts for a quarter are zero may voluntarily e-file, as well as taxpayers whose gross receipts for a quarter is greater than zero, but in this instance only if the taxpayer is authorized for the electronic funds transfer program. The Director must give written approval (a) to the taxpayer with respect to payment by EFT and (b) to the method chosen for making its EFT payments (N.J. ADMIN. CODE §18:2-3.10(a)). Taxpayers that no longer desire to participate in the voluntary EFT program must give the Director written notice at least 30 days in advance of the date on which they wish to withdraw from participation in the program (N.J. ADMIN. CODE §18:2-3.10(a)). E-filing is mandatory when sales and use tax payments must be made by electronic funds transfer. EFT is mandatory when the taxpayer has a prior year liability of $10,000 or more. (N.J. STAT. ANN. § 54:48-4.1) (4) Any person required to collect sales tax as a retailer may request a letter ruling from the Regulatory Services branch of the New Jersey Division of Taxation seeking clarification of a tax issue. No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the New Jersey system is not fully transactional.

**New Mexico.** *Tax Administration & Technology*. New Mexico is a "stage 2" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.state.nm.us/tax/eser.htm. (3) Most businesses subject to the gross receipts tax may use electronic returns and payment options, but not 13th month returns, those using special rates, and all amended returns. These returns must be filed on paper forms. (*See*, "Who can use this system" at https://ec3.state.nm.us/crs-net/help/WhoUse.htm). (4) Any person required to collect sales tax as a retailer may request a letter ruling seeking clarification of a tax issue (N.M. STAT. ANN. § 9-11-6.2). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the New Mexico system is not fully transactional.

**New York.** *Tax Administration & Technology.* New York is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.tax.state.ny.us/. (3) All businesses may be voluntary participants in sales tax e-file and e-payment options. Taxpayers whose annual sales tax liability is more than $500,000.00 are required to participate. The tax is to be remitted either via electronic funds transfer or certified check (N.Y. DEP'T. OF TAX AND FINANCE., PRESS RELEASE (Nov. 20, 2001)). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (N.Y. COMP. CODES R. & REGS. tit.

20 § 2376.2). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the New York system is not fully transactional. Although, through a new electronic service for sales taxes taxpayers can request a password to view or pay open assessments.

**North Carolina.** *Tax Administration & Technology.* North Carolina is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.dor.state.nc.us/. (3) All businesses may voluntarily participant in sales tax e-file and e-payment options. (N.C. DEP'T. OF REV., ONLINE FILING AND PAYMENTS, SALES AND USE TAX (Nov. 18, 2002)). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (N.C. GEN. STAT. § 105-264.43). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the North Carolina system is not fully transactional.

**North Dakota.** *Tax Administration & Technology.* North Dakota is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.nd.gov/tax/. (3) North Dakota sales tax returns may be filed on the Internet using Sales Tax Webfile. Webfile is accessible on the Office of the State Tax Commissioner's website. Sales and use tax permit holders may pay the tax over the Internet using a secure WebFile system. WebFile payments are submitted by check, automated clearinghouse (ACH) debit, ACH credit (N.D. OFFICE OF THE STATE TAX COMM., SALES TAX NEWSLETTER (Mar. 2006)). (4) Any person required to collect sales tax as a retailer may request an advisory opinion from the Research and Statistics Section seeking clarification of a tax issue (N.D. CENT. CODE §§ 57-39.2-19 & 57-40.2-13). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the North Dakota system is not fully transactional.

**Ohio.** *Tax Administration & Technology.* Ohio is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://tax.ohio.gov/. (3) Ohio provides for both electronic payment and electronic filing of returns. The system is voluntary unless amounts exceed $75,000 (OHIO REV. CODE ANN. §§ 5739.02; 5739.122; 5739.12; 5741.12; 5741.121). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (OHIO REV. CODE ANN. § 5703.53). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Ohio system is not fully transactional.

**Oklahoma.** *Tax Administration & Technology.* Oklahoma is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.oktax.state.ok.us/. (3) The Oklahoma QuickTax System accepts e-returns

from all taxpayers. In its voluntary aspect, taxpayers electing to file and remit under the EFT program must follow the same schedules described above for businesses that are required to participate based on tax amounts due (OKLA. STAT. tit. 68 § 1365(C)). The mandatory aspect of the program requires every person owing an average of $2,500 or more per month in total sales or use taxes in the previous fiscal year to remit the tax due and participate in the electronic funds transfer and electronic data interchange program (OKLA. STAT. tit. 68 § 1365(D); OKLA. ADMIN. CODE tit. 710, § 65-21-7(b)). They must remit the tax due and participate in the Tax Commission's e-funds and e-data exchange program, according to a prescribed schedule. (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (OKLA. ADMIN. CODE tit. 710, § 1-3-73). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Oklahoma system is not fully transactional.

