VA - Artificial Intelligence (AI)

VA AI Workforce Resources Blueprint
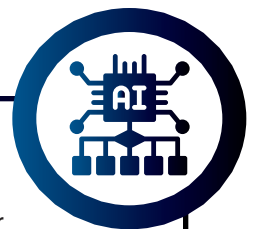
2024

VA | U.S. Department of Veterans Affairs

Acknowledgements

Special thanks to all the contributors whose expertise contributed to developing this VA - AI Workforce Resources Blueprint.

Table of Contents

MESSAGE FROM

VA's Chief AI Officer

As the Chief Technology Officer and Chief Artificial Intelligence Officer, I am thrilled to introduce the U.S. Department of Veterans Affairs' (VA) Artificial Intelligence (AI) Workforce Development Strategy, our blueprint for cultivating VA's world-class AI workforce.

AI represents a generational shift in how our computer systems will work, and what they will be capable of. When harnessed effectively, AI will play an increasingly vital role in transforming the delivery of VA benefits and services. At the same time, AI introduces several new risks which we will need to carefully manage to ensure the effectiveness and trustworthiness of our systems.

VA has long been a leader in using innovative technologies to improve our care and services, and thanks to your leadership we are already demonstrating leadership in the adoption of AI. Last year, VA reported over 40 AI use cases in operation with use cases spanning from cancer detection to suicide prevention to customer sentiment analysis.

Over the next several years, AI will become an increasingly important component of VA's software ecosystem, and it is important that we build a workforce capable of seizing this opportunity at scale. Our workforce is the linchpin of this revolution, and their diverse perspectives and expertise will shape the success of our AI initiatives.

I can't wait to see the incredible advances in Veteran care and services we'll achieve as we embark on this journey together.

Charles Worthington
Office of Information and Technology
U.S. Department of Veterans Affairs

Introduction

In this blueprint you will learn more about Artificial Intelligence (AI), how the Department of Veterans Affairs (VA) is integrating AI into the workforce as well as establishing a framework to support that integration.

To meet the emergent requirements for VA AI workforce development and to ensure safe and effective use of AI across the enterprise, VA must invest in recruitment, retention, and training regarding AI and data literacy.

This blueprint is designed to provide the tools, resources, and information to develop your future AI workforce from initial planning through onboarding of AI-specialized and AI-enabling employees.

VA's Goals with AI
- Improve outcomes and experiences for Veterans by developing trustworthy AI capabilities to support VA's mission.
- Build robust capacity in AI to develop and apply innovative AI solutions and facilitate a learning environment that supports the delivery of world-class benefits and services to Veterans.

Using the extensive VA network already in place, VA's goal is to ensure that Veterans can benefit from the significant technological advances that are happening right now.

Executive Overview

The VA has one of the nation's largest and most extensively curated collections of health and benefits data in the world, representing a large opportunity to use AI to unlock improved outcomes for Veterans. AI at VA is at a transition point, graduating from the lab into enterprise-grade systems that allow VA to reap the benefits of AI in operations while minimizing risks and ensuring equity. VA is investing in AI with a focused, agency-wide approach.

October 30, 2023, Executive Order (EO) 14110 on Safe, Secure, and Trustworthy Artificial Intelligence (AI), was published and includes establishing new standards for AI safety, security, and innovation. This has served as a catalyst for increased investment in AI innovation and AI risk management across VA.

What is AI?

The term artificial intelligence is often used broadly and with several definitions. AI is a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. AI 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.

The VA uses the definition of AI from Section 238(g) of the Fiscal Year 2019 National Defense Authorization Act, which defines AI as:

- Any artificial system that performs tasks under varying and unpredictable circumstances without significant human oversight, or that can learn from experience and improve performance when exposed to datasets.
- An artificial system developed in computer software, physical hardware or other context that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action.
- An artificial system designed to think or act like a human, including cognitive architectures and neural networks.
- A set of techniques, including machine learning, that is designed to approximate a cognitive task.
- An artificial system designed to act rationally, including an intelligent software agent or embodied robot that achieves goals using perception, planning, reasoning, learning, communicating, decision making and acting.

Practically Speaking:

- AI and Machine Learning (ML) have potential applications across VA. Some examples of ways that these techniques may be used at VA include:
  - Clinical diagnostic and treatment support.
  - Medical or social determinants of health risk assessments.
  - Drug-addiction prediction and risk assessment.
  - Suicide or other violence prediction and risk assessment.
  - Mental-health status detection or prevention.
  - AI/ML-enabled medical devices, medical diagnostic tools.
  - AI/ML-assisted clinical workflow automation.
  - Benefits claims processing.

- Examples of projects that are not considered AI/ML include:
  - Robotic Process Automation (RPA).
  - Traditional statistical methods.
  - Heuristics and rules-based algorithms.

Why AI at the VA?

- **9.1 million patients.** VA is the largest integrated health care system in the U.S.
- **2 million claims processed per year.** Providing benefits to more than 6 million Veterans, survivors, and their families.
- **1,200+ medical facilities.** Veterans receive care across all U.S. states and territories.
- **120,000 clinicians.** The majority of U.S. doctors and nurses do at least some of their training at VA.
- **1,000,000 genomics research participants.** VA has the largest genomic database tied to medical records in the world.
- **460,000+ employees.** More than 1 in 700 U.S. adults are VA employees.
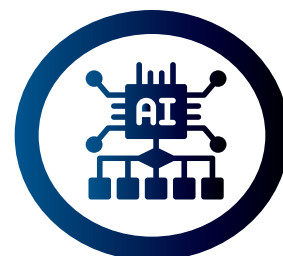
VA AI - Strategic Direction

Though AI represents a new opportunity for innovation for all federal agencies, the VA is uniquely suited to leverage AI. The VA has one of the most comprehensive combined administrative, financial, and medical record databases globally, providing important datasets for the training and testing of AI capabilities for improving outcomes for our Veterans.

New AI concepts are constantly emerging and professionals in core AI and AI-enabling disciplines have a deep understanding of the technology and can generate new ideas for advancing knowledge in the field. AI technology is advancing at a rapid pace and becoming increasingly easier to use. The constant advancements in AI applications are transforming the way businesses work. AI enables faster, innovative new solutions and services and more informed decisions.

VA is taking the initiative to build the critical talent pipelines needed for AI and AI-enabling talent. A robust training program for current and future AI user groups is available. This blueprint is a comprehensive guide that pulls together the critical groundwork and continued efforts toward prioritizing and integrating AI into the VA workforce. VA is collaborating and working across the federal government, industry, and academia to rapidly expand its AI capabilities and increase operational efficiency to provide world-class service to Veterans..

VA AI Strategy (July 2021)

The VA AI strategy articulates a clear vision to improve outcomes and experiences for Veterans by developing trustworthy AI capabilities to support VA's mission. This clear vision established set of goals, metrics, and priorities will ensure VA effectively taps into the full capabilities of AI enterprise-wide. VA will be updating this strategy as a requirement of EO 14110 over the next year, which represents an opportunity to include recent advances in AI technology and recent AI progress within VA.

Strategy 1: Use existing AI to improve outcomes and experiences for our Veterans.

Strategy 2: Increase VA AI capacity and capabilities.

Strategy 3: Increase Veteran and stakeholder trust in AI.

Strategy 4: Build upon VA's existing partnerships across agencies and industry.

VA AI Execution Plan (December 2023)
The VA AI execution plan builds on past work, including the 2021 AI strategy, and lays out an initial blueprint for operationalizing AI at VA. VA is investing in AI with a focused, agency-wide approach. VA's current execution plan for AI has 4 main workstreams:

1. Governance
Build an effective and responsive AI governance process that promotes innovation while providing guardrails that ensure VA investment in AI is trustworthy and effective.

- The most important part of AI governance is ensuring AI products are procured and developed with a foundation in VA's Trustworthy AI Framework.
- VA's investment in AI will only be successful if we can ensure that AI implementations at VA are equitable, effective, and maximize potential benefits and minimize potential risks.
- The overall goal of the AI governance workstream is to build an effective and responsive AI governance process that promotes innovation while providing guardrails that ensure VA investment in AI is trustworthy and effective. VA is coordinating an agency-wide approach to AI governance to ensure that AI use cases are monitored, responsible investments, and aligned to agency and administrative goals and objectives.
- AI governance will also ensure compliance with Executive Order 14110, and expected AI OMB memorandum, section 8(c) of Executive Order 13960, and section 4(b) of Executive Order 14091.

2. Use Cases
Prototype and pilot high-priority AI use cases with the goals of learning which AI solutions add the most value to VA and scaling successful pilots.

- VA is investing in piloting priority AI use cases to learn which solutions best contribute to our overall goal of improving health and benefits outcomes for Veterans, and to scale successful pilots across the enterprise. Projects will be evaluated based on risk level, which, for VHA, will include assessments of direct impacts on patient care and clinical care delivery.
- VA plans to explore and pilot commercial AI products that are gaining traction among VA's large health care and financial service provider peers. Note: VA is limiting Veteran-facing AI products to those that are rigorously tested and shown not to pose a risk to Veterans.
- The workstream aims to elevate and accelerate specific, promising AI use cases into operations at VA. Specific use cases will also be aligned with overall Veterans Health Administration (VHA) priorities and VA priorities.

- VA is focusing on 3 opportunity areas where AI is well-positioned to be integrated into operations:
    - **Reducing health care provider burnout.** VA's primary focus for using AI is to address and reduce provider burnout.
    - **Better patient care.** VA plans to elevate and accelerate AI products that contribute to better outcomes and improved patient care. The focused projects will directly contribute to all 6 of VHA's priorities.
    - **Improving the Veteran and staff experience.** VA's focus on use cases aims to improve the general VA staff experience, including reducing administrative burden, improving employee satisfaction, and increasing productivity. These use cases will ultimately help accelerate VA's journey to a High Reliability Organization.

3. Infrastructure
Create technical infrastructure and defined processes to develop, integrate, and monitor AI products in operations.

- For VA to successfully operationalize AI, VA must invest in AI-enabling technical infrastructure and processes. This is a requirement to develop AI in-house and to integrate commercial AI solutions. VA has varying levels of AI maturity across a few cloud platforms.
- To transform VA into a place where both commercially purchased and custom-built AI can be seamlessly operationalized and integrated into our production systems in a trustworthy manner, VA plans to invest in the following initiatives:
    - Increasing access to modern AI tooling.
    - Improving transparency and discoverability.
    - Increasing machine learning operations support.

4. Workforce
Invest in developing a workforce proficient in using, developing, and understanding AI, especially regarding its relevance to VA's mission and goals.

- To meet the emergent requirements to support the development of an AI workforce and ensure the safe and effective use of AI across the enterprise, VA must invest in the recruitment, retention, and training of AI and AI-enabling positions and staff.

Defining AI

Building Blocks of the AI Workforce

To recruit, develop, and retain a workforce proficient in AI, we must first define the various AI and AI-enabling functions practitioners will be called on to perform and the skills needed to perform them. As a foundational step towards promoting a shared understanding of the capabilities and talent required for AI implementation, VA developed a structured AI Building Block Model that offers a common taxonomy of functions, capabilities, and roles that should be present to take an AI use case from concept to solution.
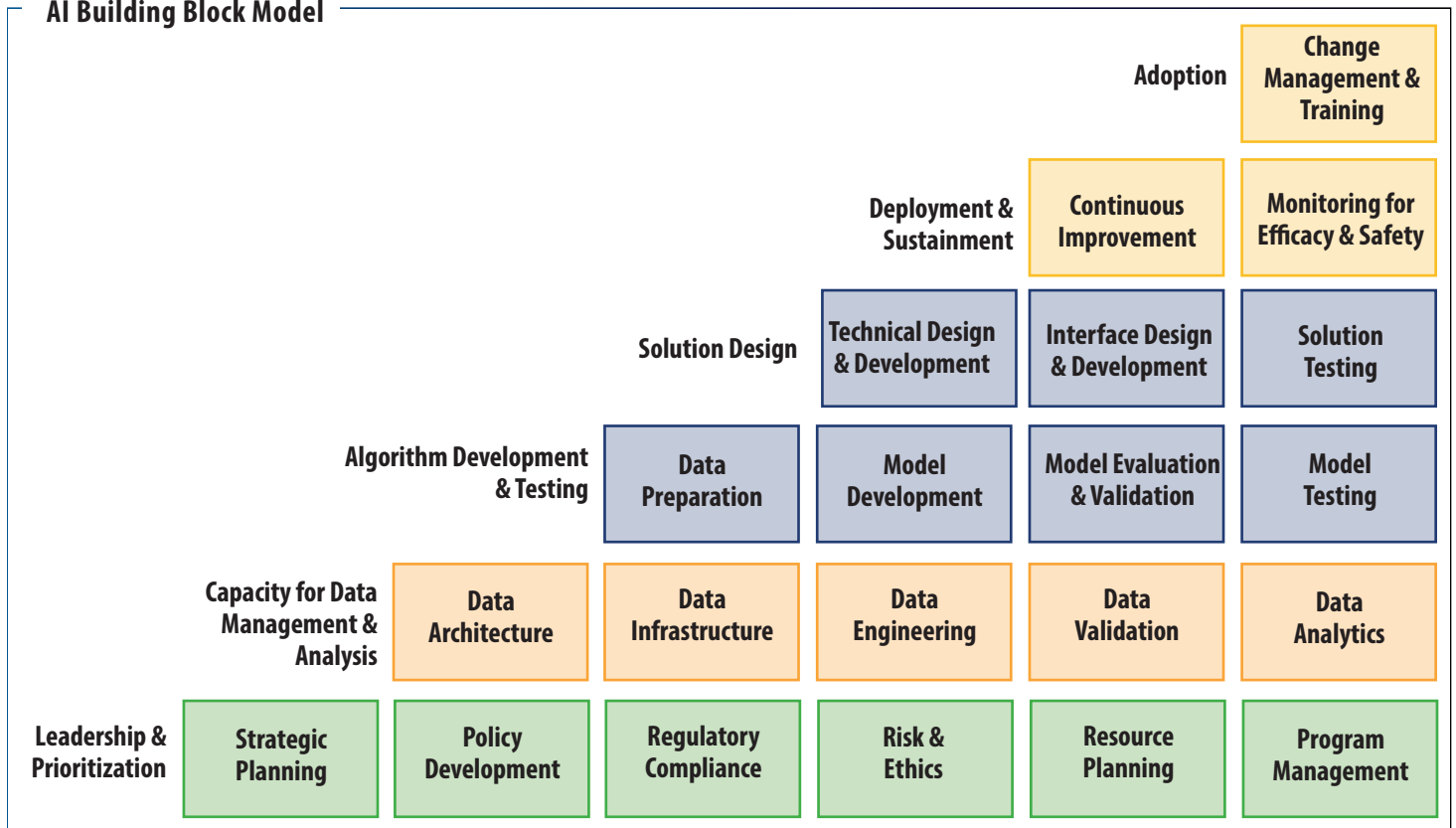
Building the Model

The AI Building Block Model was developed in coordination with Subject Matter Experts (SMEs) from across the VA, including the VHA, National Artificial Intelligence Institute (NAII), and VA Office of the Chief Technology Officer (OCTO). The model was further socialized and validated through feedback from federal agencies.
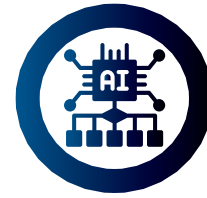
Due to the broad application and potential use of AI, those applying this model should use it as a guide and consider their respective agency goals and objectives. Refer to federal source material to determine an optimal selection of relevant Roles, Knowledge, Skills, Abilities, and Tasks (KSATs) and AI competencies.

Content supporting the AI Building Block Model was informed by Federal Workforce Frameworks, the Artificial Intelligence Community of Practice (AI CoP) AI Governance Toolkit, and the AI in Government Act of 2020 – Artificial Intelligence Competencies Memorandum for Chief Human Capital Officers.

AI Building Block Model

Adoption					**Change Management & Training**
Deployment & Sustainment				**Continuous Improvement**	**Monitoring for Efficacy & Safety**
Solution Design		**Technical Design & Development**	**Interface Design & Development**		**Solution Testing**
Algorithm Development & Testing		**Data Preparation**	**Model Development**	**Model Evaluation & Validation**	**Model Testing**
Capacity for Data Management & Analysis	**Data Architecture**	**Data Infrastructure**	**Data Engineering**	**Data Validation**	**Data Analytics**
Leadership & Prioritization	**Strategic Planning**	**Policy Development**	**Regulatory Compliance**	**Risk & Ethics**	**Resource Planning**	**Program Management**

AI Building Block Model

User Persona Examples

Each User Persona below describes an audience that may leverage the AI Building Block Model and how the model may be applied to support their organizational or program goals and objectives. The AI Building Block Model is configurable and scalable to meet the needs of a broad audience and may be leveraged to inform activities, including workforce planning, training and development, strategic planning, and project management.

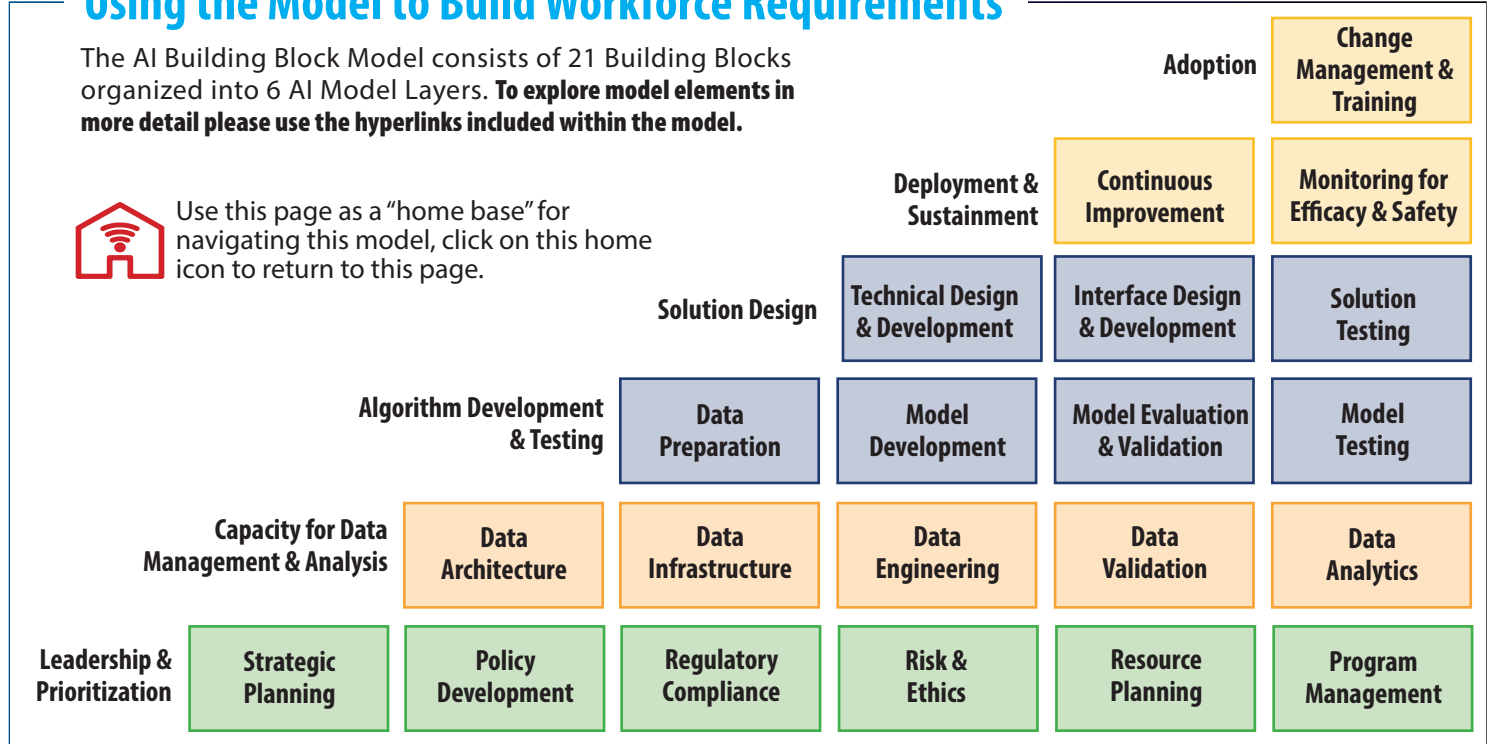| User Persona	AI Building Block Model Application
AI/Data Practitioners	• Review **AI Building Block Model** to identify **Building Blocks** most closely aligned with target career goals or growth areas. • Leverage the **Building Block Functional Summaries** to learn more about associated Federal Work Roles, knowledge, skills, abilities, and tasks (KSATs), and OPM AI Competencies. • Build a unique **Position Profile** to serve as a reference point for individual development plans (IDP) by combining multiple **Building Blocks**.
Hiring Managers and HR Specialists	• Leverage the **Building Blocks** to identify the targeted functional areas necessary to meet the needs of the position/agency. • Review each **Building Block Functional Summary** as an aid to identify associated Federal Work Roles and KSATs. • Build a **Position Profile** by reviewing the Functional Definition, associated Federal Work Roles, and OPM AI Competencies detailed within each **Building Block Functional Summary.**
Senior Management and Executive Leaders	• Use the **AI Building Block Model** to align core AI functional areas to strategic goals. • Review the **AI Building Block Model Layers** and **Building Blocks** to consider the functional areas involved in maintaining a mature AI-ready organization. • Leverage **Building Blocks** to assist in defining the organizational structure and resources necessary to achieve strategic goals.
Training and Development Professionals	• Use the **AI Building Block Model** to aid in the assessment of organizational training and development needs. • Provide employees with functional professional development tracks by aligning to the **AI Building Block Model Layers**. • Leverage **Building Block Functional Summaries** to support employee development through curated curriculums aligned to Federal Work Roles.
Project Managers and Team Leads	• Use the **AI Building Block Model** to identify which **Building Blocks** are actively under scope and key for project execution. • Consider the **AI Building Block Model** in project phasing and resource management. • Leverage the **Building Block Functional Summaries** to develop Position Profiles of necessary workforce resources.

Understanding the AI Workforce

Using the Model to Build Workforce Requirements

The AI Building Block Model consists of 21 Building Blocks organized into 6 AI Model Layers. **To explore model elements in more detail please use the hyperlinks included within the model.**

Use this page as a "home base" for navigating this model, click on this home icon to return to this page.

Layer					
Adoption					Change Management & Training
Deployment & Sustainment			Continuous Improvement		Monitoring for Efficacy & Safety
Solution Design		Technical Design & Development	Interface Design & Development		Solution Testing
Algorithm Development & Testing	Data Preparation	Model Development	Model Evaluation & Validation		Model Testing
Capacity for Data Management & Analysis	Data Architecture	Data Infrastructure	Data Engineering	Data Validation	Data Analytics
Leadership & Prioritization	Strategic Planning	Policy Development	Regulatory Compliance	Risk & Ethics	Resource Planning	Program Management

Layers
The AI Building Block Model is organized into 6 Layers, each representing a functional area. Each layer is made up of functional Building Blocks that can help users align and define their workforce assets or needs to address their organizational objectives. Explore each layer further by clicking the Layer title in the model above or by reviewing Appendix A.
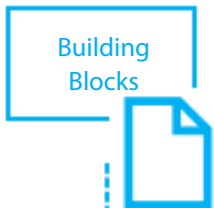
Building Block Functional Summaries
Each Building Block within the AI Building Block Model represents a core AI or AI-enabling function identified by AI SMEs for the identification, design, adoption, and sustainment of safe, secure, and trustworthy AI solutions. Building Blocks can be scaled and configured to adapt to a broad range of use cases and enterprise needs.

Building Block Functional Summaries are more in-depth explanations of Building Blocks and provide users with the detail needed to define position requirements, align functions to strategic goals, develop or curate training, and much more. Functional Summaries include suggested Federal Work Role alignment, including a sample of associated knowledge, skills, abilities, and tasks. Explore all 21 Building Block Functional Summaries by clicking the blocks in the model above or by reviewing Appendix A.

Position Profiles
Position Profiles show how users can combine the Building Blocks in the AI Building Block Model to define their own position requirements. Building Blocks from multiple layers may be leveraged into a Position Profile. Position Profiles provide a snapshot of the functional areas and competencies required for the position. Learn more about Position Profiles by by reviewing Appendix B.

