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CAREER PATHWAY SYSTEMS REQUIREMENTS PLANNER (641)

Developed By:

The Interagency Federal Cyber Career Pathways Working Group

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Endorsed By:





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1 641-SYSTEMS REQUIREMENTS PLANNER

1.1 Work Role Overview

The table below provides an overview of various role-specific elements related to 641-Systems Requirements Planner.

Table 1. 641-Systems Requirements Planner Work Role Overview

NICE Role Description	Consults with customers to gather and evaluate functional requirements and translates these requirements into technical solutions. Provides guidance to customers about applicability of		
	information systems to meet business needs.		
OPM Occupational Series	Personnel performing the 641-Systems Requirements Planner work role are most commonly aligned to the following Occupational Series (Top 5 shown): - 2210-Information Technology Management Series – 60% - 501-Financial Administration and Program – 5% - 855-Electronics Engineering – 5% - 341, Administrative Officer – 4% - 1550-Computer Science – 4%		
Work Role Pairings	Personnel performing the 651-Enterprise Architect work role are most commonly paired with the following complimentary Work Roles (Top 5 shown): - 671-System Testing and Evaluation Specialist – 43% - 801-Program Manager – 11% - 802-IT Project Manager – 7% - 632-Systems Developer – 6% - 411-Technical Support Specialist – 5%		
Functional Titles	Personnel performing the 641-Systems Requirements Planner work role may unofficially or alternatively be called: - Application Requirements Analyst / Manager - Business Analyst - Business Process Analyst - Business Relationship Manager - Requirements Analyst / Planner / Engineer - Solutions Delivery Analyst - Solutions Architect - Systems Analyst - Usability Analyst		

	Personnel performing the 641-Systems Requirements Planner work role are most commonly
	found within the following grades on the General Schedule.
	Todila within the following grades on the General Schedule.
	□ CC 7
	- ☐ GS-7 – redacted*
	- ⊠ GS-9 – 3%
	- GS-10 – redacted*
Distribution of GS-	- ⊠ GS-11 – 9%
Levels	- ⊠ GS-12 – 28%
Leveis	- ⊠ GS-13 – 28%
	- ⊠ GS-14 – 12%
	- ⊠ GS-15 – 3%
	*16% of all personnel performing the 641-Systems Requirements Planner work role are in
	non-GS pay plans and are excluded from this section
	** percentages less than 3% have been redacted
	The following work roles are examples of possible roles an individual may perform prior to
	transitioning into the 641-Systems Requirements Planner work role:
	- 411-Technical Support Specialist
On Ramps	- 421-Database Administrator
	- 441-Network Operations Specialist
	- 451-Systems Administrator
	- 621-Software Developer
	- 632-Systems Developer
	The following work roles are examples of common transitions an individual may pursue after
	having performed the 641-Systems Requirements Planner work role. This is not an
	exhaustive list, nor does it consider learning and development opportunities an individual
	may pursue to prepare themselves for performing alternate work roles:
	- 431-Knowledge Manager
	- 621-Software Developer
	- 632-Systems Developer
	- 661-Research and Development Specialist
Off Ramps	- 671-System Testing and Evaluation Specialist
On Kamps	or 1 System resumg and Evaluation specialist
	*Note: Leveraging the knowledge, skills, abilities, and tasks of the 641-Systems Requirements
	Planner work role, individuals may prepare themselves to transition into one or more of the
	following cross-functional work roles:
	- 711- Cyber Instructional Curriculum Developer
	- 712-Cyber Instructor
	- 732-Privacy Officer / Privacy Compliance Manager
	- 751-Cyber Workforce Developer and Manager
	- 752-Cyber Policy and Strategy Planner

	 802-IT Project Manager 803-Product Support Manager 	
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1.2 CORE TASKS

The table below provides a list of tasks that represent the Core, or baseline, expectations for performance in the 641-Systems Requirements Planner work role, as well as additional tasks that those in this role may be expected to perform.

