ARTIFICIAL INTELLIGENCE (AI) DEFINITIONS

The following definitions are used in HUD's guidance on artificial intelligence (AI).

- **Artificial Intelligence (AI): "**A machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. Artificial intelligence systems use machine- and human-based inputs to perceive real and virtual environments; abstract such perceptions into models through analysis in an automated manner; and use model inference to formulate options for information or action." 15 U.S.C. 9401(3). The following technical context applies to the definition of AI:
    - Encompasses, but is not limited to, the AI technical subfields of machine learning (including deep learning as well as supervised, unsupervised, and semi-supervised approaches), reinforcement learning, transfer learning, agentic AI, and generative AI.
    - Does not include robotic process automation or other systems whose behavior is defined only by human-defined rules or that learn solely by repeating an observed practice exactly as it was conducted.
    - No system should be considered too simple to qualify as covered AI due to a lack of technical complexity (e.g., the smaller number of parameters in a model, the type of model, or the amount of data used for training purposes).
    - Includes systems that are fully autonomous, partially autonomous, and not autonomous, and it includes systems that operate both with and without human oversight.

    OMB Memorandum M-25-21, Accelerating Federal Use of AI through Innovation, Governance, and Public Trust (April 3, 2025)
- **AI Model:** A component of an information system that implements AI technology and uses computational, statistical, or machine-learning techniques to produce outputs from a given set of inputs. *OMB M-25-21, Accelerating Federal Use of AI through Innovation, Governance, and Public Trust (April 3, 2025)*
- **AI System (AI System):** "Any data system, software, application, tool, or utility that operates in whole or in part using dynamic or static machine learning algorithms or other forms of artificial intelligence, whether (i) the data system, software, application, tool, or utility is established primarily for the purpose of researching, developing, or implementing artificial intelligence technology; or (ii) artificial intelligence capability is integrated into another system or agency business process, operational activity, or technology system." The term excludes "any common commercial product within which artificial intelligence is embedded, such as a word processor or map navigation system." *Advancing American AI Act, Pub. L. 117–263, § 7223(4), 136 Stat. 3668, 3669 (codified at 40 U.S.C. § 11301 note*). As used in this clause, AI System includes AI Services and Generative AI.

- **AI Services (AI Services):** Cloud-based applications, systems, and tools that use artificial intelligence (AI) and machine learning to automate tasks, analyze data, and provide intelligent solutions. AI Services include natural language processing, computer vision, predictive analytics. AI Systems, tools, and applications provided by HUD or a third party (e.g., an outside service provider or contractor).
- **Contract:** As used in this clause, "contract" means any contract, agreement, order or other instrument and encompasses the definition set forth in FAR 2.101.
- **Generative AI (GenAI):** The class of AI systems and capabilities "that emulate the structure and characteristics on input data in order to generate derived synthetic content. This can include images, videos, audio, text, and other digital content." *NIST AI-600-1, Artificial Intelligence Risk Management Framework: Generative Artificial Intelligence Profile (July 2024)*. This includes:
    - **Internal GenAI Tools (GenAI Tools):** GenAI services, applications, tools, platforms, systems, and/or capabilities developed, procured, or operated under HUD's authority and within HUD-managed networks or approved cloud environments, where data access, storage, and processing are controlled and monitored by HUD.
    - **Public GenAI Tools:** GenAI services, models, applications, or platforms hosted or operated by external vendors or the public internet, where input data may be stored, processed, or used outside of HUD's direct control. Examples include commercial AI chatbots and publicly available AI content generators.
- **Generative AI Models:** Machine learning models that enable GenAI by training on and learning patterns from large volumes of data and generating new synthetic content. GenAI models produce generative outputs and are embedded in GenAI Systems, tools, and services, and its outputs are statistical predictions, not authoritative facts. GenAI models include:
    - Foundation Models: "In generative AI, models trained on broad data using self-supervised learning that can be adapted, such as through fine-tuning, for a variety of downstream tasks." NIST AI 100-2e2025. *Adversarial Machine Learning: A Taxonomy and Terminology of Attacks and Mitigations (March 2025).*
    - Large Language Models (LLMs): "A large language model (LLM) is an advanced artificial intelligence system that understands, processes, and generates human-like content. LLMs train on vast amounts of big data, allowing them to recognize complex patterns and structures to produce coherent, contextually relevant responses to a wide array of prompts." *Dataversity, Data Concept (May 14, 2025)*
- **High-Impact AI:** AI with an output that serves as a principal basis for decisions or actions with legal, material, binding, or significant effect on: 1. an individual or entity's civil rights, civil liberties, or privacy; or 2. an individual or entity's access to education, housing, insurance, credit, employment, and other programs; 3. an individual or entity's access to critical government resources or services; 4. human health and safety; 5. critical

infrastructure or public safety; or 6. strategic assets or resources, including high-value property and information marked as sensitive or classified by the Federal Government. *OMB M-25-21, Accelerating Federal Use of AI through Innovation, Governance, and Public Trust (Apri 3, 2025).*

- **Machine Learning Systems**: Systems that use algorithms to learn from data and make predictions or decisions without being explicitly programmed.
- **Outputs:** The results, predictions, or decisions generated by an AI model based on the input data received. Outputs can vary depending on the specific task(s) and the objective(s) of the AI System. Examples of outputs include classifications, predictions, recommendations, generated content (such as text, images, or music), actions, or any other form of processed information produced by the AI model.
- **Prompts:** The input provided to an AI System to guide its generation of text, images, or other content. These prompts can take various forms, including written instructions, questions, keywords, or partial sentences.
- **Training/Input data:** The data or information provided to an AI system for processing and analysis. Training/Input data serves as the foundation for training or inference within an AI model. Training/Input data can take many forms, including text, images, audio, video, numerical data, or any other structured or unstructured data relevant to the task at hand.