Building Blocks

Preparing VA Employees for AI

AI Training

In the rapidly evolving landscape of artificial intelligence, it is imperative that VA cultivate a workforce knowledgeable of AI. As AI technologies increasingly permeate governmental operations, equipping our staff with the knowledge and skills needed to navigate the evolving AI landscape is essential.

By investing in comprehensive AI awareness, we aim to empower our employees to harness the transformative power of AI while also ensuring staff have the foundational knowledge to determine when, where, and how AI should be leveraged responsibly.

The VA has identified and will continue to explore a wide-ranging series of AI and data focused training initiatives. Through these training initiatives, VA is setting the foundation for a workforce that is ready to leverage AI to advance VA's mission, enhance service delivery to Veterans, and drive innovation, all while upholding the safe, secure, and trustworthy principles laid out in VA's Trustworthy AI Framework.

In alignment with the EO 14110 on Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (AI), VA has developed a suite of AI awareness trainings to empower our employees, managers, and leaders to develop and maintain knowledge of emerging AI technologies needed to assess opportunities to use these technologies to enhance the delivery of services to Veterans and to mitigate risks associated with these technologies. Trainings aim to empower our employees, managers, and leaders to develop and maintain knowledge of emerging AI technologies needed to assess opportunities to use these technologies to enhance the delivery of services to Veterans and to mitigate risks associated with these technologies. In addition to VA's focus on developing employee AI knowledge and skills, the VA is exploring partnerships with other federal agencies, including the Government Services Administration's (GSA) AI Community of Practice, to source and expand the availability of federal AI training content, such as Stanford University's Human-Centered AI (HAI) Federal Employee Training Series.

AI@VA Community

The AI@VA Community, created by the NAII, is an VA internal only online COP designed to share AI information, news, and training, encourage collaboration, and provide a platform for inquiry for AI practitioners and those interested in AI.

This section is dedicated to providing a deeper look at the available AI and data role training information covering AI Awareness Training and AI Training for Practitioners.

AI Awareness Training

Information and Training Links

The trainings provided on this page are intended to create a baseline understanding of AI and prepare all VA employees for their use of AI and/or their support of AI implementation at VA. This information below, including trainings in TMS can be found on the Office of Information Technology Career Development Portal (OIT CDP).

AI Awareness Training for All
All employees, regardless of position or level, should review the AI Training for All Employees category in addition to the category best aligned to their individual role.

AI Training for All Employees
Every VA federal employee, regardless of their role or level of seniority.
All employees will develop a foundational understanding of AI technologies, recognizing their impact on daily tasks, and identifying potential AI use cases in their work environment.

- **Introduction to Artificial Intelligence, TMS ID: 8000811**
- **Building an AI-Powered Workforce, TMS ID: 8003481**
- **Data Bias and Ethical Considerations in AI, TMS ID: 8003483**

AI Training for Leaders/Managers
Individuals who supervise teams/projects and are responsible for the execution of tasks and strategies.
Managers will develop a working knowledge of AI to identify opportunities for its application, integrate AI tools into workflows, to support teams through transitions, and to ensure that AI use aligns with ethical and governance standards.

- **Embracing Risk and Learning from Setback with AI Projects, TMS ID: 8002885**
- **Data Analytics and Data Ethics (Managers), TMS ID: 8003482**
- **Generative AI and its Impact on Everyday Business, TMS ID: 8002603**
- **Planning AI Implementation, TMS ID: 4504830**
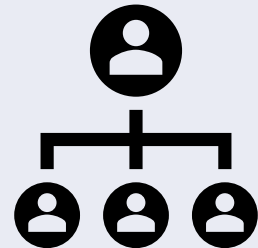
AI Training for Executive Leaders
Senior Executive Service (SES) and equivalent decision-makers who set strategic directions and policies.
Executive leaders will develop a strategic overview of AI's potential and challenges, focusing on governance, ethical AI use, strategic planning, and integration of AI technologies into Department-wide goals.

- **Navigating AI Ethical Challenges and Risks, TMS ID: 8002605**
- **Leading in the Age of Generative AI, TMS ID: 8002879**
- **AI Enterprise Planning, TMS ID: 4560681**

AI Training for Practitioners

AI and Data Role Training Information

Below is a list of 11 AI and Data Roles ,derived from Federal Workforce Frameworks, that identify AI-specific tasks as well as the corresponding knowledge, skills, and abilities required to perform the tasks. Professional development resources specific to these AI and data work roles are actively being developed and can be found on the Office of Information Technology Career Development Portal where you can find relevant task, knowledge, and skills information.

AI/Data Work Role	Role Description
AI Adoption Specialist	Facilitates AI adoption by supporting the users of AI-enabled solutions.
AI Innovation Leader	Builds the organization's AI vision and plan and leads policy and doctrine formation including how AI solutions can or will be used.
AI Risk & Ethics Specialist	Educates those involved in the development of AI and conducts assessments on the technical and societal risks across the lifecycle of AI solutions from acquisition or design to deployment and use.
AI Test & Evaluation Specialist	Performs testing, evaluation, verification, and validation on AI solutions to ensure they are developed to be and remain robust, resilient, responsible, secure, and trustworthy; and communicates results and concerns to leadership.
AI/ML Specialist	Designs, develops, and modifies AI applications, tools, and other solutions to enable successful accomplishment of mission objectives.
Data Analyst	Analyzes and interprets data from multiple disparate sources and builds visualizations and dashboards to report insights.
Data Architect	Designs a system's data models, data flow, interfaces, and infrastructure to meet the information requirements of a business or mission.
Data Officer	Holds responsibility for developing, promoting, and overseeing implementation of data as an asset and the establishment and enforcement of data-related strategies, policies, standards, processes, and governance.
Data Operations Specialist	Builds, manages, and operationalizes data pipelines.
Data Scientist	Uncovers and explains actionable insights from data by combining scientific method, math and statistics, specialized programming, advanced analytics, AI, and storytelling.
Data Steward	Develops and maintains plans, policies, and processes for data management, data governance, security, quality, accessibility, use, and disposal.

AI and Data Role Training in Development

The resources currently under development for inclusion on the OIT CDP will help employees learn the details about each AI and Data Role above. The resources will be developed in 5 categories as set forth below:

About My Role	Demonstrate My Skills	Build My Skills	Shape My Career	Expand My Horizons
Learn what it takes to be in each AI work role.	Assess current skills with AI.	Access information about multiple methods of training and employee development.	Learn about OIT's tuition reimbursement program, view similar roles, and industry certifications.	Explore temporary projection opportunities, current open roles, and get a feel for the demand for each work role.

Build the Workforce

Hiring Strategies

A traditional approach may not always achieve the optimal state of VA, so it is important to leverage all available resources and best practices for sourcing, recruitment, and retention of highly-qualified candidates. Robust talent pipelines facilitate continuous proactive recruitment and hiring processes and significantly expedites Time-to-Hire (T2H).

To become and remain competitive, VA must act now to develop an enhanced recruitment and retention process for identified AI and AI-enabling occupations by integrating the following flexibilities, authorities, and incentives into recruitment and retention plans and business practice.

We will need to hire for a range of AI and AI-enabling positions at VA. Integrating foundational AI-enabling roles, such as data scientists, will help to build the infrastructure required to support employees in AI roles.

Expected Outcomes

- Transform VA hiring culture to a proactive team-centric approach where all stakeholders work together to promote continuous readiness to hire.
- Create a candidate focused, positive first impression of the VA in a new employee's journey to a career with VA. The recruitment through onboarding experience should be organized and seamless.
- Improved diversity, size, quality, and talent of all AI candidate pipelines.
- Improved staff retention and enhanced Veteran experience.
- Increase end-user engagement and satisfaction throughout the hiring process.
- Hire the right candidates from the right markets using the right assessment tools.

Key Reminders for Building the AI Workforce

- Maximize all available hiring flexibilities.
- Leverage the VA classified position descriptions (PD) for AI and AI-enabling positions.
- Define specific or unique characteristics required that directly impact the recruitment process for that AI or AI-enabling position. Identifying specific needs up front allows you to target the specific audience and talent pipelines.
- Highly-qualified candidates are interested in working for the VA; develop sourcing streams to tap into those markets.
- Focus on developing a team-centric approach to find, attract, and hire the right candidate for the AI or AI-enabling position.
- Make the hiring process quick, efficient, and seamless for all end-users and candidates.

VA Optimal State

The goal of the resources blueprint is to provide the tools in a comprehensive strategic framework to assist with workforce planning, recruiting, hiring, and retaining the required AI staff.

Plan

Workforce planning is the systematic process for identifying and addressing the gaps between the workforce of today and the human capital needs of tomorrow.

- Promote active participation by hiring managers.
- Review workforce succession plan and identify available sources for recruitment.
- Identify strategies for how you will find, attract, develop, and retain the required workforce.
- Make budgetary and resource decisions that support workforce needs.

Recruit

Recruitment is an ongoing process even when not actively seeking to fill jobs.

- Posting a job opportunity announcement (JOA) is not a substitute for the broader and more persistent recruiting that agencies must undertake to recruit the best possible candidates for positions prior to the vacancy.
- Develop a recruitment strategy that supports recruitment from initial job seeker interest through onboarding.
- Engage and partner with diverse organizations to build candidate pipelines.

Hire

Commit to hire using the full range of hiring authorities and flexibilities to support specific hiring needs.

- Collaboration among human resources (HR), hiring managers, and other key stakeholders is essential.
- Identify positions experiencing hiring challenges and identify root causes to develop solutions for those identified challenges.
- Prepare for the future workforce through succession planning and identify hiring flexibilities to fill mission critical positions.
- Incorporate the use of hiring flexibilities and incentives to meet recruitment and retention needs.

Retain

Leverage strategies in this document to develop a retention plan to address specific root causes for retention challenges.

- Consider available work-life balance flexibilities and retention incentives.
- Demonstrate the value of learning and development by providing time, support, and resources for employees and managers to promote career growth.
- Actively engage in building a strong, diverse group of future leaders.
- Leverage Stay in VA (SIVA) as an important retention strategy.

AI Hiring Journey

Recruitment through Onboarding

Focus on Enhancing the Candidate Experience

The candidate experience through the AI hiring journey can boost or decrease the candidate's opinion and perception about a career with VA. Positive candidate experience is important because it helps VA attract top talent, makes more people inclined to accept a role in VA, encourages referrals, enhances VA branding, and increases employee engagement.

Focus on improving the candidate experience by:

- **Improving communication with candidates.** Clear and frequent communication throughout the entire recruitment and onboarding process is key to a positive candidate experience.
- **Improving internal communications.** Internal communications are critical to moving the recruitment and onboarding processes forward, updating stakeholders at each milestone with the status of the candidate and process. Work collaboratively to develop and establish internal communication processes with real-time updates and notifications.
- **Educating and informing candidates of the benefits of a career at VA.** Emphasize Total Reward$ during the recruitment process and make sure candidates receive the Total Reward$ estimates with their tentative job offers (TJO).
- **Developing a quick, efficient, and transparent hiring process.** A quick and efficient hiring process that is transparent to the candidate will enhance the candidate experience and get them onboard quickly.

Maximize the team-centric approach:

- Many different offices must work in a coordinated effort to hire new employees effectively and efficiently. Identify the stakeholders involved in the AI hiring process and develop the team-centric approach focused on enhancing the candidate experience and onboarding them quickly and efficiently.
- Promote investment from each stakeholder to encourage direct engagement and collaboration.
- As a team, develop a communication plan to remove any silos between stakeholders and services to seamlessly recruit and onboard candidates.
- Work to identify and eliminate extraneous processes and automate processes when possible.
- Establish goals and expectations for each stakeholder to drive realistic expectations for each stakeholder activity.
- Develop back-up plans for coverage of stakeholders during leave to keep the hiring process in motion.

AI Hiring Journey Map

Pre-Recruitment	Recruitment	Interview, Select, Onboard
Always be ready to recruit.	Always be ready to hire.	Always be candidate focused.
Pre-recruitment is the process of preparing and strategizing for your hiring needs.	The optimal state of VA recruitment is finding and onboarding the best available talent as quickly as possible.	The interview through onboarding journey should focus on enhancing the candidate experience and expediting the hiring process.

Pre-recruitment

Always be ready to recruit

Strategically plan
Recruitment is everyone's responsibility. The focus should be enhancing the candidate experience and simplifying the application process. It is critical to strategically plan the AI workforce needs and build candidate pipelines of qualified candidates who are interested and ready to work for VA. This promotes VA's optimal state of proactive and continuous recruitment.

Pre-recruitment is the process of preparing for your hiring needs. Cultivating a systematic approach to building your workforce sets the tone and ensures success of the recruitment process.

There are numerous recruitment flexibilities that allow VA to meet future AI workforce needs. The best practices in this section help VA by improving the candidate experience, increasing satisfaction for hiring officials, enhancing the quality and diversity of the talent pool, and driving down recruitment and onboarding cycle time.

Pre-recruitment Strategies
- **Strategy #1 -** Develop AI-focused career pathways.
- **Strategy #2 -** Forecast vacancies and commit to hire.
- **Strategy #3 -** Develop strategic marketing, recruitment, and retention plans.
- **Strategy #4 -** Develop pay incentive strategies.
- **Strategy #5 -** Develop hiring strategies.
- **Strategy #6 -** Establish early AI talent pipeline partnerships and focus on developing sourcing streams to build candidate pipelines of the future VA AI workforce.

Best Practice Tips

- Commit to Hire. Have all approved recruitment, hiring, and pay incentives authorized.
- Make budgetary and resource decisions to directly support the required AI workforce needs.
- Use the AI marketing recruitment approach to develop a local strategic approach to build talent pipelines and find the right candidate from the right market.
  - Use geo-fencing, geo-tagging, and other innovative marketing tactics.
- Use authorized hiring authorities.
- Plan to host career and hiring (virtual and in-person) fairs to expand outreach to potential candidates that are not found within the normal AI marketing recruitment niches.
- A traditional "post and pray" on USA Jobs approach may not achieve VA's optimal hiring state. Leverage all available resources and best practices for sourcing AI and AI-enabling candidates.
- Develop a team-centric and collaborative approach to streamline the onboarding journey for AI candidates.
- Be ready to interview and offer tentative job offers (TJOs) with a pre-determined salary range estimate and all incentives authorized.

STRATEGY #1

Develop AI focused career pathways

A career pathway is a map that depicts the progression an employee may take to achieve their short and long-term career goals. Career pathways are a valuable tool for VA because they inform workforce planning, recruitment and retention plans, specific and unique career training and development requirements, and succession planning. Most importantly, they help AI and AI-enabling employees track the qualifications and competencies required to advance to their aspired career goals.

Career pathways also help recruit and retain AI and AI-enabling positions because they provide interested candidates with an outline of clear career opportunities, training, skill development/enhancement, advancement, and even leadership opportunities at the outset of their career with the VA.

Career Pathing

Career pathing is a dynamic approach to creating an occupational roadmap for employees as they move through their careers, from entry-level to leadership roles. The pathways align with future opportunities within VA and should help employees realize their potential aspirations with their VA career. Career paths may include additional information such as competencies, training, skills, and experience for each specific role/position, as well as information on how to develop skill sets further to successfully advance to the next position in the career pathway.

When developing AI career pathways, make sure they fully support the AI staffing model and provide candidates with a clear look at their potential long-term VA career. Ensure that success factors are included that provide general guidance regarding an AI and AI-enabling career. This guidance should not be tied to one position, career niche, grade, experience, or set of required skills. It should incorporate the entire occupational family or series.

Best Practice Tips

- Visit Office of Personnel Management's (OPM) website to learn more about individual development plans (IDP), individual learning accounts, mentoring, coaching, and career paths.
- Career pathways should outline the typical path for AI and AI-enabling employees to move through and across jobs in ways that facilitate growth and career advancement.
- Career pathways can be modified to support employee choice and career aspiration as an AI or AI-enabling employee. Leaders, supervisors, and managers should encourage employees to focus on identifying their specific career pathway and strive to strengthen their skills, knowledge, experience, and competencies to successfully advance to the next position on their career path.
- Career pathways are an essential tool for recruiting and retaining highly-qualified AI and AI-enabling employees. They show VA's dedication to employee growth and development, which supports the life cycle of the organization's most valuable assets, its employees.
- Career pathways are living documents and should be updated as technology and required skills and experiences change. Updating career pathways with current requirements will enable employees to evolve to meet changing responsibilities and adjust their career growth and development needs. Enabling employees to evolve with ever-changing technology and required skills and experiences allows VA to build strong internal talent pipelines that help with workforce succession planning, retention, and ultimately increases Veteran's access to world class health care and benefits.

STRATEGY #2

Forecast vacancies and commit to hire

Forecasting future vacancies is key to effectively hiring AI and AI-enabling candidates such as trainees, interns, without compensation (WOC) employees, transitioning military personnel, and early career professionals. VA should commit to hiring AI and AI-enabling occupations and make budgetary and resource decisions that support workforce needs using the full range of hiring authorities and flexibilities to target and support those specific hiring needs.

Adopting an appropriate recruitment and hiring timeline (for the personnel type Title 38, Hybrid Title 38, or Title 5) is critical to the success of developing pipelines with early career AI and AI-enabling candidates. Developing strategic marketing, recruitment, and retention plans to address the need for forecasting and recruiting AI and AI-enabling occupations will provide a roadmap to expand candidate pipelines and ensure that the VA has the AI workforce to meet the needs of the future and address attrition of hard-to-fill positions.

VA must invest in and commit to recruit, hire, and retain highly-qualified candidates. VA needs to hire aggressively to keep pace with increased private sector competition and evolving demand for AI and AI-enabling roles. Budgetary constraints and space limitations are often cited as determining factors when deciding to approve positions for recruitment. While these concerns are valid and should be considered as part of the overall evaluation process, it is important to recognize that not filling a vacancy may lead to other unintended costs such as losing Veterans to private sector health care systems, high contract costs, and poorer Veteran experience outcomes. Delaying recruitment or onboarding due to these issues results in longer T2H and Time-to-Fill (T2F) and loss of potential applicants.

Best Practice Tips

- Invest in and support all VA staff involved in the recruitment through onboarding of new employees. Ensure proper and adequate staffing numbers for HR, recruiters, etc., to support the hiring of candidates.
- Always be ready to recruit and hire. Have all positions ready to recruit and fill immediately in HR Smart. When possible use standardized JOAs and assessments.
- Use all free and relevent paid marketing sourcing streams to expand marketing, recruitment, and outreach.

Recruitment is a continuous process even when not actively seeking to fill jobs and positions.

- Verify that all stakeholders involved in the hiring journey (hiring managers, leadership, HR, etc.) have discussed and agreed to the total compensation package (salary, incentives, etc.).
- Be ready to extend offer package of tentative salary, benefits, and incentives when the selection is made.
- Consider pay incentives for critical positions that are hard-to-recruit and retain.
- Routinely review active position inventory with the Chief Financial Officer (CFO), programmatic executives, leadership, and operational teams to determine if positions are allocated where they are most needed for AI and AI-enabling positions. Note that revision to human capital plans may need to be rebalanced for high-priority needs against other mission-critical occupation needs.
- Validate an accurate position inventory on a routine basis to provide clarity of current and up-to-date workload requirements to empower leadership's ability to make precise budgetary decisions for recruitments. Develop a team-centric and systematic update to maintain accurate position inventory. This is critical to the success of being in a constant state of proactive and continuous readiness to recruit and hire.

STRATEGY #3

Develop strategic marketing, recruitment, and retention plans

Marketing, recruitment, and retention plans help VA develop a framework to achieve VA's optimal state of hiring by transforming recruitment into a proactive, effective, flexible, and sustainable process. This ultimately builds the quality of the AI and AI-enabling workforce to meet each Veteran's needs and provide them with the best possible health care outcomes.

Targeted Marketing and Recruitment

Targeted marketing improves T2H and the ability to fill AI and AI-enabling positions quickly and efficiently. These targeted marketing plans should outline the marketing and outreach tactics that can be expanded as needed to recruit AI and AI-enabling positions. Marketing and recruitment plans are living documents and should evolve to match VA AI strategic direction and staffing models as technology, skills, and experience requirements change.

Marketing and recruitment plans should be developed by a collective team of stakeholders involved in the hiring and onboarding of AI and AI-enabling new employees to address specific challenges and barriers and to develop a successful approach to finding, attracting, developing, and retaining the required AI workforce. Together these plans should support employment from initial job seeker interest through onboarding.

Virtual recruitment and hiring campaigns achieve efficiency and effectiveness through a powerful combination of technology and streamlined processes. Employers and job seekers engage each other in a virtual environment that allows for information sharing, interviewing, selection, and initiation of certain onboarding steps, all to reduce T2H and improve end-user experience for candidates, hiring officials, HR, and other stakeholders.

Retention plans should be focused on enhancing the employee experience through engagement, which will ultimately retain the knowledge and experience of highly-qualified employees and improve efficiency and productivity.

Best Practice Tips

- Items to consider when developing recruitment and retention plans (not an exhaustive list of questions):
  - Has position inventory been validated and is it up-to-date with current vacancies?
  - What are the current available resources and budget? Are additional resources needed?
  - What authorities, flexibilities, and incentives are available and approved?
  - What skill gaps exist and what specific requirements are needed?
  - What recruitment incentives will keep the competitive edge with the local market?
  - Is there a retention challenge?
  - Were prior recruitment efforts sufficient?
  - Is Student Loan Repayment Program (SLRP) appropriate for this position?
  - Is there a pay disparity between VA and the local labor market for this position?
- Focus on candidate-sourcing strategies and resources. Partner with affiliated and non-affiliated academic institutions, professional associations, and other community influencers, to build talent pools.
- All incentives and flexibilities must be approved prior to recruitment and should be detailed in the marketing recruitment and retention plans.
- Use these plans to establish a unified approach to recruit and retain highly-qualified candidates.

MARKETING
Messaging and Tips

The information below is available for use as part of the marketing recruitment plan messaging tactics. Leverage this information as a starting template and expand as needed to fit the unique needs for each AI or AI-enabling position.

Potential Targeted Audiences

- **Experienced AI specialists** are professionals with expertise in machine learning, natural language processing, computer vision, and other AI-related fields.
- **Recent graduates** are graduates with degrees or certifications in computer science, data science, or related disciplines eager to apply their skills in a meaningful health care environment.
- **Military Veterans** with a background in AI or technology-related fields, looking for opportunities to serve their fellow Veterans in a new and meaningful capacity.
- **Industry experts** from the private sector, include tech companies and research institutions, interested in applying their AI expertise to address critical health care challenges.

Where to Market to these Targeted Audiences

- AI-focused job boards and online communities.
- University career centers and alumni networks.
- Tech meet-ups, hackathons, and AI-related events.
- LinkedIn groups and professional associations in the AI field.

Note: These lists are not exhaustive. Please see Strategy #6, page 24 for more information.

Tag Lines

- The U.S. Department of Veterans Affairs (VA) is seeking highly-skilled AI specialists to revolutionize health care and service delivery for the Nation's Veterans.
- From clinical decision support systems to predictive analytics, AI plays a crucial role in improving patient outcomes and enhancing operational efficiency across the VA enterprise.
- VA continues investing in innovative technology. Attracting top talent in AI is a priority.

Messaging

Meaningful Impact

- Join VA and use your AI expertise to directly impact the lives of those who have bravely served our country, driving positive change in Veteran health care and benefits delivery.
- Apply AI technology to enhance clinical decision-making, improve patient outcomes, and optimize health care delivery processes within the VA system.

Cutting-edge Innovation

- VA is committed to using cutting-edge technology to revolutionize health care delivery and stay at the forefront of health care innovation.
- Be part of a dynamic team driving technological advancements in health care delivery, working with state-of-the-art AI tools and methodologies to pioneer innovative solutions.
  - Add additional content as needed. Highlight ongoing AI initiatives and projects at VA that offer exciting opportunities for AI and AI-enabling positions to contribute to ground breaking research and development efforts.

Career Development

- There is vast potential for professional growth and career advancement within VA's AI ecosystem, with opportunities for skill development, training, and mentorship.
- There are a diverse range of roles and responsibilities available to AI and AI-enabling positions within VA, from research and development to data analytics, predictive modeling, and machine learning.

STRATEGY #4

Develop pay incentive strategies

Part of the marketing recruitment plan should include the preferred order of pay incentive strategies authorized to recruit for that AI or AI-enabling position. Pay incentive strategies should promote competitive salaries. To provide a complete estimated financial benefits package, leverage the Total Reward$ series (see page 28) brochures, flyers, and PowerApp calculator.

To remain competitive with private sector competitors, VA must be proactive by maximizing the use of pay incentives to effectively recruit and retain the workforce.

