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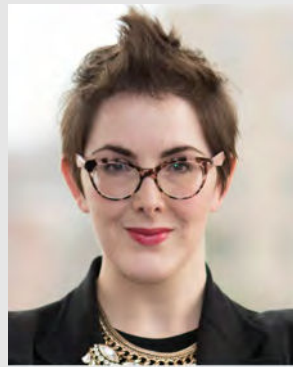
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In this installment of Eyes on E-Commerce, Swetnam-Burland and Szal discuss issues that practitioners face when advising clients on the income tax treatment of technology products and services that incorporate or depend on machine learning and, in an age in which states are champing at the bit to take down the federal protections offered under P.L. 86-272, they look at whether and how those protections extend to machine learning applications and the companies that incorporate this ever-evolving technology into their business model.

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You've heard the buzz. ChatGPT passed the bar exam. It passed Wharton's MBA degree exam. It passed the U.S. Medical Licensing Exam. Version 4 accurately prepared federal income tax returns. More significantly, for an application widely recognized as setting records for the fastest-growing user base across any platform,<sup>1</sup> hundreds of millions of users quickly turned to the machine learning tool to do everything from research to drafting social media and other PR posts to writing legal briefs.

ChatGPT may be the shiniest new toy in the toybox, but it is hardly the only machine learning application out there. Businesses across the spectrum of industries are turning to the technology for myriad applications, as incorporating machine learning into business processes can offer numerous benefits. Some of the more common business-use cases for machine learning include predictive analytics, recommendation engines, fraud detection, supply chain optimization, market research and trend analysis, risk assessment and other forecasting tools, and natural language processing. Uses vary by industry, business objective, and available data, and are constantly evolving as the applications themselves learn and evolve. Indeed, a whole subsector of companies has developed to offer machine learning tools as infrastructure or platform, or provide tools for building, training, and deploying machine learning models developed by other companies.

The options are seemingly endless, which means the tax complications are also broad. This

<sup>1</sup> ChatGPT was introduced in beta form in November 2022 by OpenAI. Bernard Marr, "A Short History of ChatGPT: How We Got to Where We Are Today," *Forbes*, May 19, 2023. Reports indicate that within five days of launch, ChatGPT had already attracted more than a million unique users. *Id.* Within two months, it boasted more than 100 million. Krystal Hu, "ChatGPT Sets Record for Fastest-Growing User Base," *Reuters*, Feb. 2, 2023.

article briefly discusses machine learning technology to set the stage for the tax implications of businesses looking to embrace this new technology. The remainder explores how states and localities will attempt to pigeonhole a rapidly evolving technology into virtually stagnant income tax systems.

### Just What Is Machine Learning?

Machine learning is a form of artificial intelligence. Machine learning systems learn without being explicitly programmed to do so.<sup>2</sup> The systems are “trained” on big data to reach analytical conclusions; the more data, the better.<sup>3</sup> Once the training data is compiled, a machine learning module is selected, the training data input, then the system is let loose to train itself on evaluating the data for patterns, predictions, and other analytical conclusions.<sup>4</sup> Unlike the artificial intelligence examples addressed in earlier articles for *Tax Notes State*,<sup>5</sup> which have static programming, machine learning modules are designed to continue to “learn” in such a way that the outputs from these applications continue to evolve. The applications themselves are dynamic, hence the results that they produce are dynamic. In that, these applications are not only enticing but represent immense business potential.

Business reliance on machine learning is nearly universal. A 2020 Deloitte study reported that, even then, some 67 percent of businesses were already relying on machine learning applications, and nearly 100 percent of surveyed businesses indicated that they intended to do so in the near future.<sup>6</sup> Implementing machine learning effectively often requires a combination of domain expertise, data preparation, model development, and ongoing monitoring and

refinement. The most common applications fall in the following categories: recommendation algorithms, image analysis and object detection, fraud detection, automatic helplines or chatbots, self-driving cars, and medical imaging and diagnostics.

