**DEPARTMENT OF COMMERCE**
**National Institute of Standards and Technology**

**Artificial Intelligence Standards**

**Request for Information**

**Docket No. 190312229-9229-01**

# COMMENTS OF AT&T SERVICES, INC.

AT&T Services, Inc., on behalf of itself and its affiliates (together, "AT&T"), respectfully submits these comments in response to the *Request for Information* ("*RFI*") in the above-referenced proceeding. In that *RFI*, the Department of Commerce's ("Department") National Institute of Standards and Technology (NIST) seeks comment on "the current state, plans, challenges and opportunities regarding the development and availability of AI technical standards and related tools, as well as priority areas for federal involvement in AI standards-related activities."[1]

AT&T is encouraged by the Administration's February 11, 2019 Executive Order on Maintaining American Leadership in Artificial Intelligence and welcomes the Administration's efforts to continue to update the United States' strategy for Artificial Intelligence (AI). AT&T supports the participation of NIST and the U.S. government in open forums in which technical standards and pre-standard activities, such as open source, are being discussed. This approach will enable the eventual adoption of standards that have been vetted by expert stakeholders, that keep pace with technological advancement, and that further the goal of international consistency and interoperability. Once such standards emerge, NIST should promote the adoption of established AI technical standards and require U.S. government agencies to adhere to them in their

[1] *Artificial Intelligence Standards*, Request for Information, 84 Fed. Reg. 18490 (May 1, 2019).

development and purchasing of AI applications. At this time, however, it would be premature for NIST to formalize any specific recommendations for AI technical standards. As referenced in the Executive Order, NIST can also advance American AI leadership by defining parameters for release of data sets by federal agencies and identifying use cases for federal agencies, particularly those related to traceability, fairness, and safety.

**Artificial Intelligence at AT&T**

AT&T's use of AI and machine learning (ML) technologies dates back to the 1950s with the pioneering work by Claude Shannon at AT&T Bell Labs. AT&T holds over 1,000 patents in this area and has researched and developed numerous AI capabilities in the areas of language translation, speech recognition, computer speech, image recognition, fleet management and sentiment analysis, among many more. Today, AT&T applies AI to a variety of use cases, including:

- **Building the 5G network:** As we deploy our 5G network, thousands of new small cells must be installed in the right places to help ensure the best 5G customer experience. To execute perfectly, we must collect and analyze device experiences – good and bad – exactly where and when they happen. ML and AI will work together to keep the 5G network maintained by continuously monitoring our network and how it is being used.
- **Securing our network**: We study multitudes of data streams to help detect threats to our network and optimize the traffic flow, to provide our customers with an optimum experience. ML is a major part of watching for global threats by looking for anomalies. We analyze approximately 670 billion flows of network data – and see 110 billion potential probes for vulnerabilities – across our global IP network every day.

- **Fraud detection**: Data and AI/ML help AT&T to detect indicators of potentially fraudulent activity. For instance, if a customer logs into their online account from the United Kingdom, but their cellular phone is located in New Jersey, an alarm is triggered. If a customer's login occurs from a U.K. IP address and their cellular phone location also has recently registered in the United Kingdom, it is likely that they are traveling. AI and ML allow AT&T to detect discrepancies and variances such as these and to flag the probability of fraud so that it can be further investigated.
- **Enhancing technician dispatch and repair services**: Our dispatch optimization increasingly uses AI to consider traffic conditions, weather, known completion times for types of jobs and even individual technician histories. This use of AI/ML is helping us to reach the goals of reducing a four-hour service window to an hour and allowing customers to track their technician's location.

AT&T is also a founding member of the Acumos AI Project, an open source AI platform co-developed with Tech Mahindra and hosted by The Linux Foundation. The platform makes it easy to build, share, and deploy AI applications, lowering the barrier of entry into the AI field and extending the benefits to others.[2]

AT&T's work on AI/ML is governed by three guiding principles[3]:

- **By People, For People**. We incorporate human oversight into AI. With people at the core, AI can enhance the workforce, expand capability and benefit society as a whole.