**Pennsylvania.** *Tax Administration & Technology.* Pennsylvania is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.revenue.state.pa.us/. (3) The Pennsylvania Department of Revenue is authorized to allow the electronic filing of any tax return or document (72 PA. CONS. STAT. § 10003.8). The department has done so by allowing all taxpayers to file their sales and use tax returns electronically using the PA. TIDES program. A sales and use tax payment of $20,000 or more must be remitted by electronic funds transfer (EFT) (PA. DEP'T. OF REV. REG. § 5.3). EFT payments may be either ACH debit or ACH credit. (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (72 PA. CONS. STAT. § 6 & 61 PA. CONS. STAT. § 3.3). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Pennsylvania system is not fully transactional.

**Rhode Island.** *Tax Administration & Technology.* Rhode Island is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.tax.ri.gov/. (3) The Rhode Island e-filing system is voluntary (R.I. REG. EFT 00-01(II), but it is also tied to the federal system. In order for the e-filing and e-payment system to work a taxpayer must e-file both a federal and state return. If a taxpayer has already filed a federal return using another electronic filing service, state returns cannot be filed electronically. (R.I. DIV. OF TAXES, FEDERAL/STATE ONLINE FILING, *at* http://www.tax.state.ri.us/elf/on-line.htm). If any tax liability exceeds $10,000, both the return and payment must be made by electronic means (R.I. GEN. LAWS § 44-1-31; R.I. Reg. EFT 00-01). Taxpayers that are required to pay employment taxes to the IRS by electronic funds transfer also are required to file returns electronically with Rhode Island (R.I. GEN. LAWS § 44-1-31). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (R.I. GEN. LAWS § 42-35-8). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Rhode Island system is not fully transactional.

**South Carolina.** *Tax Administration & Technology.* South Carolina is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.sctax.org/default.htm. (3) The Department of Revenue is authorized by the State Treasurer to accept electronic returns and electronic forms of tax payment (S.C. CODE ANN. § 12-54-75). South Carolina has added e-file and e-payment functionality to its web site for all taxpayers (Sales EDI/EFT; Esales; Business TelFile). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (S.C. CODE ANN. §§ 12-4-320 & 1-23-10(4); S.C. REV. PROC. #05-2). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the South Carolina system is not fully transactional.

**South Dakota.** *Tax Administration & Technology.* South Dakota is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.state.sd.us/drr2/Revenue.html. (3) South Dakota has allowed for e-filing and e-payment of sales and use tax returns since 1999 (S.D. SALES TAX NEWSLETTER, S.D. DEP'T. OF REV. (June 1999)). Recent legislation links e-payment and e-filing by requiring taxpayers to e-file a return by the 23rd day of the month following each monthly period if they e-pay the tax by the second to the last day of the month following each monthly period (2006 S.D. LAWS H1048, §1; S.D. CODIFIED LAWS § 10-46E-7; S.D. CODIFIED LAWS § 10-59-39). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (S.D. CODIFIED LAWS § 10-59-27; S.D. ADMIN. R. 64:06:01:01:08 - 10). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the South Dakota system is not fully transactional.

**Tennessee.** *Tax Administration & Technology.* Tennessee is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.state.tn.us/revenue/. (3) Taxpayers whose sales and use tax payments exceed $5,000 must e-file and e-pay (TENN. CODE ANN. § 67-1-703(b)), and must continue to do so until the Commissioner of Revenue advises the taxpayer to file by another method. Taxpayers designated for e-filing are notified by the Commissioner of Revenue and advised of the requirements that must be met. Those who have not been notified by the Department of Revenue are not required to e-file and e-pay, but may volunteer to do so (TENN. CODE ANN. § 67-1-703(b)). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (TENN. CODE ANN. § 67-1-109). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Tennessee system is not fully transactional.

**Texas.** *Tax Administration & Technology*. Texas is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.window.state.tx.us/m23taxes.html. (3) The Comptroller of Public Accounts is authorized to allow any taxpayer to file sales and use tax returns by means of electronic transmission if (a) the taxpayer enters into a written agreement with the Comptroller, and (b) the method of electronic transmission is compatible. Certain taxpayers are required to file any returns and reports electronically (TEXAS ADMIN. CODE ANN. tit. 34 § 3.9). The Government Code requires certain persons to transfer funds to the Comptroller by electronic funds transfer (TEX. GOV'T CODE ANN. tit. § 404, § 95). Mandatory e-filing is linked to mandatory e-payment. The e-filing of a sales and use tax return is required of the tax payments are required under EFT. (TEX. TAX CODE ANN. tit. 111, § 626). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (TEX. ADMIN. CODE tit. 34, §1.28). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Texas system is not fully transactional.

**Utah.** *Tax Administration & Technology.* Utah is a "stage 2" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://tax.utah.gov/. (3) Utah law requires that the Tax Commission must allow internet-based sales and use tax filings (UTAH CODE ANN. § 63D-1-105(1)(d)), however this capacity is being phased in. At the present time some, but not all Utah sales and use tax returns can be filed on line. Returns that must be filed on paper include TC-61F, TC-61FV, TC-61T, and TC-61W. In addition amended returns and late-filed returns remain paper-based. Similarly, most but not all sales and use taxpayers are able to make payments on line. (UTAH STATE TAX COMMISSION, ONLINE SALES AND USE TAX FILING *at* http://tax.utah.gov/sales/salestaxonline.html). Sellers whose state and local sales and use tax liability totaled $96,000 or more for the previously calendar year must transmit monthly tax payments by electronic funds transfer (UTAH CODE ANN. § 59-12-108(2)). Sellers who are not required to pay taxes electronically may elect to do so by contacting the Commission within 30 days before the beginning of a new fiscal year. Such sellers are subject to the same requirements and penalties as mandatory filers (UTAH ADMIN. CODE R. § R865-19S-86(E)(2)). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (Utah Code Ann. § 59-1-210; Utah Tax RULE 861-1A-34). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Utah system is not fully transactional.