For purposes of this article, we focus on two business use cases: conversational AI chatbots like ChatGPT<sup>7</sup> and businesses that provide access to machine learning platforms to other businesses.<sup>8</sup>

Chatbots are computer programs that simulate and process human conversations. They can be as simple as help desk or customer service chat functions on a website, delivering single-line responses — or as sophisticated as ChatGPT, capable of delivering increasing levels of personalization as the chatbot learns by processing input information. Chatbots are often used to replace customer service applications or to serve as a digital help desk. Indeed, many state tax authorities themselves have rolled out chat features to handle tax inquiries.<sup>9</sup> As a computer program, the chatbots are functionally equivalent to electronically accessed software. However, their functionality begs the questions: Who is actually using the feature? How? From where?

Access to machine learning platforms, on the other hand, is more akin to providing access to infrastructure to allow business use cases to be built on top of machine learning or to test and train their own machine learning systems before launching their modules. In that way, it is the latest “as a service” iteration: machine learning as a service (MLaaS). MLaaS offers a range of services that provide machine learning tools as a component of other cloud-based services and products. In essence, MLaaS offerings make machine learning modules and infrastructure available to businesses at large without requiring them to invest the resources to develop and train their own modules. Businesses integrate with the

<sup>2</sup>Sara Brown, “Machine Learning, Explained,” MIT Ideas Made to Matter, Apr. 21, 2021 (quoting Arthur Samuel, 1950s AI scientist). See also Thomas W. Malone, Daniela Rus, and Robert Laubacher, “Artificial Intelligence and the Future of Work,” Massachusetts Institute of Technology, at 6 (Dec. 2020).

<sup>3</sup>Brown, *supra* note 2.

<sup>4</sup>*Id.*

<sup>5</sup>Jamie Szal, Martin I. Eisenstein, and Michael Carey, “Alexa, is AI Taxable?” *Tax Notes State*, May 11, 2020, p. 719; Szal, Eisenstein, and Carey, “Hey Siri, What About Income Taxes?” *Tax Notes State*, June 8, 2020, p. 1187.

<sup>6</sup>Deloitte, “Becoming an AI-Fueled Organization: Deloitte’s State of AI in the Enterprise,” Deloitte, at 21 (2020) (last visited Sept. 30, 2023).

<sup>7</sup>See OpenAI, ChatGPT Enterprise (last visited Oct. 3, 2023).

<sup>8</sup>For example, OpenAI, the business behind ChatGPT, introduced ChatGPT API. See “OpenAI’s ChatGPT & Whisper API Now Available for Developers,” *Search Engine Journal*. The application is licensed to developers seeking to integrate ChatGPT functionality into their own applications. See OpenAI, Pricing (last visited Oct. 3, 2022). Shop by Shopify is one such use application incorporating ChatGPT API.

<sup>9</sup>For example, the California Franchise Tax Board incorporates two different versions of a chat function: one for general inquiries and one built into taxpayer accounts to discuss account-specific information.

MLaaS infrastructure typically through Application Programming Interfaces (APIs) provided by the MLaaS platform. In this sense, MLaaS is closely akin to infrastructure as a service or platform as a service.

### Apportioning Revenue From Machine Learning Applications

As with many emerging technologies, states have been all but silent on the income tax implications of machine learning. In the end, it boils down to what machine learning applications are. Are they tangible property, intangible property, or services?

Unlike sales tax statutes or regulations, state income tax statutes often do not define tangible property or intangible property.<sup>10</sup> Therein lies the rub: Machine learning could find itself classified one way for sales tax purposes yet differently for income tax apportionment purposes.