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[2] Mazin Gilbert and Kevin Hollander, *First Public Code Release of the Acumos AI Project*, AT&T Technology Blog (November 14, 2018); see also, https://www.acumos.org/.

[3] Tom Moore, *Artificial Intelligence at AT&T: Our Guiding Principles*, AT&T Technology Blog (May 15, 2019).

- **Accessible and Shared**. We support Open Source communities whenever appropriate, to further access, collaboration, standardization and participation in industry discussion.
- **Secure and Ethical**. We are grounded in ethics, safety, and values at every stage of AI, including our privacy principles and security safeguards.
    - Design: We use varied, validated datasets and diverse human input to achieve objectives.
    - Development: We use a transparent approach to algorithms that includes safeguards.
    - Deployment: We monitor outcomes to ensure accuracy and minimize biases.

We are currently developing an internal set of operating guidelines, compliance tools, and governance mechanisms to monitor adherence to these principles, and we are also refining and expanding our AI training programs.

**AI Technical Standards and Related Tools Development**

AT&T recommends that NIST engage with international and regional standards bodies and other open forums that are developing standards and collaboration tools related to AI, to ensure that any eventual standards originate from and are vetted by a diverse group of experts. While there are several efforts underway aimed at developing technical standards for AI, it would be premature to formalize any specific recommendations for such standards. The development of AI applications remains fairly nascent, and a rush to impose standards could hamper innovation or lead to standards that quickly become irrelevant as technology advances.

There are two key efforts underway to develop AI standards across verticals. First, the IEEE Standards Association is developing AI standardization processes as a part of its Global Initiative on Ethics of Autonomous and Intelligent Systems. AT&T has participated in the

development of the P7000 series, whose relevant initiatives include Benchmarking Accuracy of Facial Recognition Systems (P7013) and methodologies to address algorithmic bias in the development of AI systems (P7003). Second, the ISO/IEC Joint Technical Committee 1 Standards Committee on Artificial Intelligence (SC42) is a similar initiative, although one that is less advanced.[4]

The Internet Engineering Task Force (IETF) is similarly well-positioned to lead the development of interoperable standards related to AI in areas such as algorithmic auditability, transparency, and traceability. The IETF's work to develop protocols relevant to the Internet of Things and IPv6 operations will have applications pertinent to the creation of AI standards.

The Open Radio Access Networks Alliance (O-RAN Alliance), the Third Generation Partnership Project (3GPP), and the Alliance for Telecommunication Industry Solutions (ATIS) are developing AI-related standards relevant to the telecommunications sector. The O-RAN Alliance is an open forum in which companies around the world collaborate on open network interfaces in order to achieve greater interoperability among manufacturers and operators. The U.S. government's support for this initiative has contributed to making global telecommunications networks interoperable, and standards developed in this forum will be relevant to private companies internationally. Similarly, the 3GPP and its regional organizational partner ATIS bring together telecommunications standard development organizations and are examining the use of artificial intelligence in network management and 5G deployment.

These standardization efforts also draw on the important work of open forums such as Open AI and the Linux Foundation, which are developing software and tools for AI (including tools related to ethics in AI applications) that benefit from the knowledge and experience of a diverse

[4] See, e.g., Peter Cihon, *Standards for AI Governance: International Standards to Enable Global Coordination on AI Research and Development*, Future of Humanity Institute, University of Oxford (April 2019).

group of experts. The exchange of ideas, technological development and vetting performed by these open forum bodies is a key precursor to the development of standards. U.S. agencies such as NIST should support the work of open forums and encourage standards bodies to incorporate their outcomes to ensure that any eventual standards are informed, relevant, and validated by leading experts.

**Defining and Achieving U.S. AI Technical Standards Leadership**

The United States can maintain its leadership in the area of AI by supporting the open exchange of ideas and knowledge in forums such as the aforementioned, as their outcomes will inform the technology developed by companies at a global level and contribute to international standardization efforts. The U.S. government should prioritize and sufficiently resource agency participation in global AI/ML standards forums to increase trust, transparency, and predictability for technology providers and users, including U.S. government agencies. In this vein, the U.S. government's support for the Organization for Economic Cooperation and Development's Recommendation on Artificial Intelligence represents a constructive contribution to the development of global standards for trustworthy AI.[5]

The U.S. government can also maintain its leadership by updating its national AI strategy and by articulating clear research and development investment priorities and policy objectives. The Administration should prioritize the funding of grants for research advancement in AI/ML through the National Science Foundation, DARPA challenges, and similar initiatives. Funding for technologies that include bias detection and mitigation, transparency, and explainability will incentivize development of secure and trustworthy AI/ML applications. The U.S. strategy should also include robust investment in education and training in STEM and AI/ML, and NIST might

[5] Organization for Economic Cooperation and Development, Recommendation of the Council on Artificial Intelligence, OECD/LEGAL/0449 (adopted May 21, 2019).

consider expanding or replicating the National Initiative for Cybersecurity Education (NICE) to fulfil this need.

**Prioritizing Federal Government Engagement in AI Standardization**

NIST and other U.S. agencies are effective facilitators and can promote an open and collaborative approach across industries to the resolution of common challenges. NIST can encourage U.S. companies to participate in discussions around standardization and pre-standardization such as open source, as well as to share datasets and good practices related to the development of reliable, robust, and trustworthy AI applications. By helping private and public sector entities who are engaged in the development of AI applications to understand the technical, design, and ethical challenges presented by practical uses of AI, NIST can help to drive consensus regarding the standards that should apply.

Similarly, NIST can work with the National Laboratories to bring industry and academia together to address challenges. AT&T has engaged with Argonne National Laboratory as part of its Climate Change Resiliency Project, to assess the risks of climate change to our business operations at the neighborhood level 30 years into the future. This has led us to develop a tool that combines Argonne's regional climate modeling data with sophisticated mapping capabilities, allowing AT&T to visualize climate change risk on company infrastructure and make smarter, climate-informed decisions for the future.[6]

NIST could advance the adoption of safe and reliable AI applications by identifying use cases for federal agencies related to traceability, fairness, and safety. In doing so, NIST should draw on good practices developed in the private sector, including principles, compliance tools, and governance mechanisms. NIST should also incorporate lessons from DARPA's work on

[6] AT&T Engages with the U.S. Department of Energy's Argonne National Laboratory on Industry-Leading Climate Resiliency Project, AT&T News Release (March 27, 2019).

Explainable AI, which aims to produce a toolkit of software modules that could be used to develop future explainable AI systems. Additionally, NIST could define parameters for the release of data sets by federal agencies, which would further enable the private sector's AI work.

NIST's prior work developing frameworks for managing cybersecurity and privacy risks also create a foundation for organizations working in the area of AI/ML. These frameworks will provide helpful guideposts for organizations that seek to manage personal data responsibly in AI applications, while deriving the benefits that such data can bring. AT&T has engaged with NIST in the multi-stakeholder development of these frameworks.

As multi-stakeholder discussions of AI technical and non-technical standards advance, NIST should incorporate the resulting standards into requirements for U.S. government agencies that develop or purchase AI applications. As an adopter of AI/ML technology, the U.S. government can incentivize production of applications that are secure, explainable, and produce traceable outputs. NIST and other U.S. government agencies can concurrently promote adherence to these standards by organizations of all types, further aiming for global consistency and interoperability.

## CONCLUSION

AT&T welcomes NIST's attention to issues raised in this proceeding, and respectfully urges continued multistakeholder engagement consistent with the principles provided in these Comments.

Respectfully Submitted,

AT&T Services, Inc.

*/s/ Sarah R. Geffroy*
Sarah R. Geffroy
James Wade
David Lawson
AT&T Services, Inc.
1120 20th Street NW, Suite 800
Washington, DC 20036
202-457-2121

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