Developing Pay Incentive Strategies
- **Step 1** - Analyze data (if available) for AI or AI-enabling positions in recruitment.
- **Step 2** - Ask questions to guide specific pay incentive strategies:
  - What are the current available resources and budget?
  - What pay incentives will keep VA competitive with the local market?
  - What are the national best practice strategies and tools that would be most effective?
  - What authorities, flexibilities, and incentives are available and approved for use to recruit for this occupation?
  - What skill gaps exist and what specific requirements are needed?

Best Practice Tips

- Pay incentives must be approved before any recruitment actions start.
- Authorized pay incentives should be part of the marketing recruitment and retention plans.
- Positions do not have to be posted on USAJobs to extend pay incentives.
- VA cannot be a pay leader in the community, but can use all resources to maximize our ability to better compete with local markets.
- VHA should use pay incentive strategies in the VHA preferred order of incentives.
- Strategically use 3R and Permanent Change of Station (PCS) incentives to mitigate hiring difficulties and reduce turnover.

Pay Incentives Overview
- Individual 3Rs (recruitment, retention, and relocation allowances) and permanent change of station (PCS). Targeted use of individual 3R incentives can help close staffing gaps and should be considered before other pay incentives.
  - **Recruitment.** Specific requirements in policy and service obligation are required and may be for an amount up to 50% of basic pay for each year up to 4 years of service.
  - **Retention.** Individual retention incentives may be authorized for up to 50% of the employee's pay when it is likely the employee will leave federal employment without an incentive.
  - **Relocation.** Specific requirements in policy and service obligation apply and may be for any amount up to 50% of pay for 1 to 4 years of service. Relocation incentives may not exceed 100% of the employee's initial annual rate of basic pay.
  - **PCS.** PCS relocation requires a significant amount of coordination and planning by multiple individuals and organizations. For more information go to the Permanent Change of Station website or email VAFSC.PCSTravelPortalInquiry@va.gov.

- **Above Minimum Rate of the Grade (AMRG).** Appointment officials may consider a higher step rate of the appropriate grade after consideration of higher or unique qualifications, or special needs of the VA. The authority is a discretionary administrative determination, which shall not be made on a retroactive basis. The AMRG must be authorized in writing prior to employee entrance on duty (EOD).

- **Critical Skills Incentives (CSI).** PACT Act Section 909 (d) enables VA greater flexibility to react to private sector pay and incentive practices in instances where employees possess high demand or shortage skills. Critical skills may be authorized through September 30, 2027 for VA mission critical or shortage occupations, or for employees with visible skills gaps.

- **Special Salary Rates (SSR).** Appointment officials should obtain authorization for SSRs for occupations with current or anticipated recruitment and retention challenges of well-qualified candidates for anticipated vacancies in hard-to-fill occupations, expect to lose employees in such occupations, or cannot recruit for an occupation without appointments above the minimum step of the grade should consider authorization for SSR.

- **Group Retention Incentives.** Group retention incentives should be considered when significant numbers of a narrowly defined group or category of employees are likely to leave federal employment without an incentive.

STRATEGY #5

Develop hiring strategies

Maximize the use of all hiring flexibilities and authorities
To bolster recruitment and hiring efforts, VA should leverage all recruitment and hiring flexibilities in coordination with the preferred order of pay incentives. In doing so, VA successfully reduces T2H, improves the overall customer experience for candidates, service lines, and support staff, and optimizes recruitment outcomes. Develop hiring strategies that provide the greatest flexibility and empower your recruitment and hiring efforts to attract top talent. Leveraging these hiring strategies will ultimately increase end-user satisfaction by decreasing T2H and onboarding quickly and seamlessly. Leverage the following hiring authorities and flexibilities:

- **Direct-Hire Authority (DHA).** A DHA is an expedited hiring flexibility that allows VA to fill competitive service positions without applying rating and ranking and Veterans' preference. On January 24, 2024, the Office of Chief Human Capital Officer (OCHCO) issued the OCHCO Bulletin that authorizes VA to fill positions using the DHA at the specified grade levels (or equivalent) nationwide in the occupations and series listed below:

Position Title	Pay Plan/Occupational Series/Grade
*Information Technology Specialist	GS-2210-9 through 15
Computer Scientist (AI)	GS-1550-9 through 15
Computer Engineer (AI)	GS-0854-9 through 15
*Management and Program Analyst	GS-0343-9 through 15
*For more information on these occupations, use the OCHCO Bulletin.	

- **Pooled Hiring.** Pooled hiring is a process for sharing candidates and assessments for similar roles across agencies. Pooled hiring creates efficiencies by sharing hiring resources and a better applicant experience because applicants can apply to one job announcement and have the opportunity to be considered for jobs at multiple federal agencies.

- **Intergovernmental Personnel Act (IPA) Assignments.** IPAs are temporary assignments from universities, non-profits, and other government organizations. VA and the partner organization will need to establish an assignment agreement based on the rules noted in 5 USC sections 3371 through 3375 (this does not require OPM approval). Assignments can be made up to 2 years (leadership may extend an additional 2 years) and can be intermittent, part-time, or full-time.

- **Post Open and Continuous Announcements (OCA).** OCAs are a type of job announcement that remain open longer than traditional advertisements. The longer open period allows for continuous application submission and immediate referral issuance. OCAs are highly encouraged for hard-to-fill, high vacancy count, or high turnover occupations.

- **Creditable Service for Annual Leave Accrual for Non-Federal Work Experience and Experience in the Uniformed Service.** This flexibility allows VA to offer credit towards annual leave accrual for an applicant's relevant non-federal or military work experience, allowing high-quality selectees to potentially enter federal service in leave group 2 (20 days annual leave) or leave group 3 (26 days annual leave). This is a discretionary flexibility that VA can leverage to meet the AI and AI-enabling workforce needs, when applicable. The employee has no entitlement to this credit. VA must do due diligence to determine if the skills and experience the employee possesses are essential to the new position and were acquired through performance in a non-federal or active-duty uniformed service position having duties directly related to the duties of the positions in which they are being appointed and necessary to achieve an important agency mission or performance goal. More information on creditable service for annual leave.

- **Schedule A(r).** Schedule A(r) authority is for positions established with a focus on bringing private sector talent into public sector for rotational periods of time. Employment under this authority is appointed under excepted service and may not exceed 4 years. More information on Schedule A(r).

- **Develop Employee Referral Awards.** Develop a program that encourages "word of mouth" recruitment by existing VA staff and award their contribution to the organizational goals by referring a candidate who is selected and hired, and who completes at least one year of successful employment. For more information, please refer to VA Handbook 5017 and the Creating an Awards Program for Employee Referrals factsheet.

STRATEGY #6

Establish early AI talent partnerships
#longgame

Establish partnerships and focus on developing sourcing streams to build candidate pipelines

Candidate sourcing is critical to building talent pipelines of highly qualified candidates and is a process of finding, identifying, and engaging with potential job candidates for potential employment with VA.

- Engage and partner with affiliated and non-affiliated academic institutions, professional associations, health care recruiters in the community, and other community influencers to build talent pools.
- Mine candidates from Applicant Tracking System (ATS), Agency Talent Pool (ATP), USA Staffing Cognos reports, job board platforms, and social media profiles (e.g., LinkedIn).
- Post JOAs on niche internet job boards and professional associations to recruit from targeted talent pools.
- Share JOAs with local/regional Military Transition Assistance Program (TAP) offices to increase hiring of transitioning military and military spouses.

AI-focused Alumni and Industry Groups
Alumni Networks

- **Universities with strong AI and machine learning programs.** Identify universities known for their AI research and alumni networks, such as Stanford University, Massachusetts Institute of Technology (MIT), Carnegie Mellon University, and University of California, Berkeley.
- **Alumni associations of relevant departments.** Reach out to alumni associations of computer science, engineering, data science, and health care-related departments within select universities.
- **Online alumni platforms.** Use online platforms like LinkedIn Alumni and university-specific alumni networks to connect with graduates interested in AI careers.

Industry Groups

- **AI and machine learning associations.** Target organizations dedicated to AI and machine learning, such as the Association for the Advancement of Artificial Intelligence (AAAI), the International Conference on Machine Learning (ICML), and the IEEE Computational Intelligence Society.
- **Health care technology forums.** Engage with industry groups focused on health care technology innovation, such as the Healthcare Information and Management Systems Society (HIMSS), the Healthcare Financial Management Association (HFMA), and the American Medical Informatics Association (AMIA).

AI Job Board Channels

- **LinkedIn.** LinkedIn has a large user base of AI professionals. Advanced search filters can be used to target candidates with specific AI skills and experience.
- **Indeed.** Indeed is one of the largest job search engines, attracting millions of job seekers every month. VA can post job listings for AI positions and use their resume database to search for qualified candidates.
- **Stack Overflow.** Stack Overflow is a popular community for software developers, including those with expertise in AI and machine learning. VA can post job listings to reach a targeted audience of developers with AI skills.
- **Kaggle.** Kaggle is a platform for data science and machine learning competitions, attracting a community of AI professionals and enthusiasts. VA can post job listings to connect with data scientists and machine learning engineers.
- **AI-specific job boards.** There are also specialized job boards focused specifically on AI and machine learning roles, such as AI-Jobs.net, Deep Learning Jobs, and Machine Learning Jobs. These platforms cater specifically to professionals in the AI field and can be effective for sourcing candidates with specialized skills.

Building a Skills Language

Collaborate with academic institutions and professional organizations to define a common vocabulary for AI skills. This clarity will streamline the evaluation process.

Recruitment

Always be ready to hire

Strategically execute recruitment plans
The optimal state of the VA recruitment and hiring process is finding and onboarding the best available talent as quickly as possible. Remember, retention starts during recruitment. VA has numerous recruitment flexibilities available for AI and AI-enabling positions that allow VA to meet current and future workforce challenges. The best practices in this section help by improving the candidate experience, increasing satisfaction for hiring officials, enhancing the quality and diversity of the talent pool, and driving down recruitment and onboarding cycle times.

Develop a team-centric approach for all stakeholders involved in the hiring process for AI and AI-enabling positions. As a team:

- Identify and eliminate extraneous processes and automate processes when possible.
- Establish team-centric approved goals and expectations for each stakeholder to drive transformational change to improve recruitment through onboarding timelines.
- Develop a candidate-centric approach to enhance their experience and develop realistic expectations for each candidate activity.
- Develop back-up plans for coverage of employees during leave to keep the hiring process in motion.

Recruitment Strategies
- **Strategy #1 -** Be proactive. Retention starts at recruitment.
- **Strategy #2 -** Make the application process easy.
- **Strategy #3 -** Execute marketing and recruitment plans and maximize the use of all pay, recruitment, and hiring flexibilities.
- **Strategy #4 -** Market the Total Reward$ of a VA Career.

Best Practice Tips

- Focus on the candidate experience.
- Do not lose interested candidates. Constantly communicate and engage with candidates and ensure they understand the VA recruitment and hiring process.
- Help candidates find the best job suited for them.
- Execute the marketing recruitment plan (including geo-fencing, geo-tagging, and innovative marketing tactics).
- Commit to hire. Have all approved recruitment, hiring incentives authorized.
- Know how you are going to announce and post the position in addition to USA Jobs. Use all available approved and authorized sourcing avenues and post on multiple job search engines.
- Focus on retention of highly-qualified candidates and employees to reduce the urgency to continuously recruit and hire for AI and AI-enabling positions.
- Retention starts at recruitment. Try to reduce the number of employees transferring and leaving the VA due to poor job satisfaction and workplace perceptions. Focus on cost-neutral retention incentives like Stay in VA (SIVA).
- Ensure that all stakeholders are ready to hire.

STRATEGY #1

Be proactive. Retention starts at recruitment

Being proactive and enhancing the overall hiring process and the candidate experience will improve retention rates. To retain a highly-qualified workforce for AI and AI-enabling positions, VA must be proactive in strategic retention efforts. Develop retention plans to promote employee engagement and foster an environment where they want to stay in VA.

Why is it important to focus on employee retention?
- Work-life balance leads to positive employee experiences.
- Retention reduces expenses associated with constant reactive recruitment.
- Retention promotes continuity of care and business operations to ensure access for Veterans.
- Investing in VA employees with training and development will ensure knowledge and experience stays within VA.

There are many data sources to analyze and develop action plans to improve the VA work environment, enhance the employee experience, and encourage employees to stay with the VA. VA leaders should continuously execute retention plans that address specific root causes for retention challenges.
- Monitoring data from the Entrance, Transfer, and Exit Surveys provide data trends to help develop action plans to mitigate root causes. The VA Exit and Transfer survey data should be used as part of the comprehensive workforce analysis required for strategic workforce planning to drive proactive recruitment, hiring, and retention.
- Use the All Employee Survey (AES) to incorporate employee feedback and enhance areas of job satisfaction and workplace perceptions.
- Use Workforce Succession Planning as a proactive and systematic process applied to internal employee talent pools. It is a deliberate approach to prepare and engage the workforce to fill current and future mission-critical employment needs.

Work-life Balance Flexibilities
Offering all available work-life balance flexibilities that differ from the 40-hour/5-day traditional workweek provides managers and supervisors more flexibility. Alternate work schedules (AWS) and other duty schedules (i.e., part-time) should be leveraged to improve work-life balance as both recruitment and retention tools. Duty schedules should be established as appropriate and necessary for performance of service in the care and treatment of patients and other essential activities.

Implement the Stay in VA (SIVA) Initiative
Implementing the best practice Stay Touchpoints through the SIVA Initiative is an invaluable way to identify specific actions that can strengthen an employee's engagement and encourage them to stay with the organization. Stay Touchpoints are conducted at multiple points in every employee's journey of employment, at 30-days, 90-days, and annually thereafter.

Every Voice Counts. SIVA is an employee-centered strategy designed to improve retention by focusing on the employee experience through engagement. Central to SIVA objectives is promoting a trusting and psychologically safe environment for employees to express their ideas and experiences to supervisors, managers, and leadership. Supervisors and managers are afforded the opportunity to learn more about the workplace and how best to cultivate an environment where employees thrive directly through the employee's lens. SIVA provides the ability to target issues that leaders may not be aware of and can improve employee effectiveness and productivity.

The Stay Touchpoint is a one-on-one discussion between an employee and their supervisor or manager to proactively identify trends and specific actions that can strengthen an employee's engagement and encourage them to stay with the organization. Most importantly, Stay Touchpoints provide insight on how the employee is growing into the position and organization. Stay Touchpoints are completely voluntary and separate from performance management.

It is important to note that before engaging in SIVA Touchpoints with staff, managers should consult with local labor relations staff to ascertain if there are any labor implications. The SIVA dedicated toolkit provides the necessary information to design and implement a Stay Touchpoint practice. For more information and questions, contact the national implementation team at: VHAWMCStayinVA@va.gov.

STRATEGY #2

Make the application process easy

VA will need to hire for a range of AI and AI-enabling positions to support the AI workforce and a traditional hiring approach may not achieve VA's optimal hiring state. It is important to identify and leverage all appropriate hiring authorities and flexibilities for each AI and AI-enabling position.

The focus should be to make the application process easy for the candidate and for the hiring team. Review the appropriate hiring authority and ensure that required documents are listed on the JOA. When posting OCAs or any other JOA, make sure to expedite qualification reviews by limiting the need to open/review numerous applicant documents by:

- Identifying the documents that are not needed at the time of application and qualification review process, but will be collected after selection.
- Adjust assessment questionnaires in USA Staffing so candidates are not screened out inappropriately.
- Note that after selection, the candidate must provide all required documents.

Best Practice Tips

- Focus job postings to strategically attract experience specific to the position.
- Remember to have all flexibilities and hiring incentives approved and authorized prior to recruitment of the position.
- SLRP may be paid in addition to other incentives, and service agreements may begin and run concurrently with other service agreements.
- Use all approved sourcing, marketing, and recruitment strategies developed during pre-recruitment. Strategically combine them to develop a competitive and unique employment offer.
- When offering incentives, the written justification should include that this is for an AI or AI-enabling position and is difficult to fill, only when OPM has approved the use of a DHA (see page 23) applicable to the position with no further required evidence. Incentives for other AI and AI-enabling positions not under the DHA follow normal procedures.

STRATEGY #3

Execute marketing and recruitment plans and maximize the use of all pay, recruitment, and hiring flexibilities

Prior to initiating the recruitment for AI and/or AI-enabling positions, verify that all incentives and flexibilities were authorized/approved with specific details including authorized and approved amount of 3Rs, PCS, CSI, SSR, AMRGs, and SLRP. Focus job positions and align robust marketing tactics (including geo-fencing, geo-tagging, and innovative marketing tactics) to attract highly-qualified candidates.

Strategically Combine to Maximize

Many of the pay, recruitment, and hiring flexibilities can be combined to offer a unique and competitive recruitment package/offer to highly-qualified AI and AI-enabling candidates.

For example, hire a new AI or AI-enabling candidate using OPM-approved DHA (see page 23) by combining and offering:

- Authorized recruitment incentive up to 25% of basic pay (with a 4 year service agreement).
- AMRG to set the new employees pay above step 1 of the grade.
- Higher annual leave accrual rate based on non-federal work experience through the creditable service for annual leave.
- SLRP to help the employee repay their student loans (up to 3 year service agreement).

Execute recruitment plans and hire the right candidate.

STRATEGY #4

Market the Total Reward$ of a VA Career

Leverage the Total Reward$ of a VA Career series of tools and use them at job fairs, recruitment events, and even at new employee orientation or during Stay Touchpoints to emphasize the Total Reward$ of a job at VA to both prospective candidates and new hires.

To promote the comprehensive benefits of a long-term career at VA, the Total Reward$ of a VA Career brochure and flyers should be used by recruiters, program offices, managers, and anyone helping promote VA employment to targeted job seekers across various channels to showcase the rewards of choosing a career at VA.

The Total Reward$ Power App has the entire Total Reward$ of a VA Career series brochures and flyers. The calculator is designed for on-the-spot recruitment and retention conversations to "plug-in" the potential compensation/salary of the job seeker to see what their estimated Total Reward$ will be. The app is only available for use by internal VA employees, but a handy email function makes it possible to send specific estimates to interested candidates.

Talking About Total Reward$

The purpose of the Total Reward$ series is to ensure the candidate understands the full scope of the potential offer of employment with VA. Before your conversation, get familiar with the Total Reward$ flyer/brochure/app and know the salary range for the positions. **Note:** This is an opportunity to expand on the candidate's salary by providing an overview of the total benefits of choosing VA. The Total Reward$ series documents are not an offer of employment. Benefits of highlighting the Total Reward$ of a VA Career early in the recruitment/hiring process:

- Better candidate experience - open communication fosters transparency and trust.
- Efficiency in hiring - ensuring awareness of the full compensation package may translate into fewer declinations.
- Easier onboarding process - understanding the full value of a VA job increases likelihood of selectee being motivated to complete pre-placement requirements.
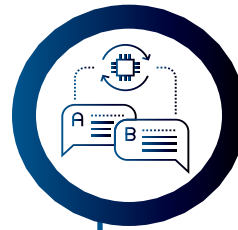
Competitive Compensation and Benefits
Government pay scales might not match the private sector. Emphasizing benefits and offering incentives, student loan repayment assistance, and flexible work arrangements can make federal positions more enticing.

Sample questions to facilitate the discussion:
- "Were you aware VHA offers paid parental leave, retirement matching, and the ability to accrue an unlimited amount of sick leave?
- "What benefits are most important to you?"

Total Compensation (Rewards) Statement
Employees can use the Total Compensation Statement document icon to go directly to the Government Retirement & Benefits (GRB) (GRB) platform toolbar. The GRB website has a large assortment of training videos and documents available through the resource library. Retirement Services has the GRB tool that employees can use to take a closer look at their current benefits and total compensation.

Interview, Select, Onboard

Always be ready to interview, select, and onboard

The optimal state of VA recruitment means having robust candidate pipelines and always being ready to interview and select. Pre-recruitment and recruitment processes include identifying the vacancy, evaluating needs, confirming the accuracy of the position and its allocation, creating the recruitment plan, posting the position, executing the recruitment plan, and receiving the applicant list. In addition, this also includes preparing for interviews and being ready to select.

A quick and effective interview, selection, and offer process ensures the candidate's experience is positive and increases odds they will be willing and available to accept an offer of employment from VA.

Interview, Select, and Onboard Strategies
- **Strategy #1** - Always be ready to interview and select.
- **Strategy #2** - Streamline the onboarding process.

Best Practice Tips

- Develop and use a structured interview process that is designed to measure job-related competencies.
- Always be ready to interview. This means having interview questions, practical tests, or other candidate assessments ready before you receive the list of qualified applicants. It also means having a panel that is available when you need them. Don't put off interviews to accommodate a panel member who is on leave or who can't be available when you need them; select someone else to be on the panel.
- Have starting pay finalized so that HR is ready to issue a formal written tentative job offer within 3 days of selection.
- Integrating candidate touchpoints, with appropriate communication, at every process step includes the candidate in the hiring process. It makes them feel welcome and reduces delays by helping them understand what steps are required to start working at the VA.
- Mentorship Programs. Pair experienced AI professionals with new hires to provide guidance and support.

STRATEGY #1

Always be ready to interview and select

Investment in the pre-recruitment phase is critical to transforming the culture to the optimal state of proactive, continuous readiness to recruit, hire, and onboard. During recruitment, prepare for interviews by identifying the interview panel, type of interview, and questions. Being "interview ready" means being prepared to interview multiple applicants at the same time for one or more vacancies.

Skills-based Hiring

Focus on demonstrably relevant skills over traditional degrees. Develop practical tests of skills with a pre-determined scoring rubric to avoid bias. Certifications in AI and experience with specific tools can be strong indicators of competence.

Interview Panel

The hiring manager normally takes the lead for interview panels and will manage the process and logistics, and intervene when necessary, during each interview phase. Using a script for introductions, providing background information, explanation of the type of interview, and what the candidate can expect ensures each candidate receives the same interview experience.

Select a diverse panel of experts with various perspectives and roles who are equivalent to or a higher grade level than the position being filled. Ensure that panel members are readily available so that interviews can be completed timely. All panel members should participate in rating all applicants throughout the phases. If a panel member is not available when you need them; select someone else to be on the panel.

Interview Phases

- Application packages and resumes - each panel member reviews and individually rates and ranks all eligible applicants or a best-qualified (BQ) list if the number of candidates is unwieldy, using a scoring template with instructions for rating.
- Conduct interviews.
- Verification of references for top candidate or candidates. The hiring manager will verify references once interview panel completes the interview ratings and rankings.
- Selection of candidate.

STRATEGY #2

Streamline the onboarding process

Focus on providing a quick, seamless, and positive onboarding experience to every candidate.

Onboarding actions involve the work of multiple service lines and should be completed concurrently. The recruitment and onboarding experience can be the most significant part of an AI and AI-enabling selectees' journey with VA. These processes should provide a welcoming environment to affirm your excitement for—and commitment to—welcoming new talent into the organization.

Maintain frequent contact with selectees and develop internal communications between team members. Using service-specific email distribution group or MS Teams channel to track onboarding milestones for selectees through EOD will enhance teamwork and transparency throughout the onboarding process.

Best Practice Tips

- All stakeholders are ready to onboard employees.
- As a team, identify barriers specific to onboarding AI and AI-enabling positions. Consider implementing innovative solutions to eliminate extraneous processes and automate processes when possible.
- Maintain frequent contact with interviewees and selectees throughout the entire hiring process.
- Develop communication plans to remove any silos between stakeholders and services to seamlessly onboard candidates.
- Do not withdraw or rescind a formal written tentative salary offer unless the selectee fails to meet all onboarding requirements.

Path Forward

VA recognizes the potential benefits of AI adoption and the importance of mitigating AI-related risks. Failing to cultivate a robust AI-ready workforce could result in:

- Missed opportunities to enhance organizational efficiency, accuracy, and decision-making.
- An impact on the quality-of-care Veterans receive at VA.
- Cybersecurity threats that jeopardize Veterans' personal information.

Recruiting, training, and upskilling VA's AI workforce can effectively mitigate these risks and position VA to harness this powerful technology to improve Veterans' lives. The Blueprint places VA at the forefront of AI utilization for operational optimization and employee empowerment. It ensures VA's federal leadership in technological advancements across health care delivery, Veteran care, and business operations by providing a framework for VA to develop the human capital necessary to unlock AI's full potential and deliver on our mission to provide world-class benefits and services to the Nation's Veterans.

