



## BRAZIL'S NATIONAL ARTIFICIAL INTELLIGENCE STRATEGY

### COMMENTS FROM BSA | THE SOFTWARE ALLIANCE

JANUARY 31, 2020

#### Introduction and Summary of Comments

BSA | The Software Alliance (**BSA**)<sup>1</sup> thanks the Ministry of Science, Technology, Innovation, and Communications (**MCTIC**) for this opportunity to contribute to the consultation on *Brazil's National Artificial Intelligence Strategy (Strategy)*<sup>2</sup>.

BSA is the leading advocate for the global software industry before governments and in the international marketplace. Our members are at the forefront of software-enabled innovation that is fueling global economic growth, including cloud computing and artificial intelligence (**AI**) products and services. BSA's members include many of the world's leading suppliers of software and online services and have made significant investments in developing innovative AI solutions for use across a range of applications.

As leaders in AI development, BSA's members have unique insights into both the tremendous potential of AI and the governmental policies that can best support the responsible use of AI and ensure continued innovation. To that end, BSA has identified five pillars<sup>3</sup> that are essential to the development of responsible AI frameworks. These pillars, with which the **Strategy** consultation document is broadly aligned, reflect the fact that both industry and government have important roles to play in promoting the benefits and mitigating the potential risks involved in the development, deployment, and use of AI:

**Building Confidence and Trust in AI Systems:** Highlighting industry efforts to ensure AI systems are developed in ways that maximize fairness, accuracy, data provenance, explainability, and responsibility.

**Sound Data Innovation Policy:** Promoting data policies that are conducive to the development of AI, including reliable legal mechanisms that facilitate cross-border data transfers, legal certainty for value-added services (e.g., text and data mining, machine learning), and enhanced access to non-sensitive government data.

- 1) Cybersecurity and Privacy Protection:** Advocating for policies that strengthen enhanced security measures and respect informed consumer choices while ensuring the ability to deliver valuable tailored products and services.

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<sup>1</sup> BSA's members include: Adobe, Atlassian, Autodesk, Bentley Systems, Box, Cadence, CNC/Mastercam, IBM, Informatica, Intel, MathWorks, Microsoft, Okta, Oracle, PTC, Salesforce, ServiceNow, Siemens Industry Software Inc., Sitecore, Slack, Splunk, Trend Micro, Trimble Solutions Corporation, Twilio, and Workday.

<sup>2</sup> Available at: <http://participa.br/profile/estrategia-brasileira-de-inteligencia-artificial>

<sup>3</sup> For more information about these pillars, please visit <https://www.ai.bsa.org>

- 2) **Research and Development:** Supporting investment in efforts that foster confidence and trust in AI systems, promote coordination and collaboration between industry and government, and help grow the AI workforce pipeline.
- 3) **Workforce Development:** Identifying opportunities for government and industry to collaborate on initiatives to prepare the workforce for new and emerging jobs.

BSA appreciates the opportunity to contribute to the development of the Strategy currently being developed by MCTIC and we offer the following comments and recommendations, which focus on important aspects for creating a secure and trusted AI ecosystem, to further enhance the Strategy. Our detailed comments follow the order of select discussion themes set forth on the online Strategy consultation form. Our comments also includes an additional overarching comment on the importance of incorporating software security as a core principle of the Strategy.

## Detailed Comments

### **A. Overarching Comment: Incorporating Software Security as a Core Principle**

BSA suggests MCTIC consider further enhancing the **Strategy** by including software security as one of its core principles. As AI and other digital technologies increasingly create a globally connected economy, ensuring that AI systems are designed to mitigate foreseeable security risks will be critical. The Framework would therefore benefit from including considerations related to securing software throughout its lifecycle. Software-enabled capabilities have expanded from traditional computer programs and industrial control systems into AI and emerging technology. These include widely deployed sensors, smart appliances, connected vehicles, and robotic systems. It is therefore imperative that software developers, including those developing AI solutions and applications, ensure that software is built and maintained securely throughout its lifecycle. In this regard, BSA has published a *Framework for Secure Software*<sup>4</sup> that serves as a comprehensive benchmark for software security considerations.