Table 2. 641-Systems Requirements Planner Core Tasks

Task ID	Task	Core or Additional
T0033	Conduct risk analysis, feasibility study, and/or trade-off analysis to develop, document, and refine functional requirements and specifications.	Core
T0039	Consult with customers to evaluate functional requirements.	Core
T0052	Define project scope and objectives based on customer requirements.	Core
T0235	Translate functional requirements into technical solutions.	Core
T0300	Develop and document User Experience (UX) requirements including information architecture and user interface requirements.	Core
T0045	Coordinate with systems architects and developers, as needed, to provide oversight in the development of design solutions.	Additional
T0062	Develop and document requirements, capabilities, and constraints for design procedures and processes.	Additional
T0127	Integrate and align information security and/or cybersecurity policies to ensure that system analysis meets security requirements.	Additional
T0156	Oversee and make recommendations regarding configuration management.	Additional
T0174	Perform needs analysis to determine opportunities for new and improved business process solutions.	Additional
T0191	Prepare use cases to justify the need for specific information technology (IT) solutions.	Additional
T0273	Develop and document supply chain risks for critical system elements, as appropriate.	Additional
T0313	Design and document quality standards.	Additional
T0325	Document a system's purpose and preliminary system security concept of operations.	Additional
T0334	Ensure that all systems components can be integrated and aligned (e.g., procedures, databases, policies, software, and hardware).	Additional
T0454	Define baseline security requirements in accordance with applicable guidelines.	Additional
T0463	Develop cost estimates for new or modified system(s).	Additional
T0497	Manage the information technology (IT) planning process to ensure that developed solutions meet customer requirements.	Additional

1.3 Core Knowledge, Skills, and Abilities

The table below provides a ranking of KSAs that represent the Core, or baseline, expectations for performance in the 641-Systems Requirements Planner work role, as well as additional KSAs that those in this role may be expected to demonstrate.

Table 3. 641-Systems Requirements Planner Core Knowledge, Skills, and Abilities

KSA ID	Description	Competency	Importance to Work Role
K0004	Knowledge of cybersecurity and privacy principles.	Information	Foundational to
	The mode of characterist, and private, private, and	Systems/Network Security	All Work Roles
K0001	Knowledge of computer networking concepts and protocols, and network security methodologies.	Infrastructure Design	Foundational to All Work Roles
K0003	Knowledge of laws, regulations, policies, and ethics as they relate to cybersecurity and privacy.	Legal, Government, and Jurisprudence	Foundational to All Work Roles
K0002	Knowledge of risk management processes (e.g., methods for assessing and mitigating risk).	Risk Management	Foundational to All Work Roles
K0005	Knowledge of cyber threats and vulnerabilities.	Vulnerabilities Assessment	Foundational to All Work Roles
K0006	Knowledge of specific operational impacts of cybersecurity lapses.	Vulnerabilities Assessment	Foundational to All Work Roles
K0101	Knowledge of the organization's enterprise information technology (IT) goals and objectives.	Enterprise Architecture	Core
K0044	Knowledge of cybersecurity and privacy principles and organizational requirements (relevant to confidentiality, integrity, availability, authentication, non-repudiation).	Information Assurance	Core
K0045	Knowledge of information security systems engineering principles (NIST SP 800-160).	Information Systems/Network Security	Core
A0064	Ability to interpret and translate customer requirements into operational capabilities.	Requirements Analysis	Core
K0008	Knowledge of applicable business processes and operations of customer organizations.	Requirements Analysis	Core
K0012	Knowledge of capabilities and requirements analysis.	Requirements Analysis	Core
S0010	Skill in conducting capabilities and requirements analysis.	Requirements Analysis	Core
К0090	Knowledge of system life cycle management principles, including software security and usability.	Systems Integration	Core
K0032	Knowledge of resiliency and redundancy.	Business Continuity	Additional
K0055	Knowledge of microprocessors.	Computers and Electronics	Additional
K0126	Knowledge of Supply Chain Risk Management Practices (NIST SP 800-161)	Contracting/Procurement	Additional