Appendix A

Functional Summaries provide users with a definition of the Building Block, Federal Workforce Framework alignment, and a subset of associated KSATs to define their own position requirements. Each Building Block is described through a Functional Summary. **The following layer descriptions and 21 Functional Summaries are designed to provide users with a definition of the Building Block, Federal Workforce Framework Alignment, and a subset of associated KSATs. All KSATs listed in this VA - AI Blueprint are a <u>sampling</u> of those that are relevant to each building block.** Those using this content as a starting point for development of PDs or other workforce documentation must consider their own organization/project-specific objectives and priorities and refer to federal source material to determine an optimal selection of KSATs.

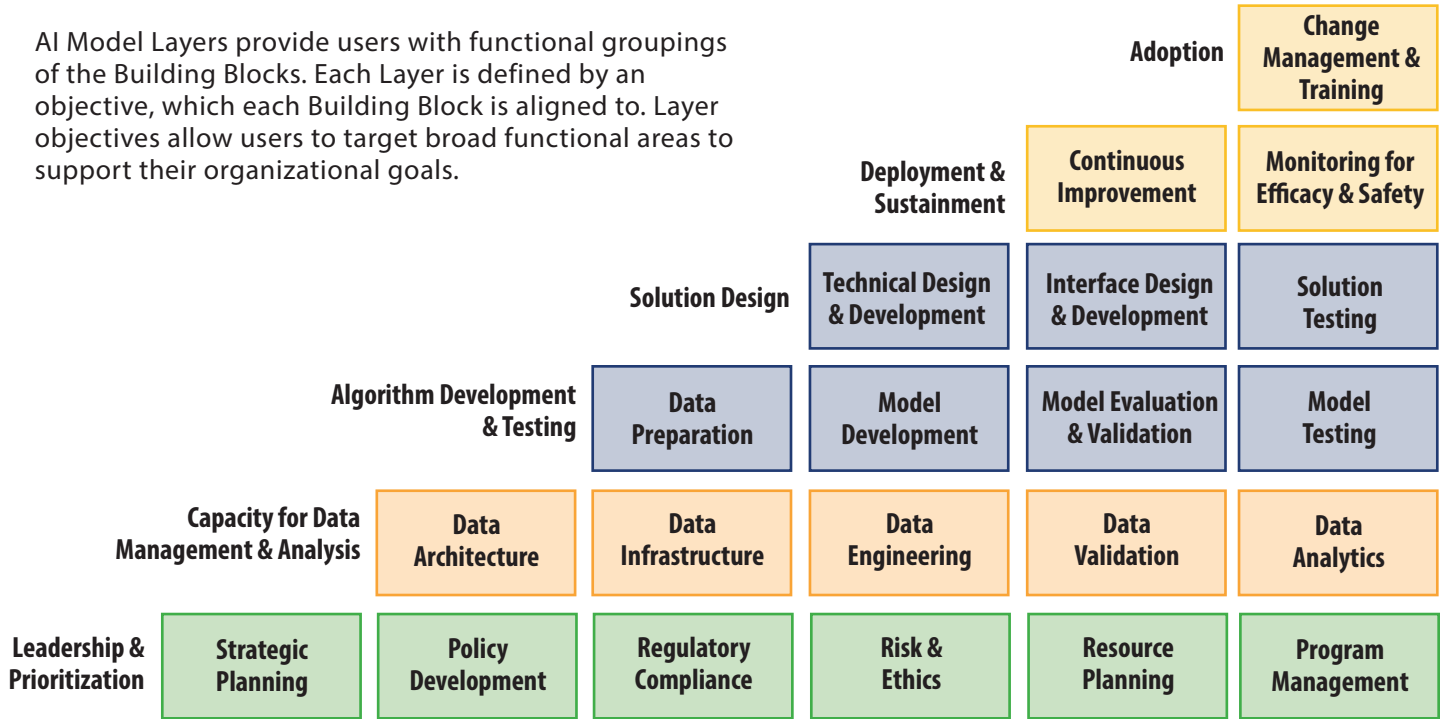| Page	Layer	Functional Summaries
35	Leadership & Prioritization	Strategic Planning, Policy Development, Regulatory Compliance, Risk & Ethics, Resource Planning, Program Management
42	Capacity for Data Management & Analysis	Data Architecture, Data Infrastructure, Data Engineering, Data Validation, Data Analytics
48	Algorithm Development & Testing	Data Preparation, Model Development, Model Evaluation & Validation, Model Testing
53	Solution Design	Technical Design & Development, Interface Design & Development, Solution Testing
57	Deployment & Sustainment	Continuous Improvement, Monitoring for Efficacy & Safety
60	Adoption	Change Management & Training

AI Building Block Model

AI Model Layers

AI Model Layers provide users with functional groupings of the Building Blocks. Each Layer is defined by an objective, which each Building Block is aligned to. Layer objectives allow users to target broad functional areas to support their organizational goals.

Layer					
Adoption					Change Management & Training
Deployment & Sustainment				Continuous Improvement	Monitoring for Efficacy & Safety
Solution Design			Technical Design & Development	Interface Design & Development	Solution Testing
Algorithm Development & Testing		Data Preparation	Model Development	Model Evaluation & Validation	Model Testing
Capacity for Data Management & Analysis	Data Architecture	Data Infrastructure	Data Engineering	Data Validation	Data Analytics
Leadership & Prioritization	Strategic Planning	Policy Development	Regulatory Compliance	Risk & Ethics	Resource Planning	Program Management

AI Model Layer	AI Model Layer Objective
Leadership & Prioritization	Establish the strategic direction for AI initiatives, set priorities, develop AI policies, and ensure regulatory and ethical compliance. Conduct resource planning that encompasses both human and computational resources.
Capacity for Data Management & Analysis	Create and maintain the infrastructure necessary to collect, store, process, and analyze data, setting the stage for actionable insights and raw materials for algorithm development.
Algorithm Development & Testing	Develop, test, and refine algorithms. Transform data into predictive models and intelligent systems, focusing on accuracy, efficiency, and ethical AI use.
Solution Design	Design solutions to be user-friendly, accessible, and seamlessly integrated into the technology ecosystem. Test solutions against the realities of operational environments, ensuring that the design is both intuitive and effective.
Deployment & Sustainment	Operationalize AI solutions and integrate into daily departmental functions, ensuring they perform as expected, adapt over time, and continuously adhere to trustworthy AI principles. Ensure solution performance is monitored within organizational workflows.
Adoption	Ensure that deployed solutions are fully adopted by the target users and integrated into organizational culture and workflows. Enhance the impact of deployed solutions on organizational performance and outcomes through awareness and training.

Those using this content must consider their own organization/project-specific objectives and priorities and refer to federal source material to determine an optimal selection of relevant KSATs and AI competencies.
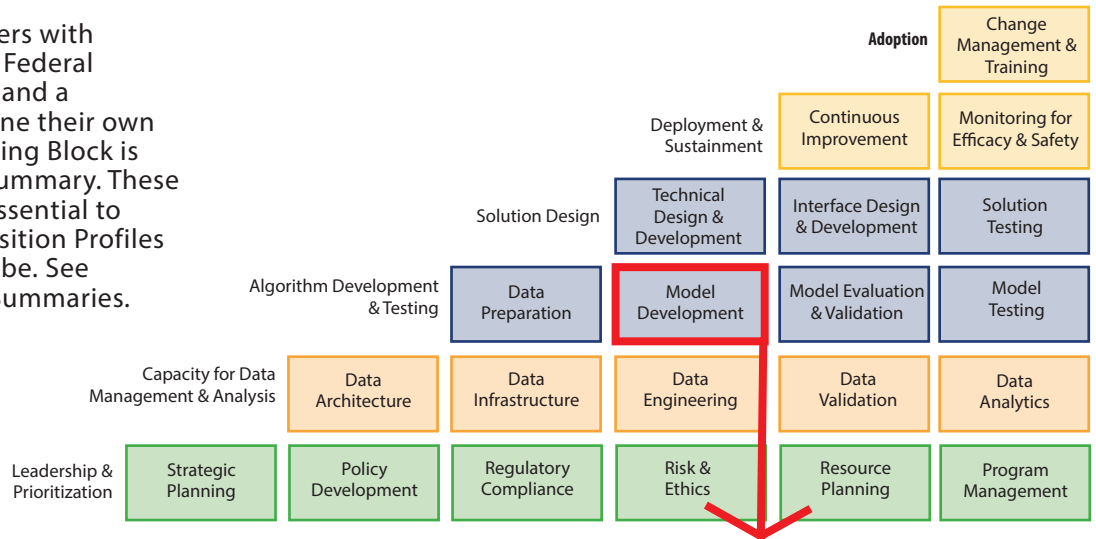
AI Building Block Model

Functional Summaries

Functional Summaries provide users with a definition of the Building Block, Federal Workforce Framework alignment, and a subset of associated KSATs to define their own position requirements. Each Building Block is described through a Functional Summary. These summaries provide information essential to informing the functional roles, Position Profiles that perform the work they describe. See Appendix A for all 21 Functional Summaries.

Adoption					Change Management & Training
Deployment & Sustainment				Continuous Improvement	Monitoring for Efficacy & Safety
Solution Design			Technical Design & Development	Interface Design & Development	Solution Testing
Algorithm Development & Testing		Data Preparation	Model Development	Model Evaluation & Validation	Model Testing
Capacity for Data Management & Analysis		Data Architecture	Data Infrastructure	Data Engineering	Data Validation	Data Analytics
Leadership & Prioritization		Strategic Planning	Policy Development	Regulatory Compliance	Risk & Ethics	Resource Planning	Program Management

The **Functional Summary** is a detailed definition for the Building Block.

Relevant work roles as defined by Federal Workforce Frameworks.

KSAs organized in terms of the Office of Personnel Management (OPM)-defined AI competencies.

Baseline tasks associated with federal work roles.

Baseline Knowledge, Skills, and Abilities (KSAs) associated with federal work roles.

Leadership & Prioritization
Functional Summary - Strategic Planning

Functional Area Definition

Lead strategic planning and visioning for AI solutions, ensuring they align with strategic objectives and technological standards. Identify opportunities where AI can create the most value for the organization. Create a roadmap outlining the steps necessary to develop, deploy, operate, and maintain AI solutions. Establish a governance framework to ensure the responsible and ethical development and use of AI, mitigating risks.

Federal Work Role Alignment

- AI Innovation Leader (Primary)
- AI Adoption Specialist
- Data Officer
- Program Manager

Associated Tasks

- Acquire and manage the necessary resources, including leadership support, financial resources, infrastructure, and key personnel, to support AI innovation adoption goals and objectives. [T0391A]
- Design and integrate an AI adoption strategy that supports the organization's vision, mission, and goals. [T0492B]
- Develop and maintain strategic plans. [T0524]
- Facilitate interactions between internal and external partner decision makers to synchronize and integrate courses of action in support of objectives. [T2416]
- Conduct long-range, strategic planning efforts with internal and external partners to support AI capability development and use. [T2624A]
- Assess value of implemented AI projects based on organizational metrics. [T5849]
- Engage and collaborate with allies and partners to advance shared strategic AI objectives. [T5880]
- Identify viable AI projects based on organizational needs. [T5891]
- Identify ways to lead and motivate people to adopt AI solutions through cultural, organizational, or other types of change. [T5892]
- Promote awareness of AI limitations and benefits. [T5909]
- Support an AI adoption strategy that aligns with the organization's vision, mission, and goals. [T5918]
- Use knowledge of business processes to create or recommend AI solutions. [T5925]

Associated Knowledge, Skills, and Abilities

Competency	Description
Accountability	• Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036]
Application Development	• Knowledge of how AI is developed and operated. [K7024]
Artificial Intelligence/Machine Learning	• Knowledge of machine learning theory and principles. [K6311]
Communicating Results	• Skill in communicating with all levels of the organization, including senior/mid-level executives, and operational-level personnel (e.g., interpersonal skills, approachability, effective listening skills, appropriate use of style and language for the audience). [S6915A] • Skill in explaining AI concepts and terminology. [S7065]
Conflict Management	• Knowledge of best practices in organizational conflict management. [K7007]
Influencing/Negotiating	• Ability to identify, connect, and influence key stakeholders to speed AI adoption. [A7000]
Partnering	• Knowledge of customer mission priorities and capabilities, as related to the integration and adoption of AI solutions. [K7013]
Planning and Evaluating	• Knowledge of organization objectives, leadership priorities, and decision-making risks. [K3591] • Knowledge of resources and capabilities required to complete AI projects. [K7042] • Skill in identifying organizational and project-level AI risks, including AI security risks and requirements. [S7068]
Project Management	• Ability to assess and forecast manpower requirements to meet organizational objectives. [A6040]
Strategic Thinking	• Knowledge of the organization's core business/mission processes. [K0942]
Technology Awareness	• Knowledge of emerging trends and future use cases of AI. [K7021]

VA - AI Workforce Blueprint | 36

Those using this content must consider their own organization/project-specific objectives and priorities and refer to federal source material to determine an optimal selection of relevant KSATs and AI competencies.
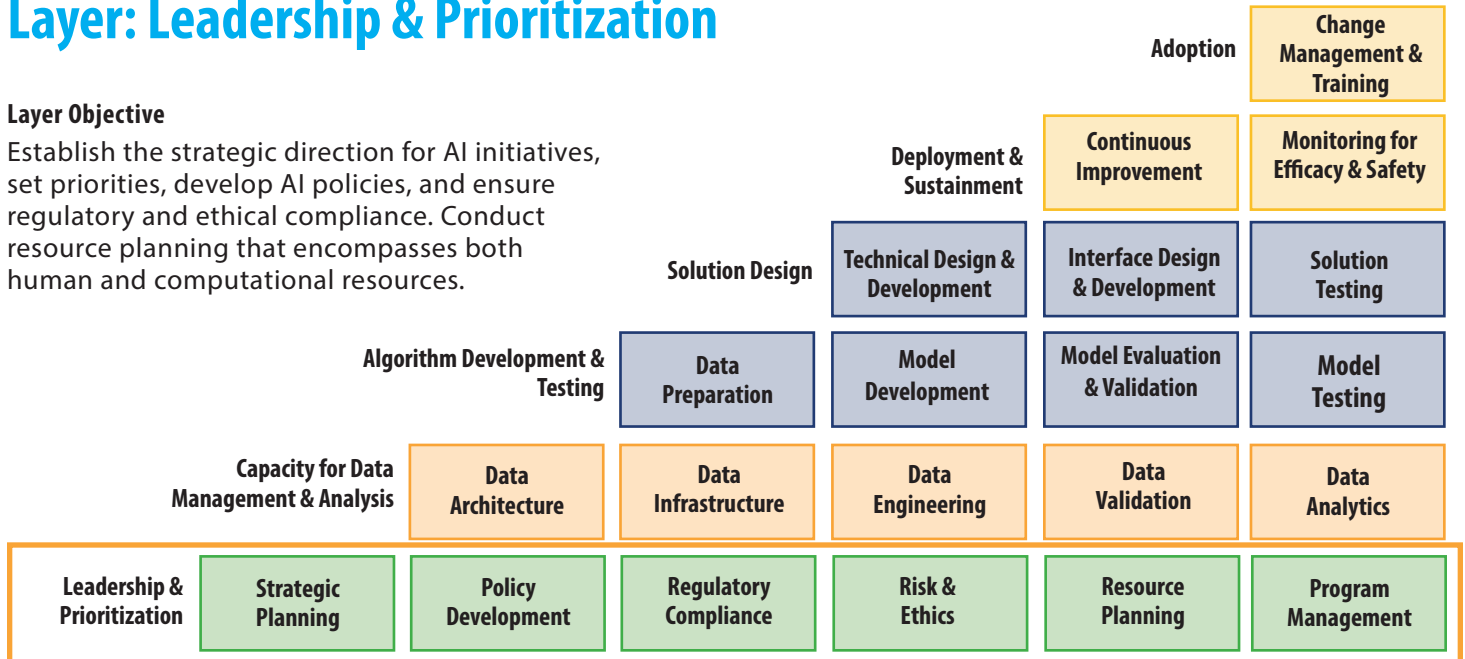
AI Building Block Model

Layer: Leadership & Prioritization

Layer Objective

Establish the strategic direction for AI initiatives, set priorities, develop AI policies, and ensure regulatory and ethical compliance. Conduct resource planning that encompasses both human and computational resources.

Adoption					Change Management & Training
Deployment & Sustainment			Continuous Improvement	Monitoring for Efficacy & Safety	
Solution Design		Technical Design & Development	Interface Design & Development	Solution Testing	
Algorithm Development & Testing	Data Preparation	Model Development	Model Evaluation & Validation	Model Testing	
Capacity for Data Management & Analysis	Data Architecture	Data Infrastructure	Data Engineering	Data Validation	Data Analytics
Leadership & Prioritization	Strategic Planning	Policy Development	Regulatory Compliance	Risk & Ethics	Resource Planning	Program Management

Building Blocks	Functional Area Definitions
Strategic Planning	Lead strategic planning and visioning for AI solutions, ensuring they align with strategic objectives and technological standards. Identify opportunities where AI can create the most value for the organization. Create a roadmap outlining the steps necessary to develop, deploy, operate, and maintain AI solutions. Establish a governance framework to ensure the responsible and ethical development and use of AI, mitigating risks.
Policy Development	Create guidelines and frameworks that govern the creation, deployment, and use of AI solutions. Set standards for data collection, mitigating algorithmic bias, and development of AI solutions. Establish protocols for data security, auditing AI models, and outlining procedures for handling potential misuse or low performance. Set guidelines for how AI is used to improve decision-making, automate tasks, or enhance products and services.
Regulatory Compliance	Ensure the development and use of AI solutions adheres to all established guidelines, rules, and legal requirements set forth by governing bodies. Educate stakeholders to build awareness of all applicable regulatory requirements including data privacy, security, fairness, and accountability.
Risk & Ethics	Continuously evaluate risks associated with bias and discrimination, privacy violations, safety concerns, and potential threats. Monitor for and educate on the ethical development of AI solutions. This includes ensuring fairness, accountability, transparency, trustworthiness, and social benefit. Consider the risk and ethical principles associated with developing, deploying, operating, and maintaining AI solutions.
Resource Planning	Lead resource planning for AI solutions. This includes planning for necessary physical requirements (i.e., facilities, equipment) and the development and implementation of an AI workforce strategy. Secure resources, oversee budgeting, and manage personnel to achieve AI strategic goals. Collaborate with internal and external stakeholders to ensure alignment and remove roadblocks to resource acquisition for AI solutions.
Program Management	Ensure that all AI efforts align with organizational goals. Evaluate program goals and performance to ensure alignment of AI efforts across the organization. This includes planning, budgeting, monitoring, and facilitating cross-functional collaboration.

Example AI Positions

- AI Ethics & Compliance Officer
- AI Technical Advisor
- Chief AI Officer
- Chief Data Officer
- Privacy Officer
- Program, Project, Product Manager

Those using this content must consider their own organization/project-specific objectives and priorities and refer to federal source material to determine an optimal selection of relevant KSATs and AI competencies.

Leadership & Prioritization
Functional Summary - Strategic Planning

Functional Area Definition

Lead strategic planning and visioning for AI solutions, ensuring they align with strategic objectives and technological standards. Identify opportunities where AI can create the most value for the organization. Create a roadmap outlining the steps necessary to develop, deploy, operate, and maintain AI solutions. Establish a governance framework to ensure the responsible and ethical development and use of AI, mitigating risks.

Federal Work Role Alignment

- AI Innovation Leader (Primary)
- AI Adoption Specialist
- Data Officer
- Program Manager

Associated Tasks

- Acquire and manage the necessary resources, including leadership support, financial resources, infrastructure, and key personnel, to support AI innovation adoption goals and objectives. [T0391A]
- Design and integrate an AI adoption strategy that supports the organization's vision, mission, and goals. [T0492B]
- Develop and maintain strategic plans. [T0524]
- Facilitate interactions between internal and external partner decision makers to synchronize and integrate courses of action in support of objectives. [T2416]
- Conduct long-range, strategic planning efforts with internal and external partners to support AI capability development and use. [T2624A]
- Assess value of implemented AI projects based on organizational metrics. [T5849]
- Engage and collaborate with allies and partners to advance shared strategic AI objectives. [T5880]
- Identify viable AI projects based on organizational needs. [T5891]
- Identify ways to lead and motivate people to adopt AI solutions through cultural, organizational, or other types of change. [T5892]
- Promote awareness of AI limitations and benefits. [T5909]
- Support an AI adoption strategy that aligns with the organization's vision, mission, and goals. [T5918]
- Use knowledge of business processes to create or recommend AI solutions. [T5925]

Associated Knowledge, Skills, and Abilities

Competency	Description
Accountability	• Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036]
Application Development	• Knowledge of how AI is developed and operated. [K7024]
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311]
Communicating Results	• Skill in communicating with all levels of the organization, including senior/mid-level executives, and operational-level personnel (e.g., interpersonal skills, approachability, effective listening skills, appropriate use of style and language for the audience). [S6915A] • Skill in explaining AI concepts and terminology. [S7065]
Conflict Management	• Knowledge of best practices in organizational conflict management. [K7007]
Influencing/Negotiating	• Ability to identify, connect, and influence key stakeholders to speed AI adoption. [A7000]
Partnering	• Knowledge of customer mission priorities and capabilities, as related to the integration and adoption of AI solutions. [K7013]
Planning and Evaluating	• Knowledge of organization objectives, leadership priorities, and decision-making risks. [K3591] • Knowledge of resources and capabilities required to complete AI projects. [K7042] • Skill in identifying organizational and project-level AI risks, including AI security risks and requirements. [S7068]
Project Management	• Ability to assess and forecast manpower requirements to meet organizational objectives. [A6040]
Strategic Thinking	• Knowledge of the organization's core business/mission processes. [K0942]
Technology Awareness	• Knowledge of emerging trends and future use cases of AI. [K7021]

Leadership & Prioritization

Functional Summary - Policy Development

Functional Area Definition

Create guidelines and frameworks that govern the creation, deployment, and use of AI solutions. Set standards for data collection, mitigating algorithmic bias, and development of AI solutions. Establish protocols for data security, auditing AI models, and outlining procedures for handling potential misuse or low performance. Set guidelines for how AI is used to improve decision-making, automate tasks, or enhance products and services.

Federal Work Role Alignment

- AI Innovation Leader (Primary)
- AI Risk & Ethics Specialist
- Data Officer
- Privacy Compliance Manager

Associated Tasks

- Design and integrate an AI adoption strategy that supports the organization's vision, mission, and goals. [T0492B]
- Provide guidance on laws, regulations, policies, standards, or procedures to management, personnel, or clients. [T0618A]
- Interpret and apply laws, regulations, policies, standards, or procedures to specific issues. [T0675]
- Administer action on all complaints concerning the organization's privacy policies and procedures in coordination and collaboration with other similar functions and, when necessary, legal counsel. [T5764]
- Assure that the use of technologies maintain, and do not erode, privacy protections on use, collection and disclosure of personal information. [T5766]
- Work with all organization personnel involved with any aspect of release of protected information to ensure coordination with the organization's policies, procedures and legal requirements. [T5811]
- Create and/or maintain governance structure for oversight and accountability of AI solutions. [T5862]
- Define and/or implement policies and procedures to enable an AI risk assessment process and assess risk mitigation efforts. [T5868]
- Engage and collaborate with allies and partners to advance shared strategic AI objectives. [T5880]

Associated Knowledge, Skills, and Abilities

Competency	Description
Accountability	• Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036] • Ability to develop policy, plans, and strategy in compliance with laws, regulations, policies, and standards in support of organizational cyber activities. [A6100] • Ability to develop, update, and/or maintain standard operating procedures (SOPs). [A6110]
Application Development	• Knowledge of how AI is developed and operated. [K7024]
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311]
Communicating Results	• Skill in communicating with all levels of the organization, including senior/mid-level executives, and operational-level personnel (e.g., interpersonal skills, approachability, effective listening skills, appropriate use of style and language for the audience). [S6915A]
Conflict Management	• Knowledge of best practices in organizational conflict management. [K7007]
Influencing/Negotiating	• Knowledge of risk management processes (e.g., methods for assessing and mitigating risk). [K0108] • Ability to identify, connect, and influence key stakeholders to speed AI adoption. [A7000]
Partnering	• Knowledge of customer mission priorities and capabilities, as related to the integration and adoption of AI solutions. [K7013]
Planning and Evaluating	• Knowledge of organization objectives, leadership priorities, and decision-making risks. [K3591]
Project Management	• Skill in leading AI adoption efforts. [S7072]
Strategic Thinking	• Knowledge of the organization's core business/mission processes. [K0942]
Technology Awareness	• Knowledge of emerging trends and future use cases of AI. [K7021]

Leadership & Prioritization

Functional Summary - Regulatory Compliance

Functional Area Definition

Ensure the development and use of AI solutions adheres to all established guidelines, rules, and legal requirements set forth by governing bodies. Educate stakeholders to build awareness of all applicable regulatory requirements including data privacy, security, fairness, and accountability.

