

Information Technology Competency Model

GS-2210 Information Technology Management

U.S. Department of the Interior

Office of Human Capital

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Information Technology Management Competency Model

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Information Technology Management Competency Model Study Summary

The DOI Office of Human Capital (OHC) conducted a comprehensive study to identify the critical competencies and tasks for successful performance of information technology (IT) management (GS-2210) work across the Department. OHC worked with IT subject matter experts from across the Department in order to create a thorough and accurate representation of the work performed by DOI IT employees and the knowledge, skills, and abilities required to perform that work.

The study involved a variation of the U.S. Office of Personnel Management's Multipurpose Occupational Systems Analysis Inventory – Closed-Ended (MOSAIC) method for gathering and analyzing information about work. The MOSAIC approach has been utilized to study and describe work performed within the Federal Government for over 25 years. The study included a wide-ranging literature review to build lists of tasks and competencies used to describe IT work across the Department. Next, focus groups with DOI IT subject matter experts were held to ensure these lists were complete and accurately represented the job. Trained job analysts also linked competencies to each task to confirm they were indeed required to perform the work. DOI IT employees rated the tasks and competencies to demonstrate the importance and utility of each component of the study. Finally, IT subject matter experts reviewed the results of the study to ensure its accuracy.

The results of this study establish a common set of IT tasks and competencies across the Department, which can be used to create assessment and selection techniques and tools and establish common practices and terminology for recruitment, performance management, workforce planning, training, and employee development. This work provides DOI with current, validated information that can be used to ensure its IT workforce has the tools to meet future challenges.

Please reference the Competency Model Interpretive Guidance for assistance in interpreting and applying the results of this study.

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Table 1: General Competencies by Grade¹

The following general competencies are valid for assessment and selection, performance management, and other related human capital functions across the GS-2210 IT Management occupational series at the grade levels listed below.

GS-5	GS-7	GS-9	GS-11
<ul style="list-style-type: none"> • <i>Attention to Detail</i> • <i>Customer Service</i> • <i>Integrity/Honesty</i> • <i>Interpersonal Skills</i> • <i>Learning</i> • <i>Teamwork</i> 	<ul style="list-style-type: none"> • Attention to Detail • Customer Service • Integrity/Honesty • Interpersonal Skills • Learning • Teamwork 	<ul style="list-style-type: none"> • <i>Accountability</i> • Attention to Detail • Customer Service • Integrity/Honesty • Interpersonal Skills • Learning • <i>Problem Solving</i> • <i>Resilience</i> • Teamwork • <i>Technical Competence²</i> 	<ul style="list-style-type: none"> • Accountability • Attention to Detail • <i>Client Engagement/Change Management</i> • <i>Creative Thinking</i> • Customer Service • <i>Decision Making</i> • <i>Influencing/Negotiating</i> • <i>Information Management</i> • Integrity/Honesty • Interpersonal Skills • Learning • <i>Oral Communication</i> • <i>Organizational Awareness</i> • Problem Solving • <i>Reasoning</i> • Resilience • Teamwork • <i>Teaching Others</i> • Technical Competence • <i>Writing</i>

¹ Italics represent the lowest grade at which the competency appears.

² Technical competencies needed for specialized positions, as appropriate. Technical competencies are listed and defined in Appendix A.

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GS-12	GS-13	GS-14	GS-15
<ul style="list-style-type: none"> • Accountability • Attention to Detail • Client Engagement/Change Management • Creative Thinking • Customer Service • Decision Making • Influencing/Negotiating • Information Management • Integrity/Honesty • Interpersonal Skills • Learning • <i>Legal, Government, and Jurisprudence</i> • Oral Communication • Organizational Awareness • <i>Partnering</i> • Problem Solving • <i>Project Management</i> • Reasoning • Resilience • <i>Strategic Thinking</i> • Teamwork • Teaching Others • Technical Competence • Writing 	<ul style="list-style-type: none"> • Accountability • Attention to Detail • Client Engagement/Change Management • Creative Thinking • Customer Service • Decision Making • Influencing/Negotiating • Information Management • Integrity/Honesty • Interpersonal Skills • Learning • Legal, Government, and Jurisprudence • Oral Communication • Organizational Awareness • Partnering • Problem Solving • Project Management • Reasoning • Resilience • Strategic Thinking • Teamwork • Teaching Others • Technical Competence • Writing 	<ul style="list-style-type: none"> • Accountability • Attention to Detail • Client Engagement/Change Management • Creative Thinking • Customer Service • Decision Making • Influencing/Negotiating • Information Management • Integrity/Honesty • Interpersonal Skills • Learning • Legal, Government, and Jurisprudence • Oral Communication • Organizational Awareness • Partnering • Problem Solving • Project Management • Reasoning • Resilience • Strategic Thinking • Teamwork • Teaching Others • Technical Competence • Writing 	<ul style="list-style-type: none"> • Accountability • Attention to Detail • Client Engagement/Change Management • Creative Thinking • Customer Service • Decision Making • Influencing/Negotiating • Information Management • Integrity/Honesty • Interpersonal Skills • Learning • Legal, Government, and Jurisprudence • Oral Communication • Organizational Awareness • Partnering • Problem Solving • Project Management • Reasoning • Resilience • Strategic Thinking • Teamwork • Teaching Others • Technical Competence • Writing