**BSA recommends that software security considerations be considered a core principle of the Strategy, to emphasize the importance of secure systems and software as part of ethical AI.**

### **B. Discussion Theme 1 – Legislation, Regulation, and Ethical Use of AI**

#### Legislation and Regulation

The consultation on the **Strategy** invites stakeholders to share their view on whether a broad AI law would be appropriate or, instead, existing laws and/or regulations should be updated to address issues related to AI.

Given the broad set of underlying issues and endless potential use cases for AI, a one-size-fits-all approach to regulation would be counterproductive. For many of the issues an overly-regulated approach is likely to inhibit development, deployment and growth of AI, to the detriment of the Brazilian economy. Instead of focusing on a one size-fits all regulation or a number of new regulations to address AI, Brazil should ensure that existing regulatory frameworks are modernized to accommodate the adoption of AI and, where necessary, develop tailored policy responses to specific issues based on ample multi-stakeholder consultation. In such cases, it is important for the Government of Brazil to keep such regulations in line with emerging international trends and best practices.

An example of a current regulation that should be updated to promote the development of AI is the Brazilian Copyright Law. Brazil should amend its Copyright Law to include specific language

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<sup>4</sup> Details available at <https://www.bsa.org/reports/bsa-framework-for-secure-software>.

permitting data analysis uses (text and data mining) to avoid any questions about the non-infringing nature of such uses.

Developing algorithms that power AI systems requires researchers to develop mathematical models that are trained using vast quantities of data. A copyright law provision to allow information analysis is very important to spur innovation. The issue is that the machine learning process may involve the creation of machine-readable reproductions of the material used in machine learning. Because the incidental copies created as part of the machine learning process are made for the sole purpose of analyzing the factual (i.e., non-copyrightable) information from lawfully accessed content and are unrelated to the creative expression embodied in the underlying works, they do not substitute for the original or in any way undermine the legitimate interests of a copyright owner. However, in the absence of a copyright exception for such activity, researchers may be reluctant to undertake important R&D due to potential legal uncertainty.

Recognizing the enormous opportunity that AI presents for promoting economic growth and addressing many of the most vexing social challenges, governments around the world are taking steps to ensure that copyright is not a barrier to innovation. As governments examine their legal frameworks to ensure that they are not inadvertently stifling AI development, there is an increasing global awareness about the need to modernize copyright laws to facilitate the development of AI. In the United States, for example, reproductions used for analysis or research are considered a fair use. But in legal systems that do not have a flexible fair use provision, which is the case of Brazil, the trend has been to pursue specific exceptions to clarify that the type of copying involved in training an AI system is not infringing. In just the past few years, Japan, Canada, Australia, the European Union, and Singapore have all taken steps to ensure that copyright is not a barrier to AI development. It is therefore extremely important to create a specific data analysis provision to avoid any questions about the non-infringing nature of data analysis uses. This will help foster innovation through the continued use of data analysis for innovation purposes, without potential barriers that the threat of potential legal sanctions for copyright infringement could pose.

**BSA suggests the Government of Brazil avoid a one size fits all AI regulation or overregulating AI, and instead develop tailored policy responses to specific issues based on ample multi-stakeholder consultation and international best practices. An example of this approach would be an amendment to the current Copyright Law to include language that clearly permits information analysis uses (TDM exception).**

### Ethical Use of AI

BSA also welcomes the **Strategy's** focus on the importance of AI ethical principles highlighted throughout the consultation document. In this regard, it is important to recognize the distinct stakeholders in the AI value chain, and the importance of their respective roles and responsibilities in promoting ethical AI (e.g., AI solution providers, entities that deploy and use AI, and end users). Much like software security, "ethical AI" requires a lifecycle approach to risk management, which includes anticipating and addressing risks that can arise when systems are designed, after they have been deployed, and when they are being decommissioned.

There is no one-size-fits-all approach for managing AI lifecycle risks. Indeed, the best risk-management practices must be tailored to account for an AI system's development model and deployment context. Allocating the appropriate roles and responsibilities for managing AI risks must likewise account for these considerations. For instance, the entity that deploys an AI solution will likely be best positioned (as compared with the developer of the AI solution) to implement appropriate recourse mechanisms for addressing concerns that might arise through its use of the system.