**Vermont.** *Tax Administration & Technology*. Vermont is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.state.vt.us/tax/. (3) Filing of sales and use tax returns and payment of taxes may be performed electronically on a voluntary basis. The Commissioner is authorized to require payments by EFT from certain taxpayers (those who pay federal taxes

electronically, and those who have previously submitted two or more uncollected checks) (VT. STAT. ANN. tit. 32, §§ 9243; 9776 & 5842(a)(4)(D)). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (VT. STAT. ANN. tit. 3, § 808). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Vermont system is not fully transactional.

**Virginia.** *Tax Administration & Technology.* Virginia is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.tax.virginia.gov/. (3) Sales and use tax returns can be filed electronically, and payments may be made through EFT (VA. CODE ANN. § 58.1-9(C)). If a taxpayer's monthly sales and use tax liability exceeds $20,000, the taxpayer may be required to make the payments by electronic funds transfer (EFT) (VA. CODE ANN. § 58.1-202.1). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (VA. CODE ANN. § 58.1-204). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Virginia system is not fully transactional.

**Washington.** *Tax Administration & Technology.* Washington is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://dor.wa.gov/. (3) Payment may be made to the Department of Revenue by cash, check, cashier's check, money order, and in certain cases by electronic funds transfers or other electronic means approved by the Department (WASH. REV. CODE § 82.32.080; WASH. ADMIN. CODE §458-20-228 (Rule 228)). The e-filing program (ELF) is not open to all tax types, but includes the consumption tax administered by the Department of Revenue (WASH. REV. CODE § 82.32.080; WASH. ADMIN. CODE §458-20-22802(4)). For taxpayers participating in the ELF program paper returns are not needed, and payments must be electronic (through the ACH debit method). Taxpayers who have taxes due of $240,000 or more in a calendar year are required to pay by electronic funds transfer (WASH. REV. CODE § 82.32.080; WASH. ADMIN. CODE §458-20-22802). Filing of sales and use tax returns and payment of taxes may be performed electronically. (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (WASH. REV. CODE § 458-20-100(9)). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Washington system is not fully transactional.

**West Virginia.** *Tax Administration & Technology.* West Virginia is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.wvrevenue.gov/. (3) West Virginia accepts electronic returns for sales and use tax (WV/CST-200 and WV/CST-220). An electronic signature will be accepted in lieu of an original handwritten signature when filing electronic records (W. VA. CODE ST.

R. §§ 110-10D-2.6 & 110-10D-5). While the Department's EFT program is available to all taxpayers, the Department may require the use of EFT by taxpayers whose aggregate state, county, special district, or stadium sales and use tax liability exceeded $10,000 for the prior calendar year. (W. VA. DEP'T. REV, SALES AND USE TAX REPORT, No. 2-20 (June 2000)). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (W.VA. CODE ANN. § 11-10-5R). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the West Virginia system is not fully transactional.

**Wisconsin.** *Tax Administration & Technology.* Wisconsin is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.dor.state.wi.us/. (3) Wisconsin Department of Revenue has sales and use tax electronic filing and payment options available for all taxpayers (Sales Telefile, Sales Internet Process, file transmission, and electronic funds transfer) (WIS. DEP'T, REV., SALES AND USE TAX REPORT, No. 1-06 (Mar. 2006); WIS. DEP'T, REV., TAX BULL. No. 146 (Feb. 2006)). Administrative rules require certain sales and use tax returns to file electronically. Sales and use tax registrants are given 90 days notice before the due date of the first period where they are required to file electronically. (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (WIS. STAT. ANN. § 73.035). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Wisconsin system is not fully transactional.

**Wyoming.** *Tax Administration & Technology.* Wyoming is a "stage 3" benchmarked jurisdiction. (1) Comprehensive web-based tax information is provided. (2) Forms, documents and instructions are available on the web and can be downloaded at http://www.dor.state.wi.us/. (3) Taxpayers may report and pay sales and use taxes electronically by using the Wyoming Internet Filing Service (WIFS). Taxpayers must first enter an electronic filing agreement with WIFS (WYO. DEP'T. REV, TAXING ISSUES, 6:3 (Oct. 1, 2003). (4) Any person required to collect sales tax as a retailer may request an advisory opinion seeking clarification of a tax issue (WYO. STAT. ANN. § 39-11-102(a)(i)(D). No provision is made for electronic filing of ruling requests. In addition, because there is no provision for digital case handling, decision, and delivery functions, the Wyoming system is not fully transactional.