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Table 2: Required Proficiency Levels by Grade Level

Proficiency Level Scale Definitions		
Proficiency Level	General Competencies	Technical Competencies
5 = Expert	<ul style="list-style-type: none"> • Applies the competency in exceptionally difficult situations • Serves as a key resource and advises others 	<ul style="list-style-type: none"> • Applies the competency in exceptionally difficult situations • Serves as a key resource and advises others • Demonstrates comprehensive expert understanding of concepts and processes
4 = Advanced	<ul style="list-style-type: none"> • Applies the competency in considerably difficult situations • Generally requires little or no guidance 	<ul style="list-style-type: none"> • Applies the competency in considerably difficult situations • Generally requires little or no guidance • Demonstrates understanding of concepts and processes
3 = Intermediate	<ul style="list-style-type: none"> • Applies the competency in difficult situations • Requires occasional guidance 	<ul style="list-style-type: none"> • Applies the competency in difficult situations • Requires occasional guidance • Demonstrates understanding of concepts and processes
2 = Basic	<ul style="list-style-type: none"> • Applies the competency in somewhat difficult situations • Requires frequent guidance 	<ul style="list-style-type: none"> • Applies the competency in somewhat difficult situations • Requires frequent guidance • Demonstrates familiarity with concepts and processes
1 = Awareness	<ul style="list-style-type: none"> • Applies the competency in simplest situations • Requires close and extensive guidance 	<ul style="list-style-type: none"> • Applies the competency in simplest situations • Requires close and extensive guidance • Demonstrates awareness of concepts and processes

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Table 2: Required Proficiency Levels of General Competencies³								
	GS-5	GS-7	GS-9	GS-11	GS-12	GS-13	GS-14	GS-15
Accountability	2	2	3	3	4	4	5	5
Attention to Detail	3	3	3	4	4	5	5	5
Client Engagement/Change Management	1	1	2	3	4	4	5	5
Creative Thinking	2	2	2	3	3	4	4	4
Customer Service	3	4	4	4	5	5	5	5
Decision Making	1	2	2	3	4	4	5	5
Influencing/Negotiating	1	1	2	3	4	4	5	5
Information Management	1	2	2	3	3	4	4	4
Integrity/Honesty	5	5	5	5	5	5	5	5
Interpersonal Skills	3	4	4	4	5	5	5	5
Learning	3	3	4	4	5	5	5	5
Legal, Government and Jurisprudence	1	1	2	2	3	3	4	5
Oral Communication	2	2	2	3	4	4	5	5
Organizational Awareness	1	2	2	3	3	4	5	5
Partnering	1	1	2	2	3	3	4	5
Problem Solving	2	2	3	3	4	4	5	5
Project Management	1	1	2	2	3	4	5	5
Reasoning	1	2	2	3	3	4	4	5
Resilience	2	2	3	3	4	4	5	5
Strategic Thinking	1	1	2	2	3	4	5	5
Teaching Others	1	1	2	3	3	4	4	5
Teamwork	3	3	4	4	4	5	5	5
Technical Competence ⁴	2	2	3	4	5	5	5	3
Writing	2	2	2	3	4	5	5	5

³ Bolded competencies are validated for use for assessment and selection purposes.

⁴ Use proficiency levels for technical competence for technical competencies.

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Table 3: Behavioral Examples for Competencies

Competency Name	Definitions
Accountability	<p>Holds self and others accountable for measurable high-quality, timely, and cost-effective results. Determines objectives, sets priorities, and delegates work. Accepts responsibility for mistakes. Complies with established control systems and rules.</p> <ul style="list-style-type: none"> • <i>Takes responsibility for results and work products</i> • <i>Ensures work is completed on time and at the level of quality required</i> • <i>Understands the rules and regulations of the work performed and ensures compliance with them</i> • <i>Demonstrates responsibility with important materials, critical processes, or confidential information</i>
Attention to Detail	<p>Is thorough when performing work and conscientious about attention to detail. Recalls information that has been presented previously.</p> <ul style="list-style-type: none"> • <i>Sets the standards for the quality of the work completed for the organization</i> • <i>Leads others in attending to detail in difficult and/or high-pressure circumstances</i> • <i>Reviews and edits work completed by others to ensure that the quality of work meets acceptable work standards</i> • <i>Independently completes thorough and accurate work</i>
Client Engagement/Change Management	<p>Knowledge of the impact of change on people, processes, procedures, leadership, and organizational culture; knowledge of change management principles, strategies, and techniques required for effectively planning, implementing, and evaluating change in the organization.</p> <ul style="list-style-type: none"> • <i>Proposes new approaches, methods, and technologies.</i> • <i>Uses state-of-the-art resources and employs technology to assist self and organization in work activities.</i> • <i>Assesses the readiness for change of people and organizations prior to implementing any change activities</i> • <i>Recognizes and plans for challenges associated with undertaking business process redesign and change management efforts</i> • <i>Considers overall structures, patterns and cycles in the organization/systems, and uses assessment, analysis and evaluation methodologies to define metrics and standards of performance</i> • <i>Assesses mission achievements, change implementation, behavioral change, evidence of learning, and employee reactions/responses</i> • <i>Is flexible and open to new ideas and encourages others to value change.</i> • <i>Seeks out ways to employ technology to achieve mission and improve organizational and individual performance.</i>
Creative Thinking	<p>Uses imagination to develop new insights into situations and applies innovative solutions to problems; designs new methods where established methods and procedures are inapplicable or are unavailable.</p> <ul style="list-style-type: none"> • <i>Creates a work environment that encourages creative thinking and innovation</i> • <i>Explores new ideas, methodologies, and alternatives to reach outcomes</i> • <i>Introduces new concepts or strategies that significantly improve or revise the way work is performed</i> • <i>Suggests or proposes alternative ways to view or define problems; is not constrained by conventional thinking and established approaches</i> • <i>Combines ideas in unique ways or makes connections between disparate ideas</i>