The Organization for Economic Co-operation and Development (OECD) recognized the critical importance of distinguishing the multiple stakeholders involved in AI when it adopted the principles underlying the Recommendation of the Council on Artificial Intelligence.<sup>5</sup> The OECD principles recognize that the AI stakeholder community "encompasses all organizations and individuals involved in, or affected by, AI systems, directly or indirectly." Furthermore, the OECD principles recognize that

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<sup>5</sup> <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449>

effective AI policies must necessarily account for “stakeholders according to their role and the context” in which AI is being deployed. Including such a conceptual distinction would be helpful to different stakeholders as they carry out risk assessments to determine the appropriate measures to adopt for AI development, deployment, and use. In addition, it would also be useful for both AI solution providers and entities that deploy and use AI to consider who the ultimate end user of the AI solution will be — in general, end-user businesses should be considered more sophisticated users than end-user individuals — and this would in turn have implications on internal risk assessments and commercial viability.

**BSA recommends that the Strategy recognize and discuss the important roles and responsibilities that multiple stakeholders, including the Brazilian government, have in implementing ethical AI and managing corresponding risks.**

### C. Discussion Theme 2 – AI Governance

The **Strategy** welcomes stakeholders’ thoughts on whether Brazil should adopt open data policies that are privacy-friendly to help train AI algorithms and avoid bias.

BSA supports an open data policy through which non-sensitive government data should be made open, available, and useable for the general-public. This approach will be most effective if it fosters a robust data sharing ecosystem between government and non-government stakeholders. In order to achieve this goal, the Government of Brazil should consider mechanisms for identifying and mitigating sources of friction that could inhibit the sharing of government data. Such an effort should include an evaluation of how agencies can leverage emerging technologies and data governance processes to enhance privacy protections, while also making more data available to the public. Government agencies should consider using cutting-edge technologies and data governance processes that can facilitate greater access to data while safeguarding user privacy, including considering opportunities to utilize “tiered access” approaches to data protection<sup>6</sup>, differential privacy frameworks<sup>7</sup>, and homomorphic encryption<sup>8</sup>.

**BSA suggests the Government of Brazil commit to ensuring that government agencies make all non-sensitive government data assets freely available under an open license and in machine readable formats.**

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<sup>6</sup> A tiered access approach to data governance would enable agencies to make available public versions of otherwise sensitive datasets by stripping out personal information. See Comm’n on Evidence-Based Policymaking, *The Promise of Evidence-Based Policymaking 5* (2017) at pg. 38 (“Tiered access is an application of data minimization, a key privacy safeguard for evidence building as embodied in the Fair Information Practice Principles (described in Chapter 3). Data minimization means giving access to the least amount of data needed to complete an approved project. For example, an eligible researcher’s project might earn approval for access to confidential information at a highly secure research data center that requires expert review of all output. Another researcher’s project may need only access to a data query tool that runs an analysis, checks for disclosure risk without ever showing individual records, and provides group statistics (see the box “Data Query Tools”). . . . A well-designed and properly implemented data minimization strategy like tiered access can reduce the risk of unauthorized use and unintended harm to individuals.”).

<sup>7</sup> See Kobbi Nissim, Thomas Steinke, Alexandra Wood, Micah Altman, Aaron Bembeneke, Mark Bun, Marco Gaboardi, David O’Brien, and Salil Vadhan, *Differential Privacy: A Primer for a Non-technical Audience* (February 2018), available at [https://privacytools.seas.harvard.edu/files/privacytools/files/pedagogical-document-dp\\_new.pdf](https://privacytools.seas.harvard.edu/files/privacytools/files/pedagogical-document-dp_new.pdf) (“Differential privacy is a strong, mathematical definition of privacy in the context of statistical and machine learning analysis. It is used to enable the collection, analysis, and sharing of a broad range of statistical estimates, such as averages, contingency tables, and synthetic data, based on personal data while protecting the privacy of the individuals in the data. . . . Computer scientists have developed a robust theory for differential privacy over the last fifteen years, and major commercial and government implementations have now started to emerge.”).

<sup>8</sup> Homomorphic encryption is a form of encryption that allows a computational analysis of encrypted data, ensuring that the data remains confidential. Use of homomorphic encryption could, for instance, enable the sharing of aggregated medical data to facilitate AI research without risking patient confidentiality. See Jean Louis Raisaro, Jeffrey Klann, Kavishwar Wagholikar, Hossein Estiri, Jean-Pierre Hubaux, and Shawn Murphy, *Feasibility of Homomorphic Encryption for Sharing I2B2 Aggregate-Level Data in the Cloud*, AMIA Jt Summits Translational Science (May 2018), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5961814/#>

The **Strategy** should also expressly recognize the uniquely important role that cross-border data transfers play in the development and use of AI. The free flow of data is integral to every stage of the AI life cycle, from the development of predictive models to the deployment and use of AI systems. Data used in AI systems often originates from many geographically dispersed sources. Many AI solutions used in Brazil are developed internationally and offered over the cloud. Likewise, AI solutions developed in Brazil need to rely on data flows both for their development and deployment. Therefore, it is imperative that unwarranted data localization mandates be avoided, and that data be allowed to move freely across borders in an interoperable and secure way.

**BSA recommends that the Strategy specifically mentions the importance of cross-border data transfers and that every effort should be made to avoid and/or eliminate unwarranted data localization requirements from Brazilian laws and regulations.**

#### **D. Discussion Themes 3 and 5 – Qualification for a Digital Future and Workforce Training**

According to a report recently issued by the World Economic Forum, 65% of today's children will hold jobs that have not been invented yet<sup>9</sup>. It is very important that the Government of Brazil work with the private sector to develop a national strategy for ensuring that Brazilian workers have the skills necessary to thrive in the new data economy.

The **Strategy** rightfully identifies the need to promote worker training in the area of Artificial Intelligence. These new jobs require an evolving set of skills. The future workforce must be given access to training on skills needed to not only to develop artificial intelligence solutions but, most importantly, to leverage these tools in a multitude of ways. Software-driven AI technologies are creating new types of jobs in every industry, generating new career pathways and driving economic opportunity. The Strategy should encourage public-private partnerships to skill, reskill and upskill the workforce, starting with pilot programs that could be then scaled up.

The **Strategy** should also encourage initiatives to increase interest in and access to computer science education for students in basic education ("alunos no ensino básico), with a focus on expanding public-private partnerships, re-envisioning vocational education, and training more STEM-qualified teachers. Efforts should also be made to improve core competencies taught to elementary and high school children – these should include problem-solving, analytical and creative thinking, interpersonal skills, in addition to digital literacy skills.

It is also important to focus on mid-career retraining programs to provide workers with training on high-demand tech skills. Strategies should also include technical training provided outside traditional college programs.

**BSA suggests the Government of Brazil work with the private sector to develop a robust strategy to boost efforts to foster current workforce training and education at all levels in the STEM fields, including computer science and software engineering. It is also important to focus on basic computer literacy skills.**

#### **E. Discussion Theme 4 – International Considerations**

The ability to freely transfer data across borders is the lifeblood of AI. Rules that limit cross-border data transfers invariably limit the insights and other benefits that AI systems can provide. Barriers to cross-border data flows, including requirements for data to be stored in local facilities, undermine the enormous efficiencies of scale and economic benefits that accrue from data innovation and should be avoided.

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<sup>9</sup> World Economic Forum, "This is what coachmen from the 1920s can tell us about robots and jobs", July 2016 available at [https://www.weforum.org/agenda/2016/07/this-is-what-coachmen-from-the-1920s-can-tell-us-about-robots-and-jobs/?utm\\_content=bufferb59f7&utm\\_medium=social&utm\\_source=twitter.com&utm\\_campaign=buffer](https://www.weforum.org/agenda/2016/07/this-is-what-coachmen-from-the-1920s-can-tell-us-about-robots-and-jobs/?utm_content=bufferb59f7&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer)

As the Government of Brazil considers a **Strategy** to promote the use and deployment of AI, it is important that not only special focus be placed on national policies that support cross border data flows but the issue should also be part of international discussions. Brazil should strive to play a leadership role internationally supporting agreements that promote data flows.

**BSA recommends that when negotiating bilateral or multilateral trade agreements, Brazil support the establishment of rules that will spur data-driven economic activity, including strong rules promoting cross-border data flows.**

### **Conclusion**

BSA is grateful for the MCTIC's consultative process and we hope our comments are helpful in assisting your efforts to develop the "**Strategy**". Please do not hesitate to contact us if you have any questions or comments regarding our suggestions. We remain open to further discussion and look forward to additional opportunities to work with MCTIC as it finalizes and implements the **Strategy**.