Federal Work Role Alignment

- Cyber Legal Advisor (Primary)
- AI Risk & Ethics Specialist
- Data Officer
- Data Steward

Associated Tasks

- Acquire and maintain a working knowledge of constitutional issues relevant laws, regulations, policies, agreements, standards, procedures, or other issuances. [T0390A]
- Provide legal analysis and decisions to inspector generals, privacy officers, oversight and compliance personnel with regard to compliance with cybersecurity policies and relevant legal and regulatory requirements. [T0574A]
- Evaluate the impact of changes to laws, regulations, policies, standards, or procedures. [T0612A]
- Provide guidance on laws, regulations, policies, standards, or procedures to management, personnel, or clients. [T0618A]
- Resolve conflicts in laws, regulations, policies, standards, or procedures. [T0834]
- Ensure that AI design and development activities are properly documented and updated. [T1000B]
- Ensure risk management responsibilities are clearly defined, assigned, and communicated to relevant stakeholders. [T5881]
- Perform risk assessment whenever an AI application or AI-enabled system undergoes a major change, when emergent behaviors are detected, and/or unintended consequences are reported. [T5905]

Associated Knowledge, Skills, and Abilities

Competency	Description
Accountability	• Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036]
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311]
Communicating Results	• Skill in explaining AI concepts and terminology. [S7065]
Decisiveness	• Ability to monitor and assess the potential impact of emerging technologies on laws, regulations, and/or policies. [A1070A]
Planning and Evaluating	• Knowledge of intelligence principles, policies, and procedures including legal authorities and restrictions. [K0300A] • Knowledge of emerging trends and future use cases of AI. [K7021]
Project Management	• Skill in identifying risk over the lifespan of an AI solution. [S7069]
Strategic Thinking	• Knowledge of the organization's core business/mission processes. [K0942]

Leadership & Prioritization

Functional Summary - Risk & Ethics

Functional Area Definition

Continuously evaluate risks associated with bias and discrimination, privacy violations, safety concerns, and potential threats. Monitor for and educate on the ethical development of AI solutions. This includes ensuring fairness, accountability, transparency, trustworthiness, and social benefit. Consider the risk and ethical principles associated with developing, deploying, operating, and maintaining AI solutions.

Federal Work Role Alignment

- AI Risk & Ethics Specialist (Primary)
- AI Test & Evaluation Specialist
- Cyber Legal Advisor
- Data Steward

Associated Tasks

- Develop methods to monitor and measure risk and assurance efforts on a continuous basis. [T0537A]
- Ensure risk mitigation plans of action and milestones are in place. [T0963A]
- Communicate the results of AI risk assessments to relevant stakeholders. [T5856]
- Create and/or maintain processes to ensure data management efforts comply with AI ethical principles. [T5863]
- Determine methods and metrics for quantitative and qualitative measurement of AI risks so that sensitivity, specificity, likelihood, confidence levels, and other metrics are identified, documented, and applied. [T5873]
- Develop risk mitigation strategies to ensure enumerated risks are prioritized, mitigated, shared, transferred, and/or accepted. [T5878]
- Direct and/or support organizational and project-level AI risk management activities. [T5879]
- Ensure risk management responsibilities are clearly defined, assigned, and communicated to relevant stakeholders. [T5881]
- Identify and submit exemplary AI use cases, best practices, failure modes, and risk mitigation strategies, including after-action reports. [T5889]
- Perform risk assessment on AI applications to identify technical, societal, organizational, and mission risks. [T5904]

Associated Knowledge, Skills, and Abilities

Competency	Description
Accountability	• Knowledge of national and international laws, regulations, policies, and ethics as they relate to cybersecurity [K1157] • Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036] • Skill in assessing AI capabilities for bias or ethical concerns. [S7056]
Application Development	• Knowledge of how AI is developed and operated. [K7024]
Artificial Intelligence/ Machine Learning	• Knowledge of the AI lifecycle. [K7045]
Communicating Results	• Skill in explaining AI concepts and terminology. [S7065]
Decisiveness	• Skill in developing solutions and/or recommendations to minimize negative impacts of machine learning, especially for edge cases. [S7064]
Influencing/Negotiating	• Knowledge of risk management processes (e.g., methods for assessing and mitigating risk). [K0108]
Planning and Evaluating	• Knowledge of the benefits and limitations of AI capabilities. [K7048] • Skill in identifying organizational and project-level AI risks, including AI security risks and requirements. [S7068]
Project Management	• Skill in identifying risk over the lifespan of an AI solution. [S7069]
Strategic Thinking	• Knowledge of the organization's core business/mission processes. [K0942]
Supporting Diversity	• Knowledge of remedies against unintended bias in AI solutions. [K7041]
Technology Awareness	• Knowledge of emerging security issues, risks, and vulnerabilities. [K0952] • Knowledge of emerging trends and future use cases of AI. [K7021]

Leadership & Prioritization

Functional Summary - Resource Planning

Functional Area Definition

Lead resource planning for AI solutions. This includes planning for necessary physical requirements (i.e., facilities, equipment) and the development and implementation of an AI workforce strategy. Secure resources, oversee budgeting, and manage personnel to achieve AI strategic goals. Collaborate with internal and external stakeholders to ensure alignment and remove roadblocks to resource acquisition for AI solutions.

Federal Work Role Alignment

- AI Innovation Leader (Primary)
- Cyber Workforce Developer & Manager
- Data Officer

Associated Tasks

- Acquire and manage the necessary resources, including leadership support, financial resources, infrastructure, and key personnel, to support AI innovation adoption goals and objectives. [T0391A]
- Identify and address AI workforce planning and management issues (e.g., recruitment, retention, and training). [T0629B]
- Oversee AI budget, staffing, and contracting decisions. [T0680B]
- Facilitate interactions between internal and external partner decision makers to synchronize and integrate courses of action in support of objectives. [T2416]
- Coordinate with organizational manpower stakeholders to ensure appropriate allocation and distribution of human capital assets. [T5170]
- Establish and collect metrics to monitor and validate AI workforce readiness. [T5330A]
- Establish, resource, implement, and assess cyber workforce management programs in accordance with organizational requirement. [T5370]
- Evaluate and develop AI workforce structure resources and requirements. [T5883]
- Remove barriers to data acquisition, collection, and curation efforts required for AI solutions. [T5913]

Associated Knowledge, Skills, and Abilities

Competency	Description
Application Development	• Knowledge of how AI is developed and operated. [K7024]
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311]
Communicating Results	• Skill in communicating with all levels of the organization, including senior/mid-level executives, and operational-level personnel (e.g., interpersonal skills, approachability, effective listening skills, appropriate use of style and language for the audience). [S6915A] • Skill in explaining AI concepts and terminology. [S7065]
Conflict Management	• Knowledge of best practices in organizational conflict management. [K7007]
Influencing/Negotiating	• Ability to identify, connect, and influence key stakeholders to speed AI adoption. [A7000]
Partnering	• Knowledge of organization policies and planning concepts for partnering with internal and/or external organizations. [K3356]
Planning and Evaluating	• Knowledge of organization objectives, leadership priorities, and decision-making risks. [K3591] • Knowledge of resources and capabilities required to complete AI projects. [K7042]
Project Management	• Knowledge of Workforce Framework, work roles, and associated tasks, knowledge, skills, and abilities. [K6250] • Knowledge of staffing, contracting, and budgetary requirements to run an AI-enabled organization. [K7043] • Ability to assess and forecast manpower requirements to meet organizational objectives. [A6040]
Strategic Thinking	• Knowledge of the organization's core business/mission processes. [K0942]
Technology Awareness	• Knowledge of emerging trends and future use cases of AI. [K7021]

Leadership & Prioritization

Functional Summary - Program Management

Functional Area Definition

Ensure that all AI efforts align with organizational goals. Evaluate program goals and performance to ensure alignment of AI efforts across the organization. This includes planning, budgeting, monitoring, and facilitating cross-functional collaboration.

Federal Work Role Alignment

- Program Manager (Primary)
- AI Innovation Leader
- IT Project Manager
- Product Manager

Associated Tasks

- Lead and oversee budget, staffing, and contracting. [T0680A]
- Provide enterprise cybersecurity and supply chain risk management guidance for development of the Continuity of Operations Plans. [T0801]
- Ensure all acquisitions, procurements, and outsourcing efforts address information security requirements consistent with organization goals. [T1018]
- Act as a primary stakeholder in the underlying IT operational processes and functions that support the service, provide direction and monitor all significant activities so the service is delivered successfully. [T5010]
- Manage the internal relationship with IT process owners supporting the service, assisting with the definition and agreement of operating level agreements (OLAs). [T5410]
- Assess value of implemented AI projects based on organizational metrics. [T5849]
- Direct and/or support organizational and project-level AI risk management activities. [T5879]
- Identify viable AI projects based on organizational needs. [T5891]
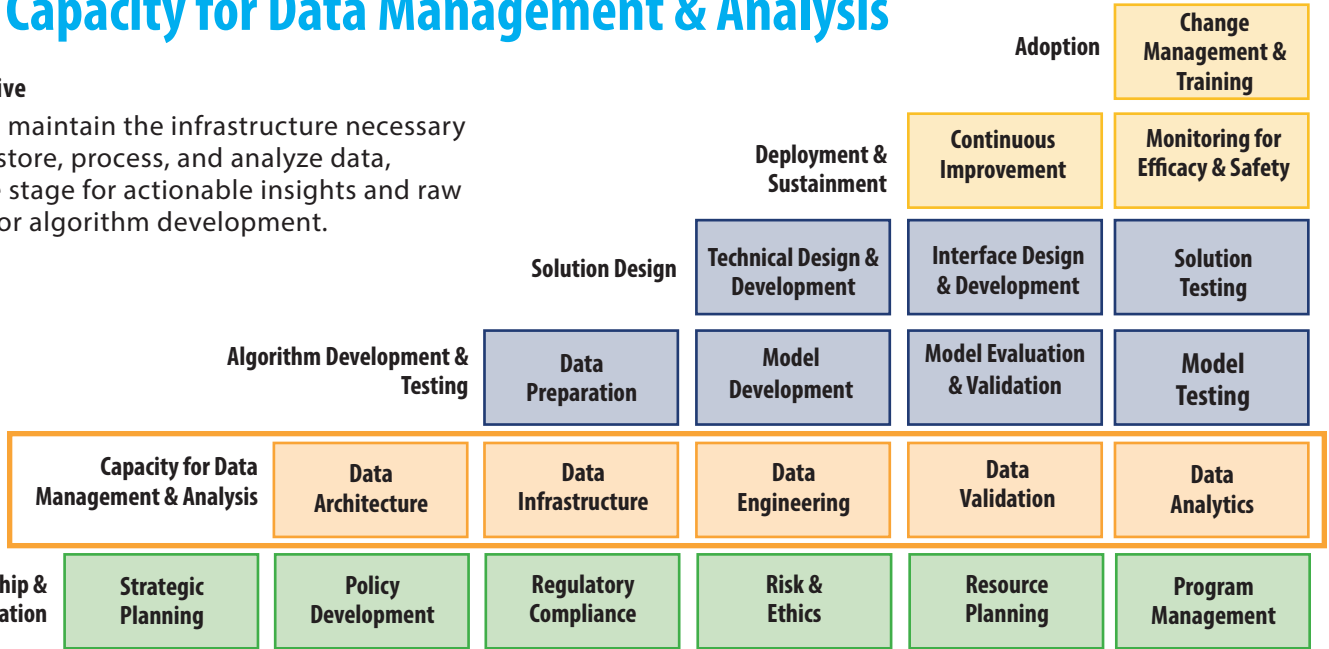
Associated Knowledge, Skills, and Abilities

Competency	Description
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311] • Knowledge of the AI lifecycle. [K7045]
Communicating Results	• Skill in communicating with all levels of the organization, including senior/mid-level executives, and operational-level personnel (e.g., interpersonal skills, approachability, effective listening skills, appropriate use of style and language for the audience). [S6915A]
Conflict Management	• Knowledge of best practices in organizational conflict management. [K7007]
Partnering	• Knowledge of the organization's enterprise IT goals and objectives. [K0143]
Planning and Evaluating	• Skill in identifying measures or indicators of system performance and the actions needed to improve or correct performance relative to the goals of the system. [S0203] • Skill in identifying organizational and project-level AI risks, including AI security risks and requirements. [S7068]
Project Management	• Knowledge of IT acquisition/procurement requirements. [K1004A] • Skill in leading AI adoption efforts. [S7072] • Skill in leveraging and optimizing resources required to complete AI projects and programs. [S7073] • Ability to assess and forecast manpower requirements to meet organizational objectives. [A6040] • Ability to oversee the development and update of the lifecycle cost estimate. [A6160]
Technology Awareness	• Knowledge of emerging trends and future use cases of AI. [K7021]

AI Building Block Model

Layer: Capacity for Data Management & Analysis

Layer Objective

Create and maintain the infrastructure necessary to collect, store, process, and analyze data, setting the stage for actionable insights and raw materials for algorithm development.

Adoption					Change Management & Training
Deployment & Sustainment			Continuous Improvement		Monitoring for Efficacy & Safety
Solution Design		Technical Design & Development	Interface Design & Development		Solution Testing
Algorithm Development & Testing	Data Preparation	Model Development	Model Evaluation & Validation		Model Testing
Capacity for Data Management & Analysis	Data Architecture	Data Infrastructure	Data Engineering	Data Validation	Data Analytics
Leadership & Privatization	Strategic Planning	Policy Development	Regulatory Compliance	Risk & Ethics	Resource Planning	Program Management

Building Blocks	Functional Area Definitions
Data Architecture	Design a system's data models, data flow, interfaces, and infrastructure as the blueprint for how data are stored, accessed, and managed. Ensure that data are reliable, secure, and readily available to meet various business needs, including supporting the development and deployment of AI systems.
Data Infrastructure	Design, develop, and maintain data infrastructure to support AI initiatives, including databases and data lakes, managing cloud or on-premise data storage solutions, warehouses, and serving systems. Ensure data quality, security, and governance for AI models. Collaborate with data scientists and machine learning engineers to understand data requirements and develop data pipelines. Implement and manage tools and technologies for data ingestion, transformation, and version control. Monitor and optimize data infrastructure performance to ensure scalability and reliability for AI workloads.
Data Engineering	Design, construct, and maintain data pipelines that efficiently transport and transform data for analysis and decision-making. Develop ETL (extract, transform, load) processes, ensuring data quality and consistency, and manage data warehousing solutions. Collect, process, transform, and store data to enable AI models to learn and perform intended functions. Leverage deep understanding of data structures, algorithms, and programming languages to build a foundation for scalable data analysis and insights generation, crucial for informed decision-making across the organization.
Data Validation	Validate the accuracy, completeness, and reliability of data before analysis. Cleanse, verify, and apply rules to detect anomalies or inconsistencies in data. Identify and rectify errors, inconsistencies, and missing information in datasets. Mitigate risks by identifying and addressing potential biases in the data. Ensure that only high-quality data are used to train models and ensure trust and transparency in AI solutions.
Data Analytics	Responsible for collecting, cleaning, and preparing data for use in machine learning models. Employ statistical methods and predictive modeling to analyze trends, perform data visualization to communicate findings effectively to technical and non-technical audiences, and use analytical tools to support data-driven decision-making. Transform data into actionable intelligence and guiding the organization towards informed strategies and outcomes.

Example AI Positions

- Data Analyst
- Data Architect
- Data Engineer
- Data Infrastructure Engineer

Those using this content must consider their own organization/project-specific objectives and priorities and refer to federal source material to determine an optimal selection of relevant KSATs and AI competencies.

Capacity for Data Management & Analysis

Functional Summary - Data Architecture

Functional Area Definition

Design a system's data models, data flow, interfaces, and infrastructure as the blueprint for how data are stored, accessed, and managed. Ensure that data are reliable, secure, and readily available to meet various business needs, including supporting the development and deployment of AI systems.

Federal Work Role Alignment

- Data Architect (Primary)
- Data Operations Specialist

Associated Tasks

- Analyze and plan for anticipated changes in data capacity requirements. [T0401]
- Analyze information to determine, recommend, and plan the development of a new application or modification of an existing application. [T0408]
- Consult with customers and key stakeholders to evaluate functional requirements for AI and data applications. [T0466A]
- Provide recommendations on new database technologies and architectures. [T0815]
- Confer with systems analysts, engineers, programmers and others to design application. [T5140]
- Advise higher level leadership on critical data management issues. [T5841]
- Collaborate with appropriate personnel to address Personal Health Information (PHI), Personally Identifiable Information (PII), and other data privacy and data reusability concerns for AI solutions. [T5854]
- Examine and identify database structural necessities by evaluating operations, applications, and programming. [T5885]
- Prepare database design and architecture reports. [T5908]
- Effectively allocate storage capacity in the design of data management systems. [T6190]

Associated Knowledge, Skills, and Abilities

Competency	Description
Accountability	• Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036]
Data Extraction and Transformation	• Knowledge of the characteristics of physical and virtual data storage media. [K0137] • Knowledge of data operations (DataOps) processes and best practices. [K7017] • Knowledge of how to collect, store, and monitor data. [K7029] • Skill in designing the best approach and architecture for automated data labeling and data lifecycle. [S7060]
Information Management	• Knowledge of data administration and data standardization policies and standards. [K0028] • Knowledge of the capabilities and functionality associated with various technologies for organizing and managing information (e.g., databases, bookmarking engines). [K0135] • Knowledge of how information needs and collection requirements are translated, tracked, and prioritized across the extended enterprise. [K0296] • Knowledge of an organization's information classification program and procedures for information compromise. [K1141A]
Modeling and Simulation	• Skill in developing data models. [S0187]
Systems Design	• Knowledge of computer networking concepts and protocols, and network security methodologies. [K0022] • Knowledge of how AI solutions integrate with cloud or other IT infrastructure. [K7025]

Capacity for Data Management & Analysis
Functional Summary - Data Infrastructure

Functional Area Definition

Design, develop, and maintain data infrastructure to support AI initiatives, including databases and data lakes, managing cloud or on-premise data storage solutions, warehouses, and serving systems. Ensure data quality, security, and governance for AI models. Collaborate with data scientists and machine learning engineers to understand data requirements and develop data pipelines. Implement and manage tools and technologies for data ingestion, transformation, and version control. Monitor and optimize data infrastructure performance to ensure scalability and reliability for AI workloads.

Federal Work Role Alignment

- Data Operations Specialist (Primary)
- Data Architect

Associated Tasks

- Implement data management standards, requirements, and specifications. [T0400A]
- Consult with customers and key stakeholders to evaluate functional requirements for AI and data applications. [T0466A]
- Develop and implement data mining and data warehousing programs. [T0520B]
- Manage the compilation, cataloging, caching, distribution, and retrieval of data. [T0702]
- Perform secure programming and identify potential flaws in codes to mitigate vulnerabilities. [T0764]
- Apply data acquisition, cleaning, transformation, and ingestion best practices for machine learning data conduits. [T5844]
- Assess and address the limitations of methods to deliver data. [T5846]
- Build automated data management conduits. [T5852]
- Comply with data classification and handling requirements through access control and security best practices. [T5857]

Associated Knowledge, Skills, and Abilities

Competency	Description
Accountability	• Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036]
Data Extraction and Transformation	• Knowledge of data mining and data warehousing principles. [K0031] • Knowledge of data operations (DataOps) processes and best practices. [K7017] • Knowledge of how to collect, store, and monitor data. [K7029] • Skill in data mining techniques (e.g., searching file systems) and analysis. [S3722] • Skill in data pre-processing (e.g., imputation, dimensionality reduction, normalization, transformation, extraction, filtering, smoothing). [S6520] • Skill in designing the best approach and architecture for automated data labeling and data lifecycle. [S7060]
Information Management	• Knowledge of data administration and data standardization policies and standards. [K0028] • Knowledge of the capabilities and functionality associated with various technologies for organizing and managing information (e.g., databases, bookmarking engines). [K0135] • Knowledge of database access application programming interfaces (APIs) (e.g., Java Database Connectivity [JDBC]). [K1128A] • Skill in establishing data security controls. [S0179B] • Skill in developing data dictionaries. [S0186] • Skill in using data mapping tools. [S6730]
Modeling and Simulation	• Skill in developing data models. [S0187]
Systems Design	• Knowledge of computer networking concepts and protocols, and network security methodologies. [K0022] • Knowledge of how AI solutions integrate with cloud or other IT infrastructure. [K7025]

Capacity for Data Management & Analysis

Functional Summary - Data Engineering

Functional Area Definition

Design, construct, and maintain data pipelines that efficiently transport and transform data for analysis and decision-making. Develop ETL (extract, transform, load) processes, ensuring data quality and consistency, and manage data warehousing solutions. Collect, process, transform, and store data to enable AI models to learn and perform intended functions. Leverage deep understanding of data structures, algorithms, and programming languages to build a foundation for scalable data analysis and insights generation, crucial for informed decision-making across the organization.

Federal Work Role Alignment

- Data Operations Specialist (Primary)
- Data Scientist
- Data Steward

Associated Tasks

- Implement data management standards, requirements, and specifications. [T0400A]
- Develop and implement data mining and data warehousing programs. [T0520B]
- Manage the compilation, cataloging, caching, distribution, and retrieval of data. [T0702]
- Program custom algorithms. [T5550]
- Apply data acquisition, cleaning, transformation, and ingestion best practices for machine learning data conduits. [T5844]
- Assess and address the limitations of methods to deliver data. [T5846]
- Collaborate with appropriate personnel to address Personal Health Information (PHI), Personally Identifiable Information (PII), and other data privacy and data reusability concerns for AI solutions. [T5854]
- Comply with data classification and handling requirements through access control and security best practices. [T5857]
- Identify and document customer requirements when on-boarding new data assets. [T5888]
- Manipulate and clean large, disparate datasets for bulk analysis to identify connections. [T5899]
- Plan and conduct complex analytical, mathematical, and statistical research that informs operational requirements. [T5906]
- Read, interpret, write, modify, and execute scripts, macros, and functions. [T6470A]

Associated Knowledge, Skills, and Abilities

Competency	Description
Accountability	• Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036]
Communicating Results	• Ability to communicate complex information, concepts, or ideas in a confident and well-organized manner through verbal, written, and/or visual means. [A3022] • Knowledge of key decision-support needs and questions to drive prioritization of data efforts. [K7035]
Data Analysis	• Knowledge of query languages such as SQL (structured query language). [K0104] • Skill in conducting queries and developing algorithms to analyze data structures. [S0166] • Ability to interpret and incorporate data from multiple tool sources. [A1120]
Data Extraction and Transformation	• Knowledge of data mining and data warehousing principles. [K0031] • Knowledge of Java-based database access application programming interface (API) (e.g., Java Database Connectivity [JDBC]). [K1128] • Knowledge of how to collect, store, and monitor data. [K7029] • Skill in data mining techniques (e.g., searching file systems) and analysis. [S3722] • Skill in data pre-processing (e.g., imputation, dimensionality reduction, normalization, transformation, extraction, filtering, smoothing). [S6520] • Skill in performing format conversions to create a standard representation of the data. [S6610] • Skill in transformation analytics (e.g., aggregation, enrichment, processing). [S6690] • Skill in identifying data acquisition, collection, and curation risks. [K7066]
Information Management	• Skill in developing data dictionaries. [K0186]
Mathematics and Statistics	• Skill in using basic descriptive statistics and techniques (e.g., normality, model distribution, scatter plots). [S6710]

Capacity for Data Management & Analysis

Functional Summary - Data Validation

Functional Area Definition

Validate the accuracy, completeness, and reliability of data before analysis. Cleanse, verify, and apply rules to detect anomalies or inconsistencies in data. Identify and rectify errors, inconsistencies, and missing information in datasets. Mitigate risks by identifying and addressing potential biases in the data. Ensure that only high-quality data are used to train models and ensure trust and transparency in AI solutions.