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Customer Service	<p>Works with clients and customers (that is, any individuals who use or receive the services or products that your work unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) to assess their needs, provide information or assistance, resolve their problems, or satisfy their expectations; knows about available products and services; is committed to providing quality products and services.</p> <ul style="list-style-type: none"> • <i>Commits to serving the public and understands their advisory role</i> • <i>Utilizes outreach, needs assessment, evaluation, and other marketing skills to identify and anticipate customer needs and provide exemplary customer service</i> • <i>Understands diverse customer groups, their perspectives, issues and needs</i> • <i>Works to ensure customers' needs are met, even when those needs are outside of the typical role of the position</i> • <i>Identifies and develops metrics to assess customer service satisfaction</i> • <i>Continuously improves products and services</i> • <i>Works and plans strategically, using a systems perspective to anticipate developing customer issues and needs and to provide timely solutions that focus on long-term benefits</i>
Decision Making	<p>Makes sound, well-informed, and objective decisions; perceives the impact and implications of decisions; commits to action, even in uncertain situations, to accomplish organizational goals; causes change.</p> <ul style="list-style-type: none"> • <i>Decides on the best course of action, even in situations with competing stakeholders or when results of decisions are not immediately clear</i> • <i>Weighs the pros and cons of potential decisions before choosing which actions to take</i> • <i>Commits to determining the best alternatives and evaluating their impact on work products</i> • <i>Uses sound methodology in reaching conclusions</i>
Influencing/Negotiating	<p>Persuades others to accept recommendations, cooperate, or change their behavior; works with others towards an agreement; negotiates to find mutually acceptable solutions.</p> <ul style="list-style-type: none"> • <i>Persuades and influences parties to cooperate and accept recommendations</i> • <i>Explains and clarifies perspectives of an issue and its impact on all parties</i> • <i>Negotiates to achieve consensus through changed opinion, attitude or behavior</i> • <i>Demonstrates logic, communicates and persuades others to see benefits of recommendations within and across groups</i> • <i>Understands all sides of an issue and its impact on all parties involved</i> • <i>Negotiates with individuals or groups, including those that are resistant, to consider cooperating in order to achieve an acceptable solution</i>
Information Management	<p>Identifies a need for and knows where or how to gather information; organizes and maintains information or information management systems.</p> <ul style="list-style-type: none"> • <i>Demonstrates an understanding of where and how data or other information are maintained</i> • <i>Shows familiarity with the information management systems of the organization</i> • <i>Effectively searches for and finds appropriate information to address the needs of a project</i> • <i>Uses discretion when handling sensitive content</i>

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Integrity/Honesty	<p>Contributes to maintaining the integrity of the organization; displays high standards of ethical conduct and understands the impact of violating these standards on an organization, self, and others; is trustworthy.</p> <ul style="list-style-type: none"> • <i>Takes pride in exhibiting personal and organizational integrity and honesty</i> • <i>Acts in a just, fair, and ethical manner and encourages ethical behavior among others, even when risky to do so</i> • <i>Inspires trust and confidence among stakeholders through reliability, authenticity, and accountability</i>
Interpersonal Skills	<p>Treats others with courtesy, sensitivity, and respect. Considers and responds appropriately to the needs and feelings of different people in different situations.</p> <ul style="list-style-type: none"> • <i>Shows respect for the values and ideas of others, even when not agreeing with them</i> • <i>Empathizes with the concerns of others</i> • <i>Demonstrates tact and courtesy when interacting with associates</i> • <i>Is proactive in defusing arguments among peers</i> • <i>Seeks feedback from others to avoid blind-spots that can cause misunderstandings</i> • <i>Explores issues with the team; shares information; solicits ideas' uses participative decision-making processes</i>
Learning	<p>Uses efficient learning techniques to acquire and apply new knowledge and skills; uses training, feedback, or other opportunities for self-learning and development.</p> <ul style="list-style-type: none"> • <i>Is proactive in seeking out new knowledge</i> • <i>Devotes time to building new skillsets or further developing existing skillsets</i> • <i>Understands instructions or assignments without much need for additional explanation or clarification</i> • <i>Is open to constructive feedback on performance</i> • <i>Rarely makes the same mistake more than once</i> • <i>Effectively applies new knowledge or skills in applied environments</i>
Legal, Government, and Jurisprudence	<p>Knowledge of the laws, legal codes, court procedures, precedents, legal practices and documents, government regulations, executive orders, agency rules, government organization and functions, and the democratic political process.</p> <ul style="list-style-type: none"> • <i>Shows familiarity with the structure and terminology of various rules and regulations of the Federal Government</i> • <i>Demonstrates the ability to search for and find appropriate rules or regulations</i> • <i>Understands how to apply appropriate rules and regulations to guide direction of work or make decisions</i>

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Oral Communication	<p>Expresses information (for example, ideas or facts) to individuals or groups effectively, taking into account the audience and nature of the information (for example, technical, sensitive, controversial); makes clear and convincing oral presentations; listens to others, attends to nonverbal cues, and responds appropriately.</p> <ul style="list-style-type: none"> • <i>Speaks honestly, effectively and with integrity</i> • <i>Makes convincing, articulate, and accurate oral presentations using non-verbal and vocal qualities that support the verbal spoken message</i> • <i>Effectively uses various communication channels, including meetings, presentations and briefings</i> • <i>Actively considers, plans for, and reacts appropriately to the audience and the contextual environment in order to minimize barriers to understanding</i> • <i>Explains complex information clearly and accurately, and seeks feedback to determine that understanding has occurred</i> • <i>Acts as an effective facilitator in group or team settings</i>
Organizational Awareness	<p>Knows the organization's mission and functions, and how its social, political, and technological systems work and operates effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization.</p> <ul style="list-style-type: none"> • <i>Demonstrates awareness of the mission, functions, and various levels of the organization</i> • <i>Understands how decisions or actions of one organizational component may affect other components</i> • <i>Leverages knowledge of organizational components, programs, and directions to improve products, actions, or decisions</i> • <i>Shows familiarity with the rules and regulations of the organization</i>
Partnering	<p>Develops networks and builds alliances; collaborates across boundaries to build strategic relationships and achieve common goals.</p> <ul style="list-style-type: none"> • <i>Demonstrates an understanding of interrelationships, roles, and responsibilities within the organization</i> • <i>Develops and maintains professional relationships</i> • <i>Is aware of organizational and programmatic goals and seeks avenues to mutually enhance goal achievement</i> • <i>Identifies opportunities for collaboration across organization units</i>
Problem Solving	<p>Identifies problems; determines accuracy and relevance of information; uses sound judgment to generate and evaluate alternatives, and to make recommendations.</p> <ul style="list-style-type: none"> • <i>Examines problems and solutions with a long-term perspective</i> • <i>Effectively leads others in the effort of developing, identifying, and formulating problem solving strategies consistent with organizational goals</i> • <i>Uses logic to develop and implement innovative tools and techniques to resolve complex problems and issues</i> • <i>Uses logic to resolve complex, unique, or unusual problems</i> • <i>Consistently anticipates challenges that are not obvious to others</i> • <i>Determines the relevance of information in reaching effective conclusions</i> • <i>Formulates recommendations for the best course of action to address problems</i>
Project Management	<p>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.</p>

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	<ul style="list-style-type: none"> • <i>Schedules and keeps track of major project milestones and persons responsible</i> • <i>Communicates with various stakeholders to ensure that projects stay on time and on budget</i> • <i>Identifies and plans for external and internal barriers to project delivery</i> • <i>Delegates work to team members as necessary and ensures completion of work</i>
Reasoning	<p>Identifies rules, principles, or relationships that explain facts, data, or other information; analyzes information and makes correct inferences or draws accurate conclusions.</p> <ul style="list-style-type: none"> • <i>Determines the relevance of information in reaching effective conclusions</i> • <i>Uses logic to determine relationships among information in order to reach conclusions</i> • <i>Makes appropriate inferences from data, rules, or other information</i>
Resilience	<p>Deals effectively with pressure; remains optimistic and persistent, even under adversity. Recovers quickly from setbacks.</p> <ul style="list-style-type: none"> • <i>Achieves desired results in face of adversity</i> • <i>Overcomes barriers to accomplish goals</i> • <i>Stays positive in spite of setback</i> • <i>Works successfully in high pressure environments</i>
Strategic Thinking	<p>Formulates effective strategies consistent with the business and competitive strategy of the organization in a global economy; examines policy issues and strategic planning with a long-term perspective; determines objectives and sets priorities; anticipates potential threats or opportunities.</p> <ul style="list-style-type: none"> • <i>Is aware of organizational and programmatic goals and seeks creative avenues to enhance goal achievement</i> • <i>Considers overall structures, patterns, and cycles in the organization/systems, and uses assessment, analysis, and evaluation methodologies to define metrics and standards of performance.</i> • <i>Incorporates new processes and procedures into annual plans.</i> • <i>Identifies potential opportunities and barriers facing the organization's objectives and priorities</i> • <i>Provides advice and guidance to resolve, implement or manage program or policy issues that involve areas of uncertainty in approach or methodology.</i> • <i>Streamlines operations for maximum efficiency, automation and effectiveness where appropriate.</i> • <i>Incorporates information from a variety of sources in the planning process (e.g., internal information, benchmarking information, stakeholder input)</i> • <i>Incorporates an awareness of current and future management directives, required functional and technical expertise, resource requirements, and targeted stakeholders into annual plans</i> • <i>Utilizes processes, tools, and/or formal mechanisms to effectively monitor and manage results</i>
Teaching Others	<p>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.</p> <ul style="list-style-type: none"> • <i>Provides instruction and feedback to others</i> • <i>Acts as a mentor to others</i> • <i>Determines areas for improvement and training for others</i> • <i>Tutors others in the performance of tasks</i>