KSA ID	Description	Competency	Importance to Work Role
K0163	Knowledge of critical information technology (IT) procurement requirements.	Contracting/Procurement	Additional
K0043	Knowledge of industry-standard and organizationally accepted analysis principles and methods.	Data Analysis	Additional
K0066	Knowledge of Privacy Impact Assessments.	Data Privacy and Protection	Additional
K0622	Knowledge of controls related to the use, processing, storage, and transmission of data.	Database Administration	Additional
K0018	Knowledge of encryption algorithms	Encryption	Additional
K0019	Knowledge of cryptography and cryptographic key management concepts	Encryption	Additional
K0047	Knowledge of information technology (IT) architectural concepts and frameworks.	Enterprise Architecture	Additional
K0063	Knowledge of parallel and distributed computing concepts.	Enterprise Architecture	Additional
K0067	Knowledge of process engineering concepts.	Enterprise Architecture	Additional
K0200	Knowledge of service management concepts for networks and related standards (e.g., Information Technology Infrastructure Library, current version [ITIL]).	Enterprise Architecture	Additional
S0005	Skill in applying and incorporating information technologies into proposed solutions.	Enterprise Architecture	Additional
K0056	Knowledge of network access, identity, and access management (e.g., public key infrastructure, Oauth, OpenID, SAML, SPML).	Identity Management	Additional
A0123	Ability to apply cybersecurity and privacy principles to organizational requirements (relevant to confidentiality, integrity, availability, authentication, non-repudiation).	Information Assurance	Additional
K0038	Knowledge of cybersecurity and privacy principles used to manage risks related to the use, processing, storage, and transmission of information or data.	Information Assurance	Additional
K0074	Knowledge of key concepts in security management (e.g., Release Management, Patch Management).	Information Assurance	Additional
S0006	Skill in applying confidentiality, integrity, and availability principles.	Information Assurance	Additional
S0367	Skill to apply cybersecurity and privacy principles to organizational requirements (relevant to confidentiality, integrity, availability, authentication, non-repudiation).	Information Assurance	Additional
K0287	Knowledge of an organization's information classification program and procedures for information compromise.	Information Management	Additional
A0170	Ability to identify critical infrastructure systems with information communication technology that were designed without system security considerations.	Information Technology Assessment	Additional

KSA ID	Description	Competency	Importance to Work Role
K0061	Knowledge of how traffic flows across the network (e.g., Transmission Control Protocol [TCP] and Internet Protocol [IP], Open System Interconnection Model [OSI], Information Technology Infrastructure Library, current version [ITIL]).	Infrastructure Design	Additional
K0170	Knowledge of critical infrastructure systems with information communication technology that were designed without system security considerations.	Infrastructure Design	Additional
K0332	Knowledge of network protocols such as TCP/IP, Dynamic Host Configuration, Domain Name System (DNS), and directory services.	Infrastructure Design	Additional
K0333	Knowledge of network design processes, to include understanding of security objectives, operational objectives, and trade-offs.	Infrastructure Design	Additional
K0168	Knowledge of applicable laws, statutes (e.g., in Titles 10, 18, 32, 50 in U.S. Code), Presidential Directives, executive branch guidelines, and/or administrative/criminal legal guidelines and procedures.	Legal, Government, and Jurisprudence	Additional
K0267	Knowledge of laws, policies, procedures, or governance relevant to cybersecurity for critical infrastructures.	Legal, Government, and Jurisprudence	Additional
K0325	Knowledge of Information Theory (e.g., source coding, channel coding, algorithm complexity theory, and data compression).	Mathematical Reasoning	Additional
S0050	Skill in design modeling and building use cases (e.g., unified modeling language).	Modeling and Simulation	Additional
K0180	Knowledge of network systems management principles, models, methods (e.g., end-to-end systems performance monitoring), and tools.	Network Management	Additional
K0060	Knowledge of operating systems.	Operating Systems	Additional
K0169	Knowledge of information technology (IT) supply chain security and supply chain risk management policies, requirements, and procedures.	Risk Management	Additional
K0073	Knowledge of secure configuration management techniques. (e.g., Security Technical Implementation Guides (STIGs), cybersecurity best practices on cisecurity.org).	System Administration	Additional
K0035	Knowledge of installation, integration, and optimization of system components.	Systems Integration	Additional
K0086	Knowledge of system design tools, methods, and techniques, including automated systems analysis and design tools.	Systems Integration	Additional
K0087	Knowledge of system software and organizational design standards, policies, and authorized approaches (e.g., International Organization for Standardization [ISO] guidelines) relating to system design.	Systems Integration	Additional
K0102	Knowledge of the systems engineering process.	Systems Integration	Additional
K0091	Knowledge of systems testing and evaluation methods.	Systems Testing and Evaluation	Additional