Federal Work Role Alignment

- Data Steward (Primary)
- AI/ML Specialist
- Data Analyst
- Data Scientist

Associated Tasks

- Analyze and define data requirements and specifications. [T0400]
- Assess the validity of source data and subsequent findings. [T5080]
- Assist integrated project teams to identify, curate, and manage data. [T5850]
- Collaborate with appropriate personnel to address Personal Health Information (PHI), Personally Identifiable Information (PII), and other data privacy and data reusability concerns for AI solutions. [T5854]
- Collaborate with data owners to establish data quality rules and definitions. [T5855]
- Create metrics that characterize the usability, timeliness, completeness, and accuracy of data for multiple users to reference and use. [T5865]
- Develop machine learning code testing and validation procedures. [T5876]
- Manipulate and clean large, disparate datasets for bulk analysis to identify connections. [T5899]
- Assist integrated project teams identify, curate, and manage test data. [T7002]

Associated Knowledge, Skills, and Abilities

Competency	Description
Accountability	• Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036]
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311]
Data Analysis	• Skill in conducting queries and developing algorithms to analyze data structures. [S0166] • Ability to translate data and test results into evaluative conclusions. [A6170] • Skill in identifying hidden patterns or relationships. [S6570]
Data Extraction and Transformation	• Knowledge of how to collect, store, and monitor data. [K7029]
Information Management	• Knowledge of data administration and data standardization policies and standards. [K0028] • Knowledge of Personally Identifiable Information (PII) data security standards. [K1034A] • Knowledge of Personal Health Information (PHI) data security standards. [K1034C]
Testing and Validation	• Knowledge of organization's evaluation and validation requirements. [K0040] • Knowledge of best practices from industry and academia in test design activities for verification and validation of AI and machine learning systems. [K7006] • Knowledge of testing, evaluation, validation, and verification (T&E V&V) tools and procedures to ensure systems are working as intended. [K7044] • Skill in testing for bias in data sets and AI system outputs as well as determining historically or often under-represented and marginalized groups are properly represented in the training, testing, and validation data sets and AI system outputs. [S7076] • Ability to collect, verify, and validate test data. [A6060]

Capacity for Data Management & Analysis

Functional Summary - Data Analytics

Functional Area Definition

Responsible for collecting, cleaning, and preparing data for use in machine learning models. Employ statistical methods and predictive modeling to analyze trends, perform data visualization to communicate findings effectively to technical and non-technical audiences, and use analytical tools to support data-driven decision-making. Transform data into actionable intelligence and guiding the organization towards informed strategies and outcomes.

Federal Work Role Alignment

- Data Analyst (Primary)
- Data Scientist

Associated Tasks

- Provide a managed flow of relevant information (via web-based portals or other means) based on a mission requirements. [T0796]
- Analyze data sources to provide actionable recommendations. [T5030]
- Collect metrics and trending data. [T5100]
- Develop strategic insights from large data sets. [T5270]
- Present technical information to technical and non-technical audiences. [T5430]
- Provide actionable recommendations to critical stakeholders based on data analysis and findings. [T5570]
- Manipulate and clean large, disparate datasets for bulk analysis to identify connections. [T5899]
- Read, interpret, write, modify, and execute scripts, macros, and functions. [T6470A]

Associated Knowledge, Skills, and Abilities

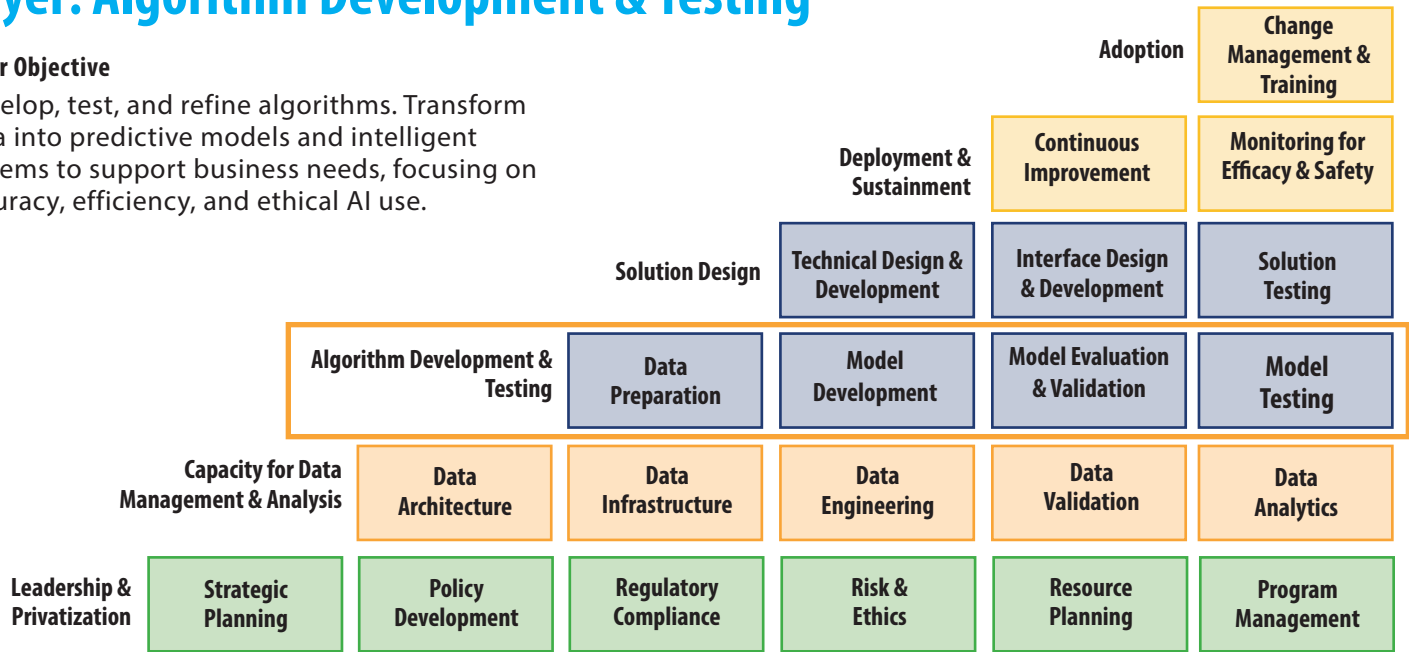| Competency	Description
Accountability	• Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036]
Communicating Results	• Ability to communicate complex information, concepts, or ideas in a confident and well-organized manner through verbal, written, and/or visual means. [A3022]
Data Analysis	• Knowledge of query languages such as SQL (structured query language). [K0104] • Knowledge of how to use data to tell a story. [K7032] • Skill in conducting queries and developing algorithms to analyze data structures. [S0166] • Skill in identifying hidden patterns or relationships. [S6570] • Skill in using data analysis tools (e.g., Excel, R, Pandas, STATA, SAS, SPSS). [S6720] • Ability to interpret and incorporate data from multiple tool sources. [A1120]
Data Extraction and Transformation	• Knowledge of data mining and data warehousing principles. [K0031] • Knowledge of how to collect, store, and monitor data. [K7029]
Data Visualization	• Knowledge of how to structure and display data. [K7031]
Mathematics and Statistics	• Skill in using basic descriptive statistics and techniques (e.g., normality, model distribution, scatter plots). [S6710]

AI Building Block Model

Layer: Algorithm Development & Testing

Layer Objective

Develop, test, and refine algorithms. Transform data into predictive models and intelligent systems to support business needs, focusing on accuracy, efficiency, and ethical AI use.

Adoption				**Change Management & Training**
Deployment & Sustainment		**Continuous Improvement**		**Monitoring for Efficacy & Safety**
Solution Design	**Technical Design & Development**	**Interface Design & Development**		**Solution Testing**
Algorithm Development & Testing	**Data Preparation**	**Model Development**	**Model Evaluation & Validation**	**Model Testing**
Capacity for Data Management & Analysis	**Data Architecture**	**Data Infrastructure**	**Data Engineering**	**Data Validation**	**Data Analytics**
Leadership & Privatization	**Strategic Planning**	**Policy Development**	**Regulatory Compliance**	**Risk & Ethics**	**Resource Planning**	**Program Management**

Building Blocks	Functional Area Definitions
Data Preparation	Enhance the quality and relevance of data fed into the models (e.g., clean raw data, reformat data to achieve standardization). Optimize data for effective model training and development, such as Feature Engineering and Data Splitting. Ensure effective leveraging of metadata to aid in efficient algorithm and solution development. Transform raw data into features that better represent the underlying problem to predictive models, enhancing model accuracy. Divide the dataset into training, validation, and test sets to evaluate the model's performance and avoid overfitting.
Model Development	Implement models to transform data inputs into appropriate model outputs. Select appropriate modeling techniques, choosing algorithms best suited to the data and the problem being solved. Build the model using selected features and algorithms, then train it with data to learn patterns. Fine-tuning model parameters for optimal performance and model outcomes/recommendations.
Model Evaluation & Validation	Determine and execute evaluation strategies to models. Evaluate the model's performance against real world scenarios. Perform error analysis to identify strengths and weaknesses of models. Interpret model evaluation results. Validate models for accuracy and performance. Collect model performance metrics to assess performance against defined specifications. Implement ethical principles for fair and trustworthy AI and social impact of models.
Model Testing	Design and execute test plans and test models to uncover unexpected behavior or errors in the model's performance. Facilitate the integration of models into the testing environment, ensuring they interact correctly with other system components. This involves conducting stress testing in an environment that closely replicates the production setting, as well as under various conditions, and monitoring model performance over time to detect drift or degradation. Recommends corrective actions, as necessary.

Example AI Positions

- Data Scientist
- Machine Learning (ML) Engineer

Those using this content must consider their own organization/project-specific objectives and priorities and refer to federal source material to determine an optimal selection of relevant KSATs and AI competencies.

Algorithm Development & Testing

Functional Summary - Data Preparation

Functional Area Definition

Enhance the quality and relevance of data fed into the models (e.g., clean raw data, reformat data to achieve standardization). Optimize data for effective model training and development, such as Feature Engineering and Data Splitting. Ensure effective leveraging of metadata to aid in efficient algorithm and solution development. Transform raw data into features that better represent the underlying problem to predictive models, enhancing model accuracy. Divide the dataset into training, validation, and test sets to evaluate the model's performance and avoid overfitting.

Federal Work Role Alignment

- Data Scientist (Primary)
- AI/ML Specialist
- Data Analyst
- Data Operations Specialist

Associated Tasks

- Analyze data sources to provide actionable recommendations. [T5030]
- Apply data acquisition, cleaning, transformation, and ingestion best practices for machine learning data conduits. [T5844]
- Assess and address the limitations of methods to deliver data. [T5846]
- Assist integrated project teams to identify, curate, and manage data. [T5850]
- Collaborate with appropriate personnel to address Personal Health Information (PHI), Personally Identifiable Information (PII), and other data privacy and data reusability concerns for AI solutions. [T5854]
- Comply with data classification and handling requirements through access control and security best practices. [T5857]
- Manipulate and clean large, disparate datasets for bulk analysis to identify connections. [T5899]
- Plan, coordinate, and execute complex studies using advanced data modeling techniques and procedures, data trend analysis, and data algorithms. [T5907]
- Write and document reproducible code. [T5927]
- Assist integrated project teams identify, curate, and manage test data. [T7002]

Associated Knowledge, Skills, and Abilities

Competency	Description
Accountability	• Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036]
Application Development	• Knowledge of coding and scripting in languages that support AI development and use. [K7009] • Skill in writing scripts using R, Python, PIG, HIVE, SQL, etc. [S6760]
Data Analysis	• Knowledge of how to use data to tell a story. [K7032] • Ability to interpret and incorporate data from multiple tool sources. [A1120]
Data Extraction and Transformation	• Knowledge of how to collect, store, and monitor data. [K7029] • Knowledge of Personal Health Information (PHI), Personally Identifiable Information (PII), and other data privacy and data reusability considerations for AI solutions. [K7040] • Skill in data pre-processing (e.g., imputation, dimensionality reduction, normalization, transformation, extraction, filtering, smoothing). [S6520] • Skill in performing format conversions to create a standard representation of the data. [S6610] • Skill in labeling data to make it more discoverable and understandable. [S7071]
Data Visualization	• Knowledge of how to structure and display data. [K7031]
Mathematics and Statistics	• Knowledge of mathematics, including logarithms, trigonometry, linear algebra, calculus, statistics, and operational analysis. [K0075A]
Planning and Evaluating	• Skill in identifying low-probability, high-impact risks in machine learning training data sets. [S7067]
Systems Design	• Knowledge of current AI and machine learning systems design and performance analysis models, algorithms, and tools. [K7011]
Testing and Validation	• Ability to collect, verify, and validate test data. [A6060]

Algorithm Development & Testing

Functional Summary - Model Development

Functional Area Definition

Implement models to transform data inputs into appropriate model outputs. Select appropriate modeling techniques, choosing algorithms best suited to the data and the problem being solved. Build the model using selected features and algorithms, then training it with data to learn patterns. Fine-tuning model parameters for optimal performance and model outcomes/recommendations.

Federal Work Role Alignment

- Data Scientist (Primary)
- AI/ML Specialist
- Data Analyst
- Data Operations Specialist

Associated Tasks

- Design, develop, and modify software systems, using scientific analysis and mathematical models to predict and measure outcome and consequences of design. [T0506]
- Conduct hypothesis testing using statistical processes. [T5120]
- Program custom algorithms. [T5550]
- Assess and address the limitations of methods to deliver machine learning models. [T5847]
- Build predictive, prescriptive, or descriptive models in collaboration with stakeholders. [T5853]
- Design and develop machine learning models to achieve organizational objectives. [T5871]
- Design, develop, and implement AI tools and techniques to achieve organizational objectives. [T5872]
- Plan and conduct complex analytical, mathematical, and statistical research that informs operational requirements. [T5906]
- Plan, coordinate, and execute complex studies using advanced data modeling techniques and procedures, data trend analysis, and data algorithms. [T5907]
- Research the latest machine learning and AI tools, techniques, and best practices. [T5915]
- Train and evaluate machine learning models. [T5924]

Associated Knowledge, Skills, and Abilities

Competency	Description
Application Development	• Knowledge of coding and scripting in languages that support AI development and use. [K7009] • Knowledge of how AI is developed and operated. [K7024] • Skill in writing scripts using R, Python, PIG, HIVE, SQL, etc. [S6760] • Skill in building and deploying machine learning models. [S7057] • Skill in using deep learning approaches to build machine learning models. [S7078] • Ability to build complex data structures and high-level programming languages. [A6050]
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311] • Knowledge of machine learning operations (MLOps) processes and best practices. [K7037]
Data Analysis	• Knowledge of industry-standard and organizationally accepted analysis principles and methods. [K0062] • Knowledge of how to use data to tell a story. [K7032] • Skill in conducting queries and developing algorithms to analyze data structures. [S0166] • Skill in developing or recommending analytic approaches or solutions to problems with incomplete information. [S3756] • Skill in identifying hidden patterns or relationships in data. [S6570] • Skill in Regression Analysis (e.g., Hierarchical Stepwise, Generalized Linear Model, Ordinary Least Squares, Tree-Based Methods, Logistic). [S6651] • Skill in using outlier identification and removal techniques. [S6750]
Communicating Results	• Skill in explaining AI concepts and terminology. [S7065]
Mathematics and Statistics	• Knowledge of statistical/machine learning algorithms. [K0021A] • Skill in creating and utilizing mathematical or statistical models. [S0172]
Modeling and Simulation	• Skill in assessing the predictive power and generalizability of a model. [S6490] • Skill in analyzing the output from machine learning models. [S7055] • Skill in creating machine learning models. [S7059]
Planning and Evaluating	• Skill in identifying low-probability, high-impact risks in machine learning training data sets. [S7067]
Supporting Diversity	• Knowledge of remedies against unintended bias in AI solutions. [K7041]
Technology Awareness	• Knowledge of the latest machine learning and AI tools, techniques, and best practices. [K7049] • Knowledge of the nature and function of technology platforms and tools used to create and employ AI. [K7050]

Algorithm Development & Testing

Functional Summary - Model Evaluation & Validation

Functional Area Definition

Determine and execute evaluation strategies to models. Evaluate the model's performance against real world scenarios. Perform error analysis to identify strengths and weaknesses of models. Interpret model evaluation results. Validate models for accuracy and performance. Collect model performance metrics to assess performance against defined specifications. Implement ethical principles for fair and trustworthy AI, and social impact of models.

Federal Work Role Alignment

- AI/ML Specialist (Primary)
- AI Test & Evaluation Specialist
- Data Scientist

Associated Tasks

- Perform AI architecture security reviews, identify gaps, and develop a risk management plan to address issues. [T0765B]
- Conduct hypothesis testing using statistical processes. [T5120]
- Assess and address the limitations of methods to deliver machine learning models. [T5847]
- Build assurance cases for AI systems that support the needs of different stakeholders (e.g., acquisition community, commanders, and operators). [T5851]
- Conduct AI risk assessments to ensure models and/or other solutions are performing as designed. [T5858]
- Determine methods and metrics for quantitative and qualitative measurement of AI risks, ensuring relevant metrics are applied. [T5873]
- Develop machine learning code testing and validation procedures. [T5876]
- Measure the effectiveness, security, robustness, and trustworthiness of AI tools. [T5901]
- Provide quality assurance of AI products throughout their lifecycle. [T5910]
- Select and use the appropriate models and prediction methods for evaluating AI performance. [T5916]
- Use models and other methods for evaluating AI performance. [T5926]

Associated Knowledge, Skills, and Abilities

Competency	Description
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311] • Knowledge of the possible impacts of machine learning blind spots and edge cases. [K7051]
Data Analysis	• Ability to translate data and test results into evaluative conclusions. [A6170]
Mathematics and Statistics	• Knowledge of mathematics, including logarithms, trigonometry, linear algebra, calculus, statistics, and operational analysis. [K0075A]
Modeling and Simulation	• Skill in assessing the predictive power and generalizability of a model. [S6490] • Skill in analyzing the output from machine learning models. [S7055]
Supporting Diversity	• Knowledge of remedies against unintended bias in AI solutions. [K7041]
Testing and Validation	• Knowledge of organization's evaluation and validation requirements. [K0040] • Knowledge of AI Test & Evaluation frameworks. [K7004] • Knowledge of best practices from industry and academia in test design activities for verification and validation of AI and machine learning systems. [K7006] • Knowledge of metrics to evaluate the effectiveness of machine learning models. [K7038] • Knowledge of testing, evaluation, validation, and verification (T&E V&V) tools and procedures to ensure systems are working as intended. [K7044] • Skill in preparing Test & Evaluation reports. [S6630] • Skill in testing and evaluating machine learning algorithms or AI solutions. [S7075] • Skill in testing for bias in data sets and AI system outputs as well as determining historically or often under-represented and marginalized groups are properly represented in the training, testing, and validation data sets and AI system outputs. [S7076] • Ability to collect, verify, and validate test data. [A6060]

Algorithm Development & Testing

Functional Summary - Model Testing

Functional Area Definition

Design and execute test plans and test models to uncover unexpected behavior or errors in the model's performance. Facilitate the integration of models into the testing environment, ensuring they interact correctly with other system components. This involves conducting stress testing in an environment that closely replicates the production setting, as well as under various conditions, and monitoring model performance over time to detect drift or degradation. Recommend corrective actions.

Federal Work Role Alignment

- AI Test & Evaluation Specialist (Primary)
- AI/ML Specialist

Associated Tasks

- Determine level of assurance of developed capabilities based on test results. [T0508]
- Develop test plans to address specifications and requirements. [T0550]
- Make recommendations based on test results. [T0694]
- Test, evaluate, and verify hardware and/or software to determine compliance with defined specifications and requirements. [T0858A]
- Record and manage test data. [T0858B]
- Conduct hypothesis testing using statistical processes. [T5120]
- Assess technical risks and limitations of planned tests on AI systems. [T5848]
- Create or customize existing Test and Evaluation Master Plans (TEMPs) for AI systems. [T5866]
- Develop machine learning code testing and validation procedures. [T5876]
- Measure the effectiveness, security, robustness, and trustworthiness of AI tools. [T5901]
- Report test and evaluation deficiencies and possible solutions to appropriate personnel. [T5914]
- Test AI tools against adversarial attacks in operationally realistic environments. [T5919]

Associated Knowledge, Skills, and Abilities

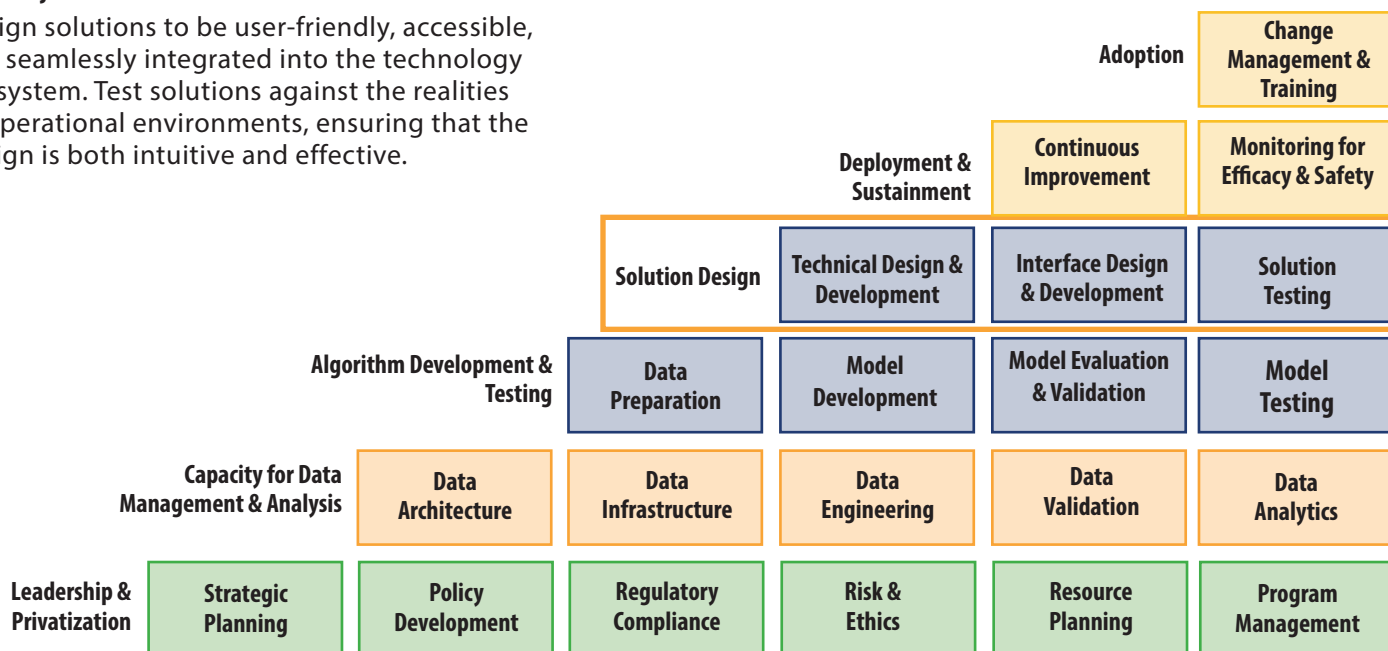| Competency	Description
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311]
Data Analysis	• Ability to translate data and test results into evaluative conclusions. [A6170]
Mathematics and Statistics	• Knowledge of mathematics, including logarithms, trigonometry, linear algebra, calculus, statistics, and operational analysis. [K0075A]
Modeling and Simulation	• Skill in assessing the predictive power and generalizability of a model. [S6490] • Skill in analyzing the output from machine learning models. [S7055]
Project Management	• Skill in providing Test & Evaluation resource estimate. [S6641]
Testing and Validation	• Knowledge of organization's evaluation and validation requirements. [K0040] • Knowledge of AI Test & Evaluation frameworks. [K7004] • Knowledge of best practices from industry and academia in test design activities for verification and validation of AI and machine learning systems. [K7006] • Knowledge of current test standards and safety standards that are applicable to AI (e.g., MIL-STD 882E, DO-178C, ISO26262). [K7012] • Knowledge of how to deploy test infrastructures with AI systems. [K7030] • Knowledge of metrics to evaluate the effectiveness of machine learning models. [K7038] • Knowledge of testing, evaluation, validation, and verification (T&E V&V) tools and procedures to ensure systems are working as intended. [K7044] • Skill in determining an appropriate level of test rigor for a given system. [S0182] • Skill in preparing Test & Evaluation reports. [S6630] • Skill in testing and evaluating machine learning algorithms or AI solutions. [S7075] • Ability to collect, verify, and validate test data. [A6060]

AI Building Block Model

Layer: Solution Design

Layer Objective

Design solutions to be user-friendly, accessible, and seamlessly integrated into the technology ecosystem. Test solutions against the realities of operational environments, ensuring that the design is both intuitive and effective.