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Teamwork	Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals. <ul style="list-style-type: none">• <i>Volunteers to assist associates with projects</i>• <i>Commits to working toward team or group goals</i>• <i>Displays team pride and empowers team pride among other group members</i>• <i>Works effectively in group settings in order to achieve team objectives</i>
Writing	Recognizes or uses correct English grammar, punctuation, and spelling; communicates information (for example, facts, ideas, or messages) in a succinct and organized manner; produces written information, which may include technical material that is appropriate for the intended audience. <ul style="list-style-type: none">• <i>Composes clear, concise, and logical documents or correspondence involving complex technical information</i>• <i>Consistently and effectively tailors written products to a wide range of audiences and for diverse purposes in order to achieve a desired outcome</i>• <i>Proofreads and edits the writing of others</i>• <i>Effectively explains complex technical material to a non-technical audience</i>• <i>Uses correct grammar, punctuation, and spelling</i>• <i>Writes in an organized fashion that is easy to understand</i>

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Table 4: General Competencies by Assessment Tool

Competency	Structured Resume Review	Structured Interview	Biodata	Cognitive Ability Test
Accountability	Low	High	High	Low
Attention to Detail	Medium	Medium	Low	High
Client Engagement/ Change Management	Medium	High	Medium	Medium
Creative Thinking	Low	High	Medium	Medium
Customer Service	Low	High	Low	Low
Decision Making	Low	High	Medium	Medium
Influencing/ Negotiating	Medium	High	Low	Low
Information Management	Medium	Medium	Medium	Medium
Integrity/Honesty	Low	High	Medium	Low
Interpersonal Skills	Low	High	Low	Low
Learning	Low	Medium	Medium	High
Legal, Government and Jurisprudence	Medium	High	Low	Low
Oral Communication	Medium	High	Medium	Low

Competency	Job Knowledge Test	Personality Inventory	Situational Judgment Test	Work Sample
Accountability	Low	Medium	Medium	Low
Attention to Detail	Low	Low	Low	High
Client Engagement/ Change Management	Medium	Low	Medium	High
Creative Thinking	Low	Medium	Low	High
Customer Service	Low	Low	High	High
Decision Making	Low	Low	High	High

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Influencing/ Negotiating	Low	Medium	Medium	Medium
Information Management	Medium	Low	Medium	High
Integrity/Honesty	Low	Medium	High	Low
Interpersonal Skills	Low	Medium	Medium	Medium
Learning	Low	Low	Low	Medium
Legal, Government and Jurisprudence	High	Low	Medium	Medium
Oral Communication	Low	Low	Low	High

Competency	Occupational Questionnaire	Structured Interview	Biodata	Cognitive Ability Test
Organizational Awareness	Low	High	Low	Low
Partnering	Low	High	Medium	Low
Problem Solving	Low	High	Medium	High
Project Management	Medium	High	Medium	Low
Reasoning	Low	Low	Low	High
Resilience	Low	High	Medium	Low
Strategic Thinking	Low	High	Medium	Low
Teaching Others	Low	High	Medium	Low
Teamwork	Low	High	Medium	Low
Technical Competence	High	High	Low	Low
Writing	Low	Low	Medium	Low

Competency	Job Knowledge Test	Personality Inventory	Situational Judgment Test	Work Sample
Organizational Awareness	Medium	Low	Low	Low
Partnering	Low	Medium	High	Medium
Problem Solving	Low	Low	Medium	High
Project Management	Low	Low	High	High
Reasoning	Low	Low	High	Medium
Resilience	Low	Medium	Low	Low

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Strategic Thinking	Low	Low	Medium	Medium
Teaching Others	Low	Medium	Medium	High
Teamwork	Low	Medium	Medium	Medium
Technical Competence	High	Low	Medium	High
Writing	Low	Low	Low	High

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Appendix A

IT Management General Competencies

Accountability	Holds self and others accountable for measurable high-quality, timely, and cost-effective results. Determines objectives, sets priorities, and delegates work. Accepts responsibility for mistakes. Complies with established control systems and rules.
Attention to Detail	Is thorough when performing work and conscientious about attention to detail.
Client Engagement/Change Management	Knowledge of the impact of change on people, processes, procedures, leadership, and organizational culture; knowledge of change management principles, strategies, and techniques required for effectively planning, implementing, and evaluating change in the organization.
Creative Thinking	Uses imagination to develop new insights into situations and applies innovative solutions to problems; designs new methods where established methods and procedures are inapplicable or are unavailable.
Customer Service	Works with clients and customers (that is, any individuals who use or receive the services or products that your work unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) to assess their needs, provide information or assistance, resolve their problems, or satisfy their expectations; knows about available products and services; is committed to providing quality products and services.
Decision Making	Makes sound, well-informed, and objective decisions; perceives the impact and implications of decisions; commits to action, even in uncertain situations, to accomplish organizational goals; causes change.
Influencing/Negotiating	Persuades others to accept recommendations, cooperate, or change their behavior; works with others towards an agreement; negotiates to find mutually acceptable solutions.
Information Management	Identifies a need for and knows where or how to gather information; organizes and maintains information or information management systems.
Integrity/Honesty	Contributes to maintaining the integrity of the organization; displays high standards of ethical conduct and understands the impact of violating these standards on an organization, self, and others; is trustworthy.
Interpersonal Skills	Treats others with courtesy, sensitivity, and respect. Considers and responds appropriately to the needs and feelings of different people in different situations.

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Learning	Uses efficient learning techniques to acquire and apply new knowledge and skills; uses training, feedback, or other opportunities for self-learning and development.
Legal, Government and Jurisprudence	Knowledge of the laws, legal codes, court procedures, precedents, legal practices and documents, government regulations, executive orders, agency rules, government organization and functions, and the democratic political process.
Oral Communication	Expresses information (for example, ideas or facts) to individuals or groups effectively, taking into account the audience and nature of the information (for example, technical, sensitive, controversial); makes clear and convincing oral presentations; listens to others, attends to nonverbal cues, and responds appropriately.
Organizational Awareness	Knows the organization's mission and functions, and how its social, political, and technological systems work and operates effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization.
Partnering	Develops networks and builds alliances; collaborates across boundaries to build strategic relationships and achieve common goals.
Problem Solving	Identifies problems; determines accuracy and relevance of information; uses sound judgment to generate and evaluate alternatives, and to make recommendations.
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.
Reasoning	Identifies rules, principles, or relationships that explain facts, data, or other information; analyzes information and makes correct inferences or draws accurate conclusions.
Resilience	Deals effectively with pressure; remains optimistic and persistent, even under adversity. Recovers quickly from setbacks.
Strategic Thinking	Formulates effective strategies consistent with the business and competitive strategy of the organization in a global economy; examines policy issues and strategic planning with a long-term perspective; determines objectives and sets priorities; anticipates potential threats or opportunities.
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.
Teamwork	Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals.

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Technical Competence	Uses knowledge that is acquired through formal training or extensive on-the-job experience to perform one's job; works with, understands, and evaluates technical information related to the job; advises others on technical issues.
Writing	Recognizes or uses correct English grammar, punctuation, and spelling; communicates information (for example, facts, ideas, or messages) in a succinct and organized manner; produces written information, which may include technical material that is appropriate for the intended audience.

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IT Management Technical Competencies

Accessibility	Knowledge of tools, equipment, and technologies used to help individuals with disabilities use computer equipment and software.
Application Development	Knowledge of application design and development methodologies, paradigms, and tools; the application life cycle, user interface, reusability, and reliability metrics.
Capacity Management	Knowledge of the principles and methods for monitoring, estimating, or reporting actual performance or the performance capability of information systems or components.
Cloud Technology	Knowledge of the principles and concepts of Cloud technologies, tools, and system environments, including computing components (hardware, software and infrastructure) that support the delivery of Cloud computing services (for example, Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as Service (IaaS), or other cloud-enabled services).
Computer Languages	Knowledge of computer languages and their applications to enable a system to perform specific functions.
Computer Network Defense	Knowledge of defensive measures to detect, respond, and protect information, information systems, and networks from threats.
Configuration Management	Knowledge of the principles and methods for planning or managing the implementation, update, troubleshooting, or integration of information systems components.
Data Management	Knowledge of the principles, procedures, and tools of data management, such as modeling techniques, data backup, data recovery, data dictionaries, data warehousing, data mining, data integrity, data disposal, and data standardization processes.
Database Administration	Knowledge of the principles, methods, and tools for automating, developing, implementing, or administering database systems.
Database Management Systems	Knowledge of the uses of database management systems and software to control the

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	organization, storage, retrieval, security, and integrity of data.
Distributed Systems	Knowledge of the principles, theoretical concepts, and tools underlying distributed computing systems, including their associated components and communication standards.
Encryption	Knowledge of procedures, tools, and applications used to keep data or information secure, including public key infrastructure, point-to-point encryption, and smart cards.
Enterprise Architecture	Knowledge of principles, concepts, and methods of enterprise architecture to align information technology (IT) strategy, plans, and systems with the mission, goals, structure, and processes of the organization.
Hardware Engineering	Knowledge of the principles, methods, and tools for designing, developing, and testing computer, mobile technology, or related equipment.
Identity Management	Knowledge of methods and controls to validate the identity of individuals to verify access approval and level, and monitor activity to ensure that only authorized access is taking place.
Incident Management	Knowledge of the tactics, technologies, principles, and processes to protect, analyze, prioritize, and handle incidents.
Information Assurance	Knowledge of methods and procedures to protect information systems and data by ensuring their availability, authentication, confidentiality, and integrity.
Information Technology Architecture	Knowledge of architectural methodologies used in the design and development of information systems, including the physical structure of a system's internal operations and interactions with other systems.
Information Technology Performance Assessment	Knowledge of the principles, methods, and tools (for example, surveys, system performance measures) to assess the effectiveness and practicality of IT systems.

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Infrastructure Design	Knowledge of the architecture and topology of software, hardware, and networks, including LANS, WANS, VOIP, and telecommunications systems, their components and associated protocols and standards, and how they operate and integrate with one another and with associated controlling software.
Network Management	Knowledge of the operation, management, and maintenance of network and telecommunication systems and linked systems and peripherals.
Operating Systems	Knowledge of computer network, desktop, and mainframe operating systems and their applications.
Operations Support	Knowledge of procedures to ensure production or delivery of products and services, including tools and mechanisms for distributing new or enhanced software.
Process Control	Knowledge of the principles, methods, and procedures used for the automated control of a process, including the design, development, and maintenance of associated software, hardware, and systems.
Quality Assurance	Knowledge of the principles, methods, and tools of quality assurance and quality control used to ensure a product fulfills functional requirements and standards.
Requirements Analysis	Knowledge of the principles and methods to identify, analyze, specify, design, and manage functional and infrastructure requirements; includes translating functional requirements into technical requirements used for logical design or presenting alternative technologies or approaches.
Risk Management	Knowledge of the principles, methods, and tools used for risk assessment and mitigation, including assessment of failures and their consequences.
Software Engineering	Knowledge of software engineering design and development methodologies, paradigms, and tools; the software life cycle, user interface, reusability, and reliability metrics.
Systems Integration	Knowledge of the principles, methods, and procedures for installing, integrating, and optimizing information systems components.

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Systems Life Cycle	Knowledge of systems life cycle management concepts used to plan, develop, implement, operate, and maintain information systems.
Systems Testing and Evaluation	Knowledge of the principles, methods, and tools for analyzing and developing systems test and evaluation procedures and technical characteristics of IT systems, including identifying critical operational issues.
Technical Documentation	Knowledge of procedures for developing technical and operational support documentation.
Vulnerabilities Assessment	Knowledge of the principles, methods, and tools for assessing vulnerabilities, and developing or recommending appropriate mitigation countermeasures.
Web Technology	Knowledge of the principles and methods of web technologies, tools, and delivery systems, including web security, privacy policy practices, and user interface issues.

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Appendix B

IT Management Study Tasks by Functional Area

IT Management

1	Drafts or reviews requests for proposals, requests for quotations, or other related contracting documents.
2	Manages delivery of services through external vendors.
3	Develops cost estimates for new or modified systems.
4	Responds to requests, resolves complaints, or directs individuals to the proper person or information.
5	Provides technical advice or assistance to others.
6	Identifies, defines, or diagnoses problems and proposes potential solutions.
7	Develops information tracking procedures.
8	Monitors, maintains, or updates data, records, or other information.
9	Analyzes or interprets data or other information.
10	Reviews reports, documents, records, data, or other materials to verify completeness, correctness, consistency, compliance, or authenticity.
11	Keeps abreast of technology, trends, research, etc., to maintain knowledge in field of expertise.
12	Coordinates work assignments and tracks progress of work.
13	Manages, leads, or administers programs, projects, operations, or activities.
14	Provides input on training courses, instruction materials, or activities.
15	Justifies and explains decisions, conclusions, findings, or recommendations.
16	Persuades others to take a particular course of action or to accept findings, recommendations, changes, or alternative viewpoints.
17	Translates occupation-specific terminology into language that is easily understood.
18	Reviews and provides feedback on the content of complex information.
19	Acquires and maintains a working knowledge of relevant laws, regulations, policies, standards, or procedures.
20	Interprets and applies laws, regulations, policies, standards, or procedures to specific issues.
21	Develops, revises, or implements laws, regulations, policies, standards, or procedures.
22	Evaluates the impact of changes to laws, regulations, policies, standards, or procedures.
23	Evaluates, monitors, or ensures compliance with laws, regulations, policies, standards, or procedures.
24	Ensures the rigorous application of information security and information assurance policies, principles, and practices.
25	Evaluates the applicability, impact, and best practice use of emerging technologies.

Applications Software

26	Analyzes and refines systems requirements.
27	Translates systems requirements into applications prototypes.
28	Plans and designs systems architecture.

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29	Writes, debugs, and maintains codes or scripts.
30	Determines output media or formats.
31	Designs user interfaces.
32	Works with customers to test applications.
33	Assures software and systems quality and functionality.
34	Writes and maintains program documentation.
35	Evaluates new applications software technologies.