For example, one can see state tax authorities arguing that the chatbot feature is the functional equivalent of electronically accessed software. Many states have amended their statutory definitions of tangible personal property for sales tax purposes to include electronically accessed software — even though nothing tangible (that is, physical) changes hands.<sup>11</sup> As tangible personal property, the revenue that companies derive from licenses of the chatbot technology is sourced to the state where the property is located under the standard rules of the Uniform Division of Income

for Tax Purposes Act,<sup>12</sup> or to the state where the property is delivered in most other state rules.<sup>13</sup>

That itself begs a critical question: Where is the chatbot as a piece of property? Can you even put a geographic situs on a digital product in the same way you can a licensed piece of tangible property? Of course not. In many cases, the only connection to the jurisdiction is the website visitor, not the provider itself, or the database or application servers housing the machine learning hardware or software — or even the business making the machine learning application available as part of its operations. This is the problem when states attempt to pigeonhole modern technology into archaic tax systems designed for a different era. In turn, this is why the licensing of these chatbot applications is more likely to be considered a license of intangible property as they are in Massachusetts.<sup>14</sup>

How to apportion revenue from MLaaS is more straightforward and more challenging at the same time — straightforward because licensed MLaaS will be considered intangible property for income tax apportionment purposes. It is highly unlikely that any state would attempt to claim MLaaS is tangible property, particularly in the way MLaaS is used in our hypothetical. While machine learning cannot be patented (one factor for intangible property in the California definition), in our example it is licensed and arguably can be considered a formula, technique, or design that companies that seek out the machine learning infrastructure rely on for their further business ventures. Businesses that license MLaaS platforms are doing so to access the infrastructure and the process of training machine learning modules.

Sourcing machine learning applications and platforms will, however, be more challenging because the rules that apply to revenue from intangible property are anything but intuitive.

<sup>10</sup> There are, of course, exceptions to every rule. California defines intangible property for income tax apportionment as “includ[ing], but not limited to, patents, copyrights, trademarks, service marks, trade names, licenses, plans, specifications, blueprints, processes, techniques, formulas, designs, layouts, patterns, drawings, manuals, trade secrets, stock, contract rights including broadcasting rights, and other similar intangible assets.” Cal. Tax. Reg. 25136-2(b)(4).

Massachusetts defines intangible property in much the same way but expressly includes computer software in the definition. 830 Code Mass. Regs. section 63.38.1(9)(d)1.c. “Intangible property.” Thus, unlike California, Massachusetts explicitly identifies software as intangible property for income tax purposes but taxes software as tangible property for sales tax purposes.

<sup>11</sup> See Szal, “Alexa,” *supra* note 5, at 722 n.11.

<sup>12</sup> UDITPA, Art. IV, section 17(a)(2).

<sup>13</sup> For example, see Conn. Gen. Stat. section 12-218(b)(1).

<sup>14</sup> See Code Mass. Regs. section 63.38.1(9)(d)1.c., *supra* note 10.

States are split as to whether they require the revenue to be sourced based on the company's market distribution,<sup>15</sup> or whether the revenue is sourced based on the company's direct costs incurred in performing the income-producing activities.<sup>16</sup>

Where is the market for infrastructure used to facilitate and enable a business to itself provide digital services and products? Will the MLaaS provider be required to look through to the location of its customers' customers as other service providers are required to do? Arguably no, if MLaaS is treated as intangible property. In states like Massachusetts that have adopted market sourcing for intangible property, licensors are required only to consistently base their sourcing method on "objective criteria" applied in good faith, considering all readily available information sources.<sup>17</sup> In other words, so long as the MLaaS licensor is consistent in its approach, its sourcing method for determining where the market for its intangible property (that is, its platform) is located will be upheld.

Compliance in cost-of-performance states requires the licensor to calculate its direct costs to provide each separate stream of revenue and to identify the geographic location associated with the greatest proportion of those costs. However, it presents an opportunity to the licensor inasmuch as the licensor may control the situs of its development costs. Certainly it is easier to identify the geographic situs of one's own expenditures — such as overhead, salary, the location of servers, and so forth — than the location of a customer's customers.