Adoption					**Change Management & Training**
Deployment & Sustainment			**Continuous Improvement**		**Monitoring for Efficacy & Safety**
Solution Design	**Technical Design & Development**	**Interface Design & Development**		**Solution Testing**	
Algorithm Development & Testing	**Data Preparation**	**Model Development**	**Model Evaluation & Validation**		**Model Testing**
Capacity for Data Management & Analysis	**Data Architecture**	**Data Infrastructure**	**Data Engineering**	**Data Validation**	**Data Analytics**
Leadership & Privatization	**Strategic Planning**	**Policy Development**	**Regulatory Compliance**	**Risk & Ethics**	**Resource Planning**	**Program Management**

Building Blocks	Functional Area Definitions
Technical Design & Development	Design and develop AI solutions to functionally meet all business requirements and seamlessly integrate into the technology ecosystem. Ensure that the solution's technical architecture aligns with all business requirements. Facilitate collaboration among technical teams to validate performance of all AI solution/system elements prior to deployment.
Interface Design & Development	Design and develop AI solutions to be user-friendly and accessible for seamless integration into workflows. This involves creating efficient user experiences (UX) and designing intuitive user interfaces (UI) ensuring the solution aligns with all business requirements. Confirm the user community has the resources required to integrate solutions into continuing operations.
Solution Testing	Test AI solutions against the realities of operational environments, ensuring that the design is both intuitive and effective. Test for bias, solution functionality, performance security, and user acceptance prior to deployment.

Example AI Positions

- Software Engineer
- Test & Evaluation Specialist
- User Experience, User Interface (UX/UI) Designer

Those using this content must consider their own organization/project-specific objectives and priorities and refer to federal source material to determine an optimal selection of relevant KSATs and AI competencies.

Solution Design

Functional Summary - Technical Design & Development

Functional Area Definition

Design and develop AI solutions to functionally meet all business requirements and seamlessly integrate into the technology ecosystem. Ensure that the solution's technical architecture aligns with all business requirements. Facilitate collaboration among technical teams to validate performance of all AI solution/system elements prior to deployment.

Federal Work Role Alignment

- Software Developer (Primary)
- AI/ML Specialist
- Data Operations Specialist

Associated Tasks

- Analyze information to determine, recommend, and plan the development of a new application or modification of an existing application. [T0408]
- Analyze user needs and requirements to determine design feasibility. [T0414]
- Confer with systems analysts, engineers, programmers, and others to design application and to obtain information on project limitations and capabilities, performance requirements, and interfaces. [T0461]
- Design and develop software systems with predictive analysis and mathematical models. [T0506]
- Ensure that AI design and development activities are properly documented and updated. [T1000B]
- Apply data acquisition, cleaning, transformation, and ingestion best practices for machine learning data conduits. [T5844]
- Assist integrated project teams to identify, curate, and manage data. [T5850]
- Build automated data management conduits. [T5852]
- Consider energy implications (graphical processing unit, tensor processing unit, etc.) when designing AI solutions. [T5859]
- Design, develop, and implement AI tools and techniques to achieve organizational objectives. [T5872]
- Use knowledge of business processes to create or recommend AI solutions. [T5925]

Associated Knowledge, Skills, and Abilities

Competency	Description
Application Development	• Knowledge of how AI is developed and operated. [K7024] • Skill in building and deploying machine learning models. [S7057]
Artificial Intelligence/Machine Learning	• Knowledge of machine learning theory and principles. [K6311] • Knowledge of machine learning operations (MLOps) processes and best practices. [K7037]
Communicating Results	• Skill in managing user relationships, including determining user needs/requirements, managing user expectations, and demonstrating commitment to delivering quality results. [S3822A]
Data Extraction and Transformation	• Skill in identifying data acquisition, collection, and curation risks. [S7066]
Software Engineering	• Knowledge of programming language structures and logic. [K0102] • Knowledge of software engineering. [K0119] • Skill in applying secure coding techniques. [S0905A]
Strategic Thinking	• Knowledge of the organization's core business/mission processes. [K0942]
Supporting Diversity	• Knowledge of remedies against unintended bias in AI solutions. [K7041]
Systems Design	• Knowledge of software design tools, methods, and techniques. [K0117] • Knowledge of software development models, methodologies, and practices (Waterfall Model, Spiral, Agile, DevSecOps). [K0118A] • Knowledge of how AI solutions integrate with cloud or other IT infrastructure. [K7025] • Knowledge of planning for long-term maintainability using architectural structures, viewpoints, styles, design decisions and frameworks, and the underlying data structures. [K7097] • Ability to develop secure software according to secure software deployment methodologies, tools, and practices. [A1071A]

Functional Area Definition

Design and develop AI solutions to be user-friendly and accessible for seamless integration into workflows. This involves creating efficient user experiences (UX) and designing intuitive user interfaces (UI) ensuring the solution aligns with all business requirements. Confirming the user community has the resources required to integrate solutions into continuing operations.

Federal Work Role Alignment

- Product Designer User Interface (UI) (Primary)
- AI Adoption Specialist
- Service Designer User Experience (UX)
- Software Developer

Associated Tasks

- Analyze user needs and requirements to determine design feasibility. [T0414]
- Confer with stakeholders to design the application and understand limitations and capabilities. [T0461]
- Consult with customers and key stakeholders to evaluate functional requirements for AI and data applications. [T0466A]
- Research and evaluate available technologies and standards to meet customer requirements. [T0927A]
- Ensure that AI design and development activities are properly documented and updated. [T1000B]
- Develop and document User Experience (UX) requirements including information architecture and user interface requirements. [T1144]
- Use knowledge of business processes to create or recommend AI solutions. [T5925]
- Design and prototype user interfaces. [T5965]
- Create prototypes, wireframes, and storyboards based on customer requirements. [T5966]
- Lead integrated design team to achieve a finished product. [T5968]
- Work with users as a human factors liaison to determine user needs/requirements, manage user expectations, perform analysis, and demonstrate commitment to delivering quality results. [T5974]

Associated Knowledge, Skills, and Abilities

Competency	Description
Application Development	• Knowledge of how AI is developed and operated. [K7024] • Knowledge of end to end product development processes. [K7101]
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311] • Knowledge of machine learning operations (MLOps) processes and best practices. [K7037]
Communicating Results	• Skill in managing user relationships, including determining user needs/requirements, managing user expectations, and demonstrating commitment to delivering quality results. [S3822A]
Strategic Thinking	• Knowledge of the organization's core business/mission processes. [K0942]
Supporting Diversity	• Knowledge of remedies against unintended bias in AI solutions. [K7041]
Systems Design	• Knowledge of capabilities and requirements analysis. [K0016] • Knowledge of software design tools, methods, and techniques. [K0117] • Knowledge of software development models, methodologies, and practices (Waterfall Model, Spiral, Agile, DevSecOps). [K0118A] • Knowledge of technology integration processes. [K0132] • Knowledge of the user experience (e.g., decision making, user design, and human-computer interaction) as it relates to AI systems. [K7053] • Knowledge of developing user-centered conceptual and logical designs. [K7106] • Knowledge of user centered design principles. [K7108] • Skill in using industry-standard design and prototyping tools. [S7102] • Skill in operating UX tools and methods. [S7105] • Ability to develop secure software according to secure software deployment methodologies, tools, and practices. [A1071A]

Solution Design

Functional Summary - Solution Testing

Functional Area Definition

Test AI solutions against the realities of operational environments, ensuring that the design is both intuitive and effective. Test for bias, solution functionality, performance security, and user acceptance prior to deployment.

Federal Work Role Alignment

- Product Designer User Interface (UI) (Primary)
- AI Adoption Specialist
- Service Designer User Experience (UX)
- Software Developer

Associated Tasks

- Develop software system testing and validation procedures, programming, and documentation. [T0515A]
- Develop test plans to address specifications and requirements. [T0550]
- Make recommendations based on test results. [T0694]
- Test, evaluate, and verify hardware and/or software to determine compliance with defined specifications and requirements. [T0858A]
- Measure the effectiveness, security, robustness, and trustworthiness of AI tools. [T5901]
- Test components to ensure they work as intended in a variety of scenarios for all aspects of the AI application. [T5920]
- Test how users interact with AI solutions. [T5921]
- Conduct automated testing for acceptance testing, functional testing, integration testing, interoperability testing, load/stress testing, performance testing, regression testing, and unit testing. [T5933]
- Evaluate reliability, availability, and maintainability data. [T5936]
- Assess the system's effectiveness and suitability for meeting user need and based on test and evaluation results. [T5937]

Associated Knowledge, Skills, and Abilities

Competency	Description
Artificial Intelligence/ Machine Learning	• Skill in integrating AI Test & Evaluation frameworks into test strategies for specific projects. [S7070]
Communicating Results	• Skill in explaining AI concepts and terminology. [S7065]
Data Extraction and Transformation	• Ability to translate data and test results into evaluative conclusions. [A6070]
Modeling and Simulation	• Skill in assessing the predictive power and subsequent generalizability of a model. [S6490]
Partnering	• Skill in translating operation requirements for AI systems into testing requirements. [S7077]
Project Management	• Skill in providing Test & Evaluation resource estimate. [S6641]
Testing and Validation	• Knowledge of organization's evaluation and validation requirements. [K0040] • Knowledge of systems testing and evaluation methods. [K0130] • Knowledge of AI Test & Evaluation frameworks. [K7004] • Knowledge of best practices from industry and academia in test design activities for verification and validation of AI and machine learning systems. [K7006] • Knowledge of how to deploy test infrastructures with AI systems. [K7030] • Knowledge of metrics to evaluate the effectiveness of machine learning models. [K7038] • Skill in preparing Test & Evaluation reports. [S6630] • Ability to collect, verify, and validate test data. [A6060]

AI Building Block Model

Layer: Deployment & Sustainment

Layer Objective

Operationalize AI solutions and integrate into daily departmental functions, ensuring they perform as expected, adapt over time, and continuously adhere to trustworthy AI principles. Ensure solution performance is monitored within organizational workflows.

Adoption					**Change Management & Training**
Deployment & Sustainment				**Continuous Improvement**	**Monitoring for Efficacy & Safety**
Solution Design			**Technical Design & Development**	**Interface Design & Development**	**Solution Testing**
Algorithm Development & Testing		**Data Preparation**	**Model Development**	**Model Evaluation & Validation**	**Model Testing**
Capacity for Data Management & Analysis	**Data Architecture**	**Data Infrastructure**	**Data Engineering**	**Data Validation**	**Data Analytics**
Leadership & Privatization	**Strategic Planning**	**Policy Development**	**Regulatory Compliance**	**Risk & Ethics**	**Resource Planning**	**Program Management**

Building Blocks	Functional Area Definitions
Continuous Improvement	Collaborate with maintenance teams to assess whether sustainment issues could indicate the need for changes in algorithm designs. Address any issues that arise, optimizing the system for efficiency. Implement upgrades to enhance functionality and user experience over time, while upholding the principles of trustworthy AI.
Monitoring for Safety & Efficacy	Conduct continuing assessments to measure the extent to which AI solutions continue to deliver value, adapt to new requirements, and remain at the forefront of technological innovation. Provide ongoing monitoring of deployed AI solutions to assess the extent to which they sustain their performance and adhere to regulatory and ethical standards.

Example AI Positions

- Development Operations (DevOps) Engineer
- ML Operations Engineer

Deployment & Sustainment

Functional Summary - Continuous Improvement

Functional Area Definition

Collaborate with maintenance teams to assess whether sustainment issues could indicate the need for changes in algorithm designs. Address any issues that arise, optimizing the system for efficiency. Implement upgrades to enhance functionality and user experience over time, while upholding the principles of trustworthy AI.

Federal Work Role Alignment

- AI/ML Specialist (Primary)
- AI Adoption Specialist
- Systems Developer

Associated Tasks

- Correct errors by making appropriate changes and rechecking the program to ensure desired results are produced. [T0477]
- Provide guidelines for implementing developed systems to customers or installation teams. [T0803]
- Gather feedback on customer satisfaction and internal service performance to foster continual improvement. [T5380]
- Incorporates risk-driven systems maintenance updates process to address system deficiencies (periodically and out of cycle). [T5400]
- Assess and address the limitations of methods to deliver machine learning models. [T5847]
- Design and develop continuous integration/continuous delivery (CI/CD) in a containerized or other reproducible computing environment to support the machine learning life cycle. [T5870]
- Research the latest machine learning and AI tools, techniques, and best practices. [T5915]
- Support an AI adoption strategy that aligns with the organization's vision, mission, and goals. [T5918]
- Test how users interact with AI solutions. [T5921]
- Use models and other methods for evaluating AI performance. [T5926]

Associated Knowledge, Skills, and Abilities

Competency	Description
Application Development	• Knowledge of how AI is developed and operated. [K7024]
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311] • Knowledge of machine learning operations (MLOps) processes and best practices. [K7037] • Knowledge of the possible impacts of machine learning blind spots and edge cases. [K7051]
Communicating Results	• Skill in explaining AI concepts and terminology. [S7065]
Partnering	• Knowledge of how to leverage government research and development centers, think tanks, academic research, and industry systems. [K6290] • Ability to inspire and lead a culture of innovation. [A7001]
Project Management	• Skill in identifying risk over the lifespan of an AI solution. [S7069]
Supporting Diversity	• Knowledge of remedies against unintended bias in AI solutions. [K7041]
Systems Design	• Knowledge of current AI and machine learning systems design and performance analysis models, algorithms, and tools. [K7011] • Knowledge of the basics of customer experience, customer design, psychology of customer decision-making, and human-computer interaction. [K7047]
Technology Awareness	• Knowledge of emerging trends and future use cases of AI. [K7021] • Knowledge of the latest machine learning and AI tools, techniques, and best practices. [K7049] • Knowledge of the nature and function of technology platforms and tools used to create and employ AI. [K7050]
Testing and Validation	• Skill in conducting vulnerability scans and recognizing vulnerabilities in information systems and networks. [S0003B] • Skill in testing and evaluating machine learning algorithms or AI solutions. [S7075]

Deployment & Sustainment

Functional Summary - Monitoring for Efficacy & Safety

Functional Area Definition

Conduct continuing assessments to measure the extent to which AI solutions continue to deliver value, adapt to new requirements, and remain at the forefront of technological innovation. Provide ongoing monitoring of deployed AI solutions to assess the extent to which they sustain their performance and adhere to regulatory and ethical standards.

Federal Work Role Alignment

- AI Test & Evaluation Specialist (Primary)
- AI Risk & Ethics Specialist

Associated Tasks

- Determine level of assurance of developed capabilities based on test results. [T0508]
- Develop methods to monitor and measure risk and assurance efforts on a continuous basis. [T0537A]
- Perform AI architecture security reviews, identify gaps, and develop a risk management plan to address issues. [T0765B]
- Record and manage test data. [T0858B]
- Assess technical risks and limitations of planned tests on AI systems. [T5848]
- Communicate the results of AI risk assessments to relevant stakeholders. [T5856]
- Conduct AI risk assessments to ensure models and/or other solutions are performing as designed. [T5858]
- Create or customize existing Test and Evaluation Master Plans (TEMPs) for AI systems. [T5866]
- Determine methods and metrics for quantitative and qualitative measurement of AI risks so that sensitivity, specificity, likelihood, confidence levels, and other metrics are identified, documented, and applied. [T5873]
- Measure the effectiveness, security, robustness, and trustworthiness of AI tools. [T5901]
- Perform risk assessment on AI applications to identify technical, societal, organizational, and mission risks. [T5904]
- Provide quality assurance of AI products throughout their lifecycle. [T5910]
- Test the reliability, functionality, security, and compatibility of AI tools within systems. [T5922]
- Use models and other methods for evaluating AI performance. [T5926]

Associated Knowledge, Skills, and Abilities

Competency	Description
Accountability	• Knowledge of laws, regulations, and policies related to AI, data security/privacy, and use of publicly procured data for government. [K7036]
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311] • Knowledge of interactions and integration of DataOps, MLOps, and DevSecOps in AI. [K7034]
Communicating Results	• Skill in explaining AI concepts and terminology. [S7065]
Planning and Evaluating	• Knowledge of AI security risks, threats, and vulnerabilities and potential risk mitigation solutions. [K7003]
Project Management	• Skill in providing Test & Evaluation resource estimate. [S6641] • Skill in identifying risk over the lifespan of an AI solution. [S7069]
Supporting Diversity	• Knowledge of remedies against unintended bias in AI solutions. [K7041]
Systems Design	• Knowledge of the user experience (e.g., decision making, user design, and human-computer interaction) as it relates to AI systems. [K7053]
Technology Awareness	• Knowledge of emerging security issues, risks, and vulnerabilities. [K0952] • Knowledge of emerging trends and future use cases of AI. [K7021]
Testing and Validation	• Knowledge of AI Test & Evaluation frameworks. [K7004] • Knowledge of best practices from industry and academia in test design activities for verification and validation of AI and machine learning systems. [K7006] • Knowledge of how to deploy test infrastructures with AI systems. [K7030] • Knowledge of metrics to evaluate the effectiveness of machine learning models. [K7038] • Knowledge of testing, evaluation, validation, and verification (T&E V&V) tools and procedures to ensure systems are working as intended. [K7044] • Knowledge of tools for testing the robustness and resilience of AI products and solutions. [K7054] • Skill in determining an appropriate level of test rigor for a given system. [S0182] • Skill in testing and evaluating machine learning algorithms or AI solutions. [S7075] • Ability to collect, verify, and validate test data. [A6060]

AI Building Block Model
Layer: Adoption

Layer Objective

Ensure that deployed solutions are fully adopted by the target users and integrated into organizational culture and workflows. Enhance the impact of deployed solutions on organizational performance and outcomes through awareness and training.

Adoption					**Change Management & Training**
Deployment & Sustainment			**Continuous Improvement**		**Monitoring for Efficacy & Safety**
Solution Design		**Technical Design & Development**	**Interface Design & Development**		**Solution Testing**
Algorithm Development & Testing	**Data Preparation**	**Model Development**	**Model Evaluation & Validation**		**Model Testing**
Capacity for Data Management & Analysis	**Data Architecture**	**Data Infrastructure**	**Data Engineering**	**Data Validation**	**Data Analytics**
Leadership & Privatization	**Strategic Planning**	**Policy Development**	**Regulatory Compliance**	**Risk & Ethics**	**Resource Planning**	**Program Management**

Building Blocks	Functional Area Definitions
Change Management & Training	Ensure that deployed solutions are fully adopted by the target users and integrated into organizational culture and workflows. Help bridge the gap between technical and non-technical stakeholders through training, change management, and the establishment of policies and procedures for the ethical and responsible use of AI.

Example AI Positions

- AI Adoption & Change Management Specialist

Those using this content must consider their own organization/project-specific objectives and priorities and refer to federal source material to determine an optimal selection of relevant KSATs and AI competencies.

Adoption

Functional Summary - Change Management & Training

Functional Area Definition

Ensure that deployed solutions are fully adopted by the target users and integrated into organizational culture and workflows. Help bridge the gap between technical and non-technical stakeholders through training, change management, and the establishment of policies and procedures for the ethical and responsible use of AI.

Federal Work Role Alignment

- AI Adoption Specialist (Primary)
- AI Innovation Leader

Associated Tasks

- Acquire and manage the necessary resources, including leadership support, financial resources, infrastructure, and key personnel, to support AI innovation adoption goals and objectives. [T0391A]
- Design and integrate an AI adoption strategy that supports the organization's vision, mission, and goals. [T0492B]
- Develop new or identify existing awareness and training materials that are appropriate for intended audiences. [T0538]
- Present technical information to technical and non-technical audiences. [T5430]
- Coordinate with change management employees to plan, foster, and track change. [T5861]
- Engage and collaborate with allies and partners to advance shared strategic AI objectives. [T5880]
- Identify ways to lead and motivate people to adopt AI solutions through cultural, organizational, or other types of change. [T5892]
- Promote awareness of AI limitations and benefits. [T5909]
- Support an AI adoption strategy that aligns with the organization's vision, mission, and goals. [T5918]

Associated Knowledge, Skills, and Abilities

Competency	Description
Artificial Intelligence/ Machine Learning	• Knowledge of machine learning theory and principles. [K6311]
Conflict Management	• Knowledge of best practices in organizational conflict management. [K7007]
Influencing/Negotiating	• Ability to identify, connect, and influence key stakeholders to speed AI adoption. [A7000]
Partnering	• Knowledge of customer mission priorities and capabilities, as related to the integration and adoption of AI solutions. [K7013]
Planning and Evaluating	• Knowledge of organization objectives, leadership priorities, and decision-making risks. [K3591] • Knowledge of resources and capabilities required to complete AI projects. [K7042] • Knowledge of the benefits and limitations of AI capabilities. [K7048]
Project Management	• Knowledge of change models and frameworks. [K7008] • Skill in leading AI adoption efforts. [S7072]
Strategic Thinking	• Knowledge of the organization's core business/mission processes. [K0942]
Teaching Others	• Knowledge of principles and processes for conducting training and education needs assessment. [K6380] • Ability to prepare and deliver education and awareness briefings to ensure that systems, network, and data users are aware of and adhere to systems security policies and procedures. [A0918]
Technology Awareness	• Knowledge of emerging trends and future use cases of AI. [K7021]

Appendix B

This section is dedicated to Position Profiles and includes a list of AI Example Positions, Position Profile Overview, and the Position Profile. The Position Profiles are located pages 66-71, and are developed to show users how to combine the detailed Building Block information provided in the associated Functional Summaries to define their own position requirements. Position Profiles show users how to combine the detailed Building Block information provided in the associated Functional Summaries to define their own position requirements.

Page	AI Position Profile
66	Adoption & Change Management Specialist
67	AI Risk & Ethics Compliance Officer
68	AI Technical Advisor
69	Data Infrastructure Engineer
70	Data Scientist
71	Machine Learning (ML) Engineer

Those using this content must consider their own organization/project-specific objectives and priorities and refer to federal source material to determine an optimal selection of relevant KSATs and AI competencies.

AI Building Block Model
AI Example Positions

AI Model Layers provide users with functional groupings of the Building Blocks. Each Layer is defined by an objective, which each Building Block is aligned to. Layer objectives allow users to target broad functional areas to support their organizational goals.

Adoption					**Change Management & Training**
Deployment & Sustainment				**Continuous Improvement**	**Monitoring for Efficacy & Safety**
Solution Design		**Technical Design & Development**	**Interface Design & Development**	**Solution Testing**	
Algorithm Development & Testing	**Data Preparation**	**Model Development**	**Model Evaluation & Validation**	**Model Testing**	
Capacity for Data Management & Analysis	**Data Architecture**	**Data Infrastructure**	**Data Engineering**	**Data Validation**	**Data Analytics**
Leadership & Prioritization	**Strategic Planning**	**Policy Development**	**Regulatory Compliance**	**Risk & Ethics**	**Resource Planning**	**Program Management**

Layer	AI Example Position
Leadership & Prioritization	• AI Ethics & Compliance Officer* • AI Technical Advisor* • Chief AI Officer • Chief Data Officer • Privacy Officer • Program, Project, Product Manager
Capacity for Data Management & Analysis	• Data Analyst • Data Architect • Data Engineer • Data Infrastructure Engineer*
Algorithm Development & Testing	• Data Scientist* • Machine Learning (ML) Engineer*
Solution Design	• Software Engineer • Test & Evaluation Specialist • User Experience, User Interface (UX/UI) Designer
Deployment & Sustainment	• Development Operations (DevOps) Engineer • ML Operations Engineer
Adoption	• AI Adoption & Change Management Specialist*

* Indicates a sample position profile was developed and is included in this section.

AI Building Block Model

Position Profiles

AI Building Blocks are aligned to the Position Profiles that most actively draw from those functional areas. These Building Blocks are listed as Core Functional Areas in each Position Profile.

Adoption			Change Management & Training	
Deployment & Sustainment			Continuous Improvement	Monitoring for Efficacy & Safety
Solution Design		Technical Design & Development	Interface Design & Development	Solution Testing
Algorithm Development & Testing	Data Preparation	Model Development	Model Evaluation & Validation	Model Testing
Capacity for Data Management & Analysis	Data Architecture	Data Infrastructure	Data Engineering	Data Validation	Data Analytics
Leadership & Prioritization	Strategic Planning	Policy Development	Regulatory Compliance	Risk & Ethics	Resource Planning	Program Management

The **Applicable AI Competencies** are KSAs presented in the Functional Summaries are derived from Federal Workforce Framework work roles. The KSAs in the Position Profiles are summarized using the OPM-defined AI competencies.