Customer Support

36	Diagnoses and resolves problems in response to customer reported incidents.
37	Researches, evaluates, and provides feedback on problematic trends and patterns in customer support requirements.
38	Develops, maintains, or operates problem tracking and resolution databases.
39	Installs, configures, troubleshoots, and maintains customer hardware and software.
40	Develops and manages customer service performance requirements.
41	Develops customer support policies, procedures, and standards.
42	Provides customer training.

Data Management

43	Analyzes and defines data requirements and specifications.
44	Designs, normalizes, develops, installs, and implements databases.
45	Maintains, monitors, and performs performance tuning, backup, and recovery of databases.
46	Installs, configures, and maintains database management systems software.
47	Analyzes and plans for anticipated changes in data capacity requirements.
48	Develops and administers data standards, policies, and procedures.
49	Develops and implements data mining and data warehousing programs.
50	Evaluates and provides recommendations on new database technologies and architectures.

Enterprise Architecture

51	Develops reference models of the enterprise and maintains the information in the IT repository.
52	Determines gaps between current and target architecture and develops plans for transitioning to target architecture.
53	Defines the policies and principles to guide technology decisions for the enterprise architecture.
54	Identifies opportunities to improve enterprise-level systems to support business processes and utilize emerging technologies.
55	Provides enterprise architecture guidance, support, and coordination to customers and IT project teams.
56	Documents the enterprise architecture infrastructure, including the business units and key processes, using modeling techniques.

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57	Ensures technical integration is achieved across the enterprise by participating in test planning, validation, and reviews.
58	Evaluates the impact of enterprise architecture products and services on IT investments, business operations, stakeholder satisfaction, and other outcomes.
59	Coordinates and conducts governance and portfolio management activities associated with ensuring compliance with the enterprise architecture.

Information Security

60	Develops policies and procedures to ensure information systems reliability and accessibility and to prevent and defend against unauthorized access to systems, networks, and data.
61	Conducts risk and vulnerability assessments of planned and installed information systems to identify vulnerabilities, risks, and protection needs.
62	Promotes awareness of security issues among management and ensures sound security principles are reflected in organizations' visions and goals.
63	Conducts systems security evaluations, audits, and reviews.
64	Develops systems security contingency plans and disaster recovery procedures.
65	Develops and implements programs to ensure that systems, network, and data users are aware of, understand, and adhere to systems security policies and procedures.
66	Participates in network and systems design, assessment and alteration process, and continuous monitoring to ensure implementation of appropriate systems security policies.
67	Facilitates the gathering, analysis, and preservation of evidence used in the prosecution of computer crimes.
68	Assesses security events to determine impact and implements corrective actions.

Internet

69	Determines overall technical design and structure of internet services.
70	Monitors functionality, security, and integrity of internet services.
71	Troubleshoots and resolves technical problems with design and delivery of internet services.
72	Collects and analyzes internet services usage and performance statistics.

Network Services

73	Analyzes and defines network requirements.
74	Defines and maintains network architecture and infrastructure.
75	Configures and optimizes network servers, hubs, routers, switches, and firewalls.
76	Analyzes network workload.
77	Monitors network capacity and performance.
78	Diagnoses and resolves network problems.
79	Develops network backup and recovery procedures.
80	Installs, tests, maintains, and upgrades network operating systems software.

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Operating Systems

81	Analyzes systems requirements in response to business requirements, risks, and costs.
82	Evaluates, selects, verifies, and validates systems software environment.
83	Evaluates, selects, and installs compilers, assemblers, and utilities.
84	Monitors and fine-tunes performance of the systems environment.
85	Evaluates new systems technologies and their effect on the operating environment.

Policy and Planning

86	Develops and maintains strategic plans.
87	Assesses policy needs and develops policies to govern IT activities.
88	Provides policy guidance to IT management, staff, and customers.
89	Defines current and future business environments.
90	Prepares IT budgets.
91	Manages IT investment portfolios.
92	Establishes metrics to measure and evaluate system performance and total cost of ownership.
93	Identifies and addresses IT workforce planning and management issues, such as recruitment, retention, and training.
94	Conducts audits of IT programs and projects.
95	Develops configuration or change management plans.

Systems Administration

96	Plans and schedules the installation of new or modified hardware and operating systems and applications software.
97	Manages accounts, network rights, and access to systems and equipment.
98	Manages systems resources including performance, capacity, availability, serviceability, and recoverability.
99	Implements security procedures and tools.
100	Develops and documents systems administration standard operating procedures.
101	Resolves hardware or software interface and interoperability problems.
102	Ensures systems availability, functionality, integrity, and efficiency.
103	Maintains systems configuration.
104	Manages the installation and integration of systems fixes, updates, and enhancements.

Systems Analysis

105	Performs needs analyses to define opportunities for new or improved business process solutions.
106	Consults with customers to identify and specify requirements.
107	Develops overall functional and systems requirements and specifications.
108	Conducts feasibility studies and trade-off analyses.
109	Prepares business cases for the application of IT solutions.
110	Defines systems scope and objectives.

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111	Ensures the integration of all systems components (e.g., procedures, databases, policies, software, and hardware).
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