Of course, whether there is even a need to apportion revenue is a secondary question. After all, it depends on whether the machine learning

provider has a filing obligation in a state in the first place. For that, we turn to whether those machine learning developers may avail themselves of federal protections against income tax exposure.

### P.L. 86-272 in the Machine Learning Age

To determine which states might attempt to impose income tax on these emerging technologies first requires traveling back to the 1950s.

In 1959 Congress passed P.L. 86-272.<sup>18</sup> The goal of the legislation was, in effect, to overrule the U.S. Supreme Court opinion in *Portland Cement*.<sup>19</sup> In that case, the Court sustained a Minnesota income tax on the Minnesota-apportioned net income of an Iowa manufacturer that engaged in a "regular and systematic course of solicitation of orders for the sale of its products," consisting of a leased sales office in Minneapolis equipped with its own furniture and fixtures and staffed by four employees.<sup>20</sup> In dissent, Justice Felix Frankfurter warned that the Court was usurping the role of Congress:

The question is not whether a fair share of the profits derived from the carrying on of exclusively interstate commerce should contribute to the cost of the state governments. The question is whether the answer to this problem rests with this Court or with Congress. . . . The problem calls for solution by devising a congressional policy. Congress alone can provide for a full and thorough canvassing of the multitudinous and intricate factors which compose the problem of the taxing freedom of the States and the needed limits on such state taxing power.<sup>21</sup>

Taking up Frankfurter's suggestion, Congress created a simple rule:

<sup>15</sup> States that currently enforce market sourcing for revenue from intangible property include: Alabama, California, Colorado, Connecticut, the District of Columbia, Georgia, Hawaii, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Utah, Vermont, West Virginia, and Wisconsin. The trend is for states to move toward market sourcing and away from cost of performance because of the difficulty in implementing cost of performance.

<sup>16</sup> States that still enforce cost of performance for revenue from intangible property include: Alaska, Arizona, Arkansas, Florida, Idaho, Kansas, Mississippi, North Dakota, South Carolina, and Virginia.

<sup>17</sup> See 830 Code Mass. Regs. section 63.38.1(9)(d)1.d.i.

<sup>18</sup> 15 U.S.C. sections 381-384.

<sup>19</sup> *Northwestern States Portland Cement Co. v. Minnesota and Williams v. Stockham Valves & Fittings Inc.*, 358 U.S. 450 (1959).

<sup>20</sup> *Id.* at 454.

<sup>21</sup> *Id.* at 475-476 (Frankfurter, J., dissenting).

No State, or political subdivision thereof, shall have power to impose . . . a net income tax on the income derived within such State by any person from interstate commerce *if the only business activities within such State by or on behalf of such person* during such taxable year are either, or both, of the following:

- (1) the solicitation of orders by such person, or his representative, in such State for sales of tangible personal property, which orders are sent outside the State for approval or rejection, and, if approved, are filled by shipment or delivery from a point outside the State; and
- (2) the solicitation of orders by such person, or his representative, in such State in the name of or for the benefit of a prospective customer of such person, if orders by such customer to such person to enable such customer to fill orders resulting from such solicitation are orders described in paragraph (1).<sup>22</sup>

As a later Supreme Court opinion put it, Congress's purpose in enacting P.L. 86-272 was clear: "to define clearly a lower limit for the exercise of" a state's power to tax.<sup>23</sup>

Although there were skirmishes in the courts over which activities constituted solicitation and which did not, there was, until recently, little conflict over what counted as "business activities within such State." One only had to look at what the business and its employees and agents did and where to determine that the business was engaged in activities in State X but not State Y.

Then along came the internet, and everything changed — or, more accurately, in the authors' view, the perspectives (and possibly the ambition) of some state tax agencies changed. In the wake of *Wayfair*,<sup>24</sup> state tax agencies and others began to argue that basic website and e-commerce functions — such as the use of marketing cookies or online chat on retail websites — are activities of

the business operating the website that occur at the location of its customers' personal computers, tablets, or smartphones. That is, if a customer in Virginia starts a live chat session with a retailer's customer service representative in Maine or even a chatbot located in the ether, the business that employs that customer service representative or bot is engaged in a business activity *in Virginia* — without regard to the location of that representative or the computer equipment supporting them. This view crystallized in a 2021 Multistate Tax Commission statement<sup>25</sup> that revenue authorities in California, Minnesota, New Jersey, and New York have adopted or are proposing to adopt through public guidance or regulations.<sup>26</sup>

Whether discussing the newest machine learning technology or a good old-fashioned print mailer, the legal analysis under P.L. 86-272 should proceed in the same manner. It begins with the statute's text,<sup>27</sup> which must be interpreted as it was understood at the time of its enactment in 1959.<sup>28</sup> In other words, a business activity within a state is an activity that would have been recognized as such in 1959. This does not lead to the absurd view that no computer-age technologies can occur in a state because the home computer did not exist in 1959. Rather, this leads to the sensible conclusion that under P.L. 86-272, a business activity occurs where the people or equipment of a business performing that activity are located. If a business owns a printing press that prints a catalog in Maine, it is engaged in a business activity in Maine. If a business operates a website from a data center in Virginia, that business is engaged in a business activity in Virginia.

<sup>25</sup> See MTC, "Statement of Information Concerning Practices of the Multistate Tax Commission and Supporting States Under Public Law 86-272" (2021).

<sup>26</sup> Whether and under what circumstances the state tax agencies may do so is the subject of notice-and-comment rulemaking in New York and litigation in California. The authors' law firm represents the American Catalog Mailers Association in a lawsuit filed in state court in San Francisco to challenge the California guidance, *American Catalog Mailers Association v. Franchise Tax Board*, Case No. CGC-22-601363 (Nov. 17, 2022).

<sup>27</sup> Frankfurter famously said the three rules of statutory construction are (1) read the statute, (2) read the statute, and (3) read the statute. See Henry J. Friendly, *Benchmarks* 202 (1967).

<sup>28</sup> See *Wisconsin Central Ltd. v. United States*, 138 S. Ct. 2067, 2070 (2018).

<sup>22</sup> 15 U.S.C. section 381 (emphasis added).

<sup>23</sup> *Heublein Inc. v. South Carolina Tax Commission*, 409 U.S. 275, 281 (1972).

<sup>24</sup> *South Dakota v. Wayfair Inc.*, 138 S. Ct. 2080 (2018).

Indeed, focusing the analysis on where the business's agents or equipment are located, as opposed to the nature of the activity being performed, should make the analysis easier — which is not to say easy. The location of a chatbot should be no more nor less easy to discern under this standard than the location of a customer service representative. Similarly, the location of machine learning platforms should be no more difficult to identify than infrastructure-as-a-service or platform-as-a-service products. The fundamental questions under P.L. 86-272 remain: What is the business doing? And where are the employees, agents, and equipment doing that work located?

Unless and until Congress acts to amend or repeal P.L. 86-272, an unlikely prospect at present, the focus of tax agencies and taxpayers alike should be on how best to answer these questions — no matter how simple or sophisticated the software is.

### Conclusion

While no one can draw hard and fast conclusions about the state income tax treatment of machine learning technologies, these technologies serve as the latest reminder to practitioners that even mind-blowing technological developments should not rock the foundations of legal analysis. Just as the answer to whether artificial intelligence software can own a patent turns on a much older definition of the term “individual” in the Patent Act,<sup>29</sup> whether and how a state can impose income tax on machine learning technologies — and whether and to what extent federal law limits that power — will be resolved through the same legal analyses that have applied to more established technologies . . . at least until Congress or state legislatures act to change the game. ■

<sup>29</sup> See *Thaler v. Vidal*, 43 F.4th 1207 (Fed. Cir. 2022).

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