Position Profiles are aligned to the **Federal Workforce Framework work roles,** which provide a common lexicon and consistency for identifying relevant KSATs.
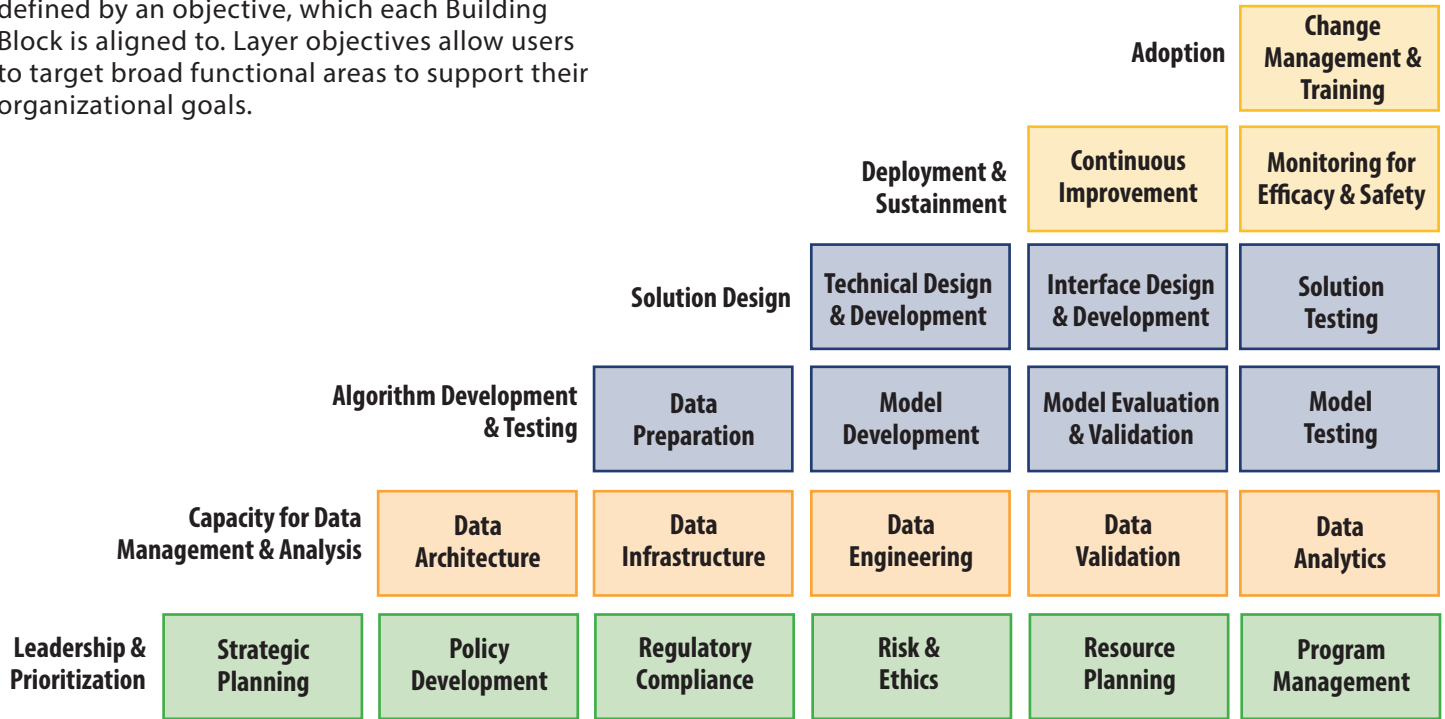
Those using this content must consider their own organization/project-specific objectives and priorities and refer to federal source material to determine an optimal selection of relevant KSATs and AI competencies.

MACHINE LEARNING (ML) ENGINEER
Position Profile

Applicable AI Competencies

- Accountability
- Application Development
- AI/ML
- Communicating Results
- Data Analysis
- Data Extraction and Transformation
- Data Visualization
- Mathematics and Statistics
- Modeling and Simulation
- Planning and Evaluating
- Project Management
- Supporting Diversity
- Systems Design
- Technology Awareness
- Testing and Validation

Federal Work Role Alignment

- **AI/ML Specialist** - designs, develops, and modifies AI applications, tools, and/or other solutions to enable successful accomplishment of mission objectives (primary work role).
- **AI Test & Evaluation Specialist** - performs testing, evaluation, verification, and validation on AI solutions to ensure they are developed to be and remain robust, resilient, responsible, secure, and trustworthy; and communicates results and concerns to leadership.
- **Data Scientist** - uncovers and explains actionable insights from data by combining scientific method, math and statistics, specialized programming, advanced analytics, AI, and storytelling.
- **Data Analyst** - analyzes and interprets data from multiple disparate sources and builds visualizations and dashboards to report insights.

Position Profile Overview

The **Machine Learning (ML) Engineer** is responsible for the development of complex algorithms to support advanced AI solutions that are strategically aligned with the business objectives of the agency and its components.

The primary purpose of this position is to develop complex algorithms that contribute to the development of AI solutions in advancement of the agency's mission and objectives. This includes predictive model development, model validation, model evaluation, and model testing.

The incumbent is recognized as a seasoned expert in AI/ML technologies and AI testing and evaluation, tasked with supporting the development of AI solutions to resolve complex challenges integral to VA's digital transformation.

Core Functional Area(s)

Core Functional Area and Definition
Data Preparation. Ensure effective leveraging of metadata to aid in efficient algorithm and solution development.
Model Development. Implement models to transform data inputs into appropriate model outputs.
Model Evaluation & Validation. Determine and execute evaluation strategies for models and validate model accuracy.
Model Testing. Design and execute test plans to test models and uncover unexpected behavior or errors in the model's performance.
Data Analytics. Employ statistical methods and predictive modeling to analyze trends, perform data visualization to communicate findings.

VA - AI Workforce Blueprint | 71

The **Position Profile Overview** provides a high-level overview of the functions, purpose, and competencies associated with the position.

The **Core Functional Area(s)** are derived from the individual Building Blocks supporting the Position Profile. These definitions are abbreviated versions of those provided in the Functional Summaries.

Explore 6 sample Position Profiles

- Adoption & Change Management Specialist
- AI Risk & Ethics Compliance Officer
- AI Technical Advisor
- Data Infrastructure Engineer
- Data Scientist
- Machine Learning (ML) Engineer

Position Profiles

AI Competency Quick Reference List

The AI Competency Quick Reference List provides a comprehensive listing of all the currently identified AI competencies. Each position profile in this document indicates the respective AI Competency. Refer to this quick reference for more information on the competencies for each position profile. For the full list of competency definitions, use the The AI in Government Act of 2020 - Artificial Intelligence Competencies memorandum from OPM.

AI Competency	Definition
Accountability	Holds self and others accountable for measurable high-quality, timely, equitable and cost-effective results. Determines objectives, sets priorities, and does and delegates work. Accepts responsibility for mistakes. Complies with established control systems and rules.
Application Development	Uses programming languages to script and automate tasks; applies programming languages and skills across multiple platforms or frameworks.
AI/ML	Knowledge of the principles, methods, and tools used to design systems that perform and apply human-like intelligence functions such as neural networks, deep learning, natural language processing, robotics, and image recognition.
Communicating Skills	Translates technical concepts, data findings, uncertainty, and/or limitations (including potential bias) from data sets into concise, plain language and supporting diagrams and media.
Conflict Management	Encourages creative tension and differences of opinions. Anticipates and takes steps to prevent counter-productive confrontations. Manages and resolves conflicts and disagreements in a constructive manner. Escalates conflicts and disagreements when appropriate and constructive in order to get to resolution.
Data Analysis	Manipulates and exploits internal and external, structured, and unstructured data sources to accomplish organizational goals.
Data Extraction and Transformation	Retrieves and ingests disparate types of data from a variety of unstructured and structured sources, and then organizes, cleans, and transforms data sets for easy access, analysis, and optimization.
Data Visualization	Utilizes tools, techniques, and software to generate reports or visualizations that convey data analyses, findings, and limitations.
Influencing/Negotiating	Persuades others; builds consensus through give and take; gains cooperation from others to obtain information and accomplish goals.
Information Management	Identifies a need for and knows where or how to gather information; organizes and maintains information or information management systems.
Mathematics and Statistics	Utilizes an understanding of mathematical and statistical techniques and/or software tools to apply appropriate statistical or mathematical methodology to datasets in order derive meaning, determine significance, or to produce metrics.
Modeling and Simulation	Applies tools, techniques, and procedures to develop functional, physical, or prototype models and simulations for training, testing and evaluation, to predict behavior and phenomena, to evaluate design alternatives, to support operational preparation, and to visually communicate concepts and/or validate requirements.
Partnering	Develops networks and builds alliances; collaborates across boundaries to build strategic relationships and achieve common goals.
Planning and Evaluating	Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization to accomplish goals; monitors progress and evaluates outcomes. Sets reasonable expectations with leadership and stakeholders on project delivery.
Project Management	Knowledge of the principles, methods, or tools for developing, scheduling, coordinating, and managing projects and resources, including monitoring, and inspecting costs, work, and contractor performance.
Strategic Thinking	Formulates objectives and priorities and implements plans consistent with the long-term interests of the organization in a global environment. Capitalizes on opportunities and mitigates risks.
Supporting Diversity	Maintains an open mind regarding different ideas, opinions, values, and beliefs; recognizes own world-view and understands its influence on interactions with others; incorporates a variety of viewpoints to help accomplish work goals; contributes to an inclusive work environment with equitable treatment of individuals across all demographics (e.g., race, gender) and social (e.g., culture) groups.
Systems Design	Designs and evaluates software and hardware and develops enterprise and solution architectures that meet user needs and requirements (e.g., security and privacy) and optimize performance, using applicable principles, methods, and tools.
Teaching Others	Helps others learn through formal or informal methods; identifies training needs; provides constructive feedback; coaches others on how to perform tasks; acts as a mentor.
Technology Awareness	Knowledge of developments and new applications of information technology (hardware, software, telecommunications), emerging technologies and their applications to business processes, how emerging technologies can impact people's rights and safety, and applications and implementation of information systems to meet organizational requirements.
Testing and Validation	Works closely with AI system design, engineering, implementation, and system stakeholders to develop appropriate methods for testing and validation to ensure that systems comport with goals and values, and potential sources of bias are uncovered, considered, and mitigated.

ADOPTION & CHANGE MANAGEMENT SPECIALIST

Position Profile

Applicable AI Competencies

- Accountability
- Application Development
- AI/ML
- Communicating Results
- Conflict Management
- Influencing/Negotiating
- Partnering
- Planning and Evaluating
- Project Management
- Strategic Thinking
- Supporting Diversity
- Systems Design
- Teaching Others
- Technology Awareness
- Testing and Validation

Federal Work Role Alignment

- **AI Adoption Specialist** – facilitates AI adoption by supporting the users of AI-enabled solutions (primary work role).
- **AI Innovation Leader** - builds the organization's AI vision and plan. Leads the policy and doctrine formation including how AI solutions can or will be used.
- **AI/ML Specialist** - designs, develops, and modifies AI applications, tools, and/or other solutions to enable successful accomplishment of mission objectives.

Position Profile Overview

The **Adoption & Change Management Specialist** is responsible for the enterprise integration of advanced AI solutions that are strategically aligned with the business objectives of VA and its components.

The primary purpose of this position is to lead and strategically manage the adoption of advanced AI initiatives. The position also leverages change management methodologies to support user adoption. It leads development of communications and training initiatives to enhance awareness and ability throughout VA. The incumbent is recognized as a seasoned expert in AI technologies and change management strategies, and is tasked with strategically leading the adoption of AI solutions to resolve complex challenges integral to the digital transformation of VA.

Core Functional Area(s)

Core Functional Area and Definition
Change Management and Training. Ensure that deployed solutions are fully adopted by the target users and integrated into organizational culture and workflows.
Continuous Improvement. Collaborate with maintenance teams to assess whether sustainment issues could indicate the need for changes in algorithm designs.
Strategic Planning. Lead strategic planning and visioning for AI solutions, ensuring they align with strategic objectives and technological standards.
Policy Development. Create guidelines and frameworks that govern the creation, deployment, and use of AI solutions.

AI Risk & Ethics Compliance Officer

Applicable AI Competencies

- Accountability
- Application Development
- AI/ML
- Communicating Results
- Decisiveness
- Influencing/Negotiating
- Planning and Evaluating
- Project Management
- Strategic Thinking
- Supporting Diversity
- Technology Awareness

Federal Work Role Alignment

- **AI Risk & Ethics Specialist** - educates those involved in the development of AI and conducts assessments on the technical and societal risks across the lifecycle of AI solutions from acquisition or design to deployment and use.
- **Cyber Legal Advisor** - provides legal advice and recommendations on relevant topics related to cyber law.

Position Profile Overview

The **Artificial Intelligence (AI) Risk & Ethics Compliance Officer** is responsible for ensuring the ethical and responsible development, deployment, and use of AI solutions.

The primary purpose of this position is to define the organization's core ethical principles and ensure compliance with regulatory requirements.

The incumbent is recognized as a seasoned expert in AI/ML technologies, ethical principles, and regulatory requirements, tasked with safeguarding AI solutions from ethical and legal considerations.

Core Functional Area(s)

Core Functional Area and Definition
Regulatory Compliance. Ensure the development and use of AI solutions adheres to all established guidelines, rules, and legal requirements set forth by governing bodies.
Risk & Ethics. Continuously evaluate risks associated with bias and discrimination, privacy violations, safety concerns, and potential threats.

AI Technical Advisor

Applicable AI Competencies

- Accountability
- Application Development
- AI/ML
- Communicating Results
- Conflict Management
- Data Analysis
- Data Extraction and Transformation
- Influencing/Negotiating
- Mathematics and Statistics
- Modeling and Simulations
- Partnering
- Planning and Evaluating
- Project Management
- Software Engineering
- Strategic Thinking
- Supporting Diversity
- Systems Design
- Technology Awareness

Federal Work Role Alignment

- **AI Innovation Leader** - builds the organization's AI vision and plan and leads policy and doctrine formation including how AI solutions can or will be used.
- **AI/ML Specialist** - designs, develops, and modifies AI applications, tools, and/or other solutions to enable successful accomplishment of mission objectives.
- **Data Operations Specialist** - builds, manages, and operationalizes data pipelines.
- **Software Developer** - executes software planning, requirements, risk management, design, development, architecture, modeling, estimation, configuration management, quality, security, and tests using software development methodologies, architectural structures, viewpoints, styles, design decisions, and frameworks across all lifecycle phases.

Position Profile Overview

The **Artificial Intelligence (AI) Technical Advisor** leverages in-depth knowledge of ML, data science, and software development to advise senior leadership and stakeholders on the development, integration, and prioritization of AI solutions.

The primary purpose of this position is to advise on how AI solutions can be used to improve efficiency, productivity, or decision-making.

The incumbent is recognized as a seasoned expert in AI/ML technologies tasked with bridging the gap between technical expertise, real world application, and alignment to strategic goals.

Core Functional Area(s)

Core Functional Area and Definition
Strategic Planning. Lead strategic planning and visioning for AI solutions, ensuring they align with strategic objectives and technological standards.
Data Engineering. Design, construct, and maintain data pipelines that efficiently transport and transform data for analysis and decision-making.
Model Development. Implement models to transform data inputs into appropriate model outputs.
Technical Design and Development. Design and develop AI solutions to functionally meet all business requirements and seamlessly integrate into the technology ecosystem.
Interface Design and Development. Design and develop AI solutions to be user-friendly and accessible for seamless integration into workflows.

Data Infrastructure Engineer

Applicable AI Competencies

- Accountability
- Communicating Results
- Data Analysis
- Data Extraction and Transformation
- Information Management
- Mathematics and Statistics
- Systems Design

Federal Work Role Alignment

- **Data Architect** - designs a system's data models, data flow, interfaces, and infrastructure to meet the information requirements of a business or mission.
- **Data Operations Specialist** - builds, manages, and operationalizes data pipelines.

Position Profile Overview

The **Data Infrastructure Engineer** is responsible for designing, developing, and managing the scalable and secure data pipelines that power AI solutions.

The primary purpose of this position is to ensure a seamless flow of data for training, testing, and deployment of AI solutions. This includes working closely with Data Scientists, ML Engineers, and stakeholders to maintain the efficacy of data pipelines.

The incumbent is recognized as a seasoned expert in data infrastructure, tasked with developing and implementing data pipelines for efficient data ingestion, transformation, and loading for AI model development and training.

Core Functional Area(s)

Core Functional Area and Definition
Data Architecture. Design a system's data models, data flow, interfaces, and infrastructure as the blueprint for how data are stored, accessed, and managed.
Data Infrastructure. Design, develop, and maintain databases and data lakes, managing cloud or on-premise data storage solutions, warehouses, and serving systems.
Data Engineering. Design, construct, and maintain data pipelines that efficiently transport and transform data for analysis and decision-making.

Data Scientist

Applicable AI Competencies

- Accountability
- Application Development
- AI/ML
- Communicating Results
- Data Analysis
- Data Extraction and Transformation
- Data Visualization
- Information Management
- Mathematics and Statistics
- Modeling and Simulation
- Planning and Evaluating
- Supporting Diversity
- Systems Design
- Technology Awareness
- Testing and Validation

Federal Work Role Alignment

- **Data Scientist** - uncovers and explains actionable insights from data by combining scientific method, math and statistics, specialized programming, advanced analytics, AI, and storytelling.
- **Data Steward** - develops and maintains plans, policies, and processes for data management, data governance, security, quality, accessibility, use, and disposal.
- **Data Analyst** - analyzes and interprets data from multiple disparate sources and builds visualizations and dashboards to report insights.
- **AI/ML Specialist** - designs, develops, and modifies AI applications, tools, and/or other solutions to enable successful accomplishment of mission objectives.

Position Profile Overview

The **Data Scientist** is responsible for leveraging data sources to create complex algorithms that support AI solutions.

The primary purpose of this position is to design, develop, and implement ML models using various techniques (e.g., deep learning, natural language processing, computer vision). This includes working closely with engineers, product managers, and stakeholders to support the development of AI solutions.

The incumbent is recognized as a seasoned expert in data science, tasked with leveraging large datasets to optimize ML models to ensure accuracy, efficiency, and scalability.

Core Functional Area(s)

Core Functional Area and Definition
Data Preparation. Ensure effective leveraging of metadata to aid in efficient algorithm and solution development.
Model Development. Implement models to transform data inputs into appropriate model outputs.
Data Validation. Validate the accuracy, completeness, and reliability of data before analysis.
Data Analytics. Employ statistical methods and predictive modeling to analyze trends, perform data visualization to communicate findings.

Machine Learning (ML) Engineer

Applicable AI Competencies

- Accountability
- Application Development
- AI/ML
- Communicating Results
- Data Analysis
- Data Extraction and Transformation
- Data Visualization
- Mathematics and Statistics
- Modeling and Simulation
- Planning and Evaluating
- Project Management
- Supporting Diversity
- Systems Design
- Technology Awareness
- Testing and Validation

Federal Work Role Alignment

- **AI/ML Specialist** - designs, develops, and modifies AI applications, tools, and/or other solutions to enable successful accomplishment of mission objectives (primary work role).
- **AI Test & Evaluation Specialist** - performs testing, evaluation, verification, and validation on AI solutions to ensure they are developed to be and remain robust, resilient, responsible, secure, and trustworthy; and communicates results and concerns to leadership.
- **Data Scientist** - uncovers and explains actionable insights from data by combining scientific method, math and statistics, specialized programming, advanced analytics, AI, and storytelling.
- **Data Analyst** - analyzes and interprets data from multiple disparate sources and builds visualizations and dashboards to report insights.

Position Profile Overview

The **Machine Learning (ML) Engineer** is responsible for the development of complex algorithms to support advanced AI solutions that are strategically aligned with the business objectives of the agency and its components.

The primary purpose of this position is to develop complex algorithms that contribute to the development of AI solutions in advancement of the agency's mission and objectives. This includes predictive model development, model validation, model evaluation, and model testing.

The incumbent is recognized as a seasoned expert in AI/ML technologies and AI testing and evaluation, tasked with supporting the development of AI solutions to resolve complex challenges integral to VA's digital transformation.

Core Functional Area(s)

Core Functional Area and Definition
Data Preparation. Ensure effective leveraging of metadata to aid in efficient algorithm and solution development.
Model Development. Implement models to transform data inputs into appropriate model outputs.
Model Evaluation & Validation. Determine and execute evaluation strategies for models and validate model accuracy.
Model Testing. Design and execute test plans to test models and uncover unexpected behavior or errors in the model's performance.
Data Analytics. Employ statistical methods and predictive modeling to analyze trends, perform data visualization to communicate findings.

Appendix C

Abbreviations

AAAI.................... Advancement of Artificial Intelligence
AI .... Artificial Intelligence
AES...................... All Employee Survey
AMIA.................. American Medical Informatics Association
AMRG................. Appointment Above
Minimum Rate of Grade
API...................... Application Programming Interfaces
ATP...................... Agency Talent Pool
ATS...................... Applicant Tracking System
AWS.................... Alternate Work Schedule
CCOE.................. Compensation Center of Excellence
CFO..................... Chief Financial Officer
CI/CD.................. Continuous Integration/Continuous Delivery
COP..................... Community of Practice
CSI...................... Critical Skills Incentive
DCWF................. DoD Cyber Workforce Framework
DeveOps........... Development Operations
DHA.................... Direct-Hire Authority
DoD.................... Department of Defense
EDRP.................. Education Debt Reduction Program
EO....................... Executive Order
EOD..................... Entrance on Duty
ETL...................... Extract, Transform, Load
FY........................ Fiscal Year
GRB..................... Government Retirement & Benefits
GSA..................... General Services Administration
HFMA................. Healthcare Financial
Management Association
HIMSS................ Healthcare Information
and Management Systems Society
HR........................ Human Resources
ICML................... International Conference
on Machine Learning
IEEE..................... Computational Intelligence Society
ILEAD.................. Institute for Learning,
Education and Development
IPA....................... Intergovernmental Personnel Act
IT.......................... Information Technology
JDBC................... Java Database Connectivity
JOA...................... Job Opportunities Announcement
KSAT.................... Knowledge, Skills, Abilities, and Tasks
MIT...................... Massachusetts Institute of Technology
ML....................... Machine Learning
NAII.................... National Artificial Intelligence Institute
OCA.................... Open Continuous Announcement
OCHCO.............. Office of the Chief Human Capital Officer

OIT - Office of Information Technology
OIT CDP............ Office of Information
Technology Career Development Portal
OLA..................... Operating Level Agreement
OPM.................... Office of Personnel Management
PCS...................... Permanent Change of Station
PD........................ Position Description
PHI....................... Personal Health Information
PII........................ Personal Identifiable Information
RPA...................... Robotic Process Automation
SIVA.................... Stay in VA
SLRP.................... Student Loan Repayment Program
SOP..................... Standard Operating Procedures
SQL...................... Structured Query Language
SSR...................... Special Salary Rate
T&E...................... Testing & Evaluation
T2F...................... Time-to-Fill
T2H...................... Time-to-Hire
TAP...................... (Military) Transition Assistance Program
TEMPs................ Test & Evaluation Master Plan
TMS..................... Talent Management System
UI......................... User Interface
UX........................ User Experience
VA........................ Department of Veterans Affairs
VAMC.................. VA Medical Center
VHA..................... Veterans Health Administration
WOC................... Without Compensation

Resources

- Department of Defense. (2017). DOD Cyber Workforce Framework - Search KSATs. DoD Cyber Exchange. https://public.cyber.mil/wid/dcwf/.
- Riordan, A., Speildel, R., Cox, K., Irazabal, L., Nelson, J., & Beckstrom, H. (2022, January). Artificial Intelligence Governance Toolkit. IT Modernization Centers of Excellence. https://coe.gsa.gov/docs/AICoP-AIGovernanceToolkit.pdf.
- U.S. Office of Personnel Management [OPM]. (n.d.). The AI in Government Act of 2020 – Artificial Intelligence Competencies. Retrieved from https://www.chcoc.gov/content/ai-government-act-2020-%E2%80%93-artificial-intelligence-competencies.