KSA ID	Description	Competency	Importance to Work Role
S0008	Skill in applying organization-specific systems analysis principles and techniques.	Systems Testing and Evaluation	Additional
S0134	Skill in conducting reviews of systems.	Systems Testing and Evaluation	Additional
K0059	Knowledge of new and emerging information technology (IT) and cybersecurity technologies.	Technology Awareness	Additional
K0093	Knowledge of telecommunications concepts (e.g., Communications channel, Systems Link Budgeting, Spectral efficiency, Multiplexing).	Telecommunications	Additional
K0164	Knowledge of functionality, quality, and security requirements and how these will apply to specific items of supply (i.e., elements and processes).	Third Party Oversight/Acquisition Management	Additional

1.4 CORE COMPETENCIES

The table below is a compilation of competencies aligned to the 641-Systems Requirements Planner work role, and their associated importance. Listed competencies are collections of three or more similar Knowledge, Skills, or Abilities aligned to the Work Role. *These competencies originate from the NICE Framework Competency Pivot Tool*.

Table 4. 641-Systems Requirements Planner Core Competencies

Technical Comp Competency ID Definition Work Role Related KSAs		Work Role Related KSAs	Importance	
Enterprise Architecture	C018	KSAs that relate to the 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.	 Knowledge of the organization's enterprise information technology (IT) goals and objectives. Knowledge of information technology (IT) architectural concepts and frameworks. Knowledge of parallel and distributed computing concepts. Knowledge of process engineering concepts. Knowledge of service management concepts for networks and related standards (e.g., Information Technology Infrastructure Library, current version [ITIL]). Skill in applying and incorporating information technologies into proposed solutions. 	Core
Information Assurance	C022	KSAs that relate to the methods and procedures that protect information systems and data by ensuring their availability, authentication, confidentiality, and integrity.	 Knowledge of cybersecurity and privacy principles and organizational requirements (relevant to confidentiality, integrity, availability, authentication, non-repudiation). Ability to apply cybersecurity and privacy principles to organizational requirements (relevant to confidentiality, integrity, availability, authentication, non-repudiation). Knowledge of cybersecurity and privacy principles used to manage risks related to the use, processing, storage, and transmission of information or data. Knowledge of key concepts in security management (e.g., Release Management, Patch Management). Skill in applying confidentiality, integrity, and availability principles. Skill to apply cybersecurity and privacy principles to organizational requirements (relevant to confidentiality, integrity, availability, authentication, non-repudiation). 	Core

Technical Competency	Comp ID	Definition	Work Role Related KSAs	Importance
Requirements Analysis	C043	KSAs that relate to 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.	 Ability to interpret and translate customer requirements into operational capabilities. Knowledge of applicable business processes and operations of customer organizations. Knowledge of capabilities and requirements analysis. Skill in conducting capabilities and requirements analysis. 	Core
Systems Integration	C049	KSAs that relate to the principles, methods, and procedures for installing, integrating, and optimizing information systems components.	 Knowledge of system life cycle management principles, including software security and usability. Knowledge of installation, integration, and optimization of system components. Knowledge of system design tools, methods, and techniques, including automated systems analysis and design tools. Knowledge of system software and organizational design standards, policies, and authorized approaches (e.g., International Organization for Standardization [ISO] guidelines) relating to system design. Knowledge of the systems engineering process. 	Core
Infrastructure Design	C026	KSAs that relate to the architecture and typology of software, hardware, and networks, including LANS, WANS, and telecommunications systems, their components and associated protocols and standards, and how they operate and integrate with one another and with associated controlling software.	 Knowledge of computer networking concepts and protocols, and network security methodologies. Knowledge of how traffic flows across the network (e.g., Transmission Control Protocol [TCP] and Internet Protocol [IP], Open System Interconnection Model [OSI], Information Technology Infrastructure Library, current version [ITIL]). Knowledge of critical infrastructure systems with information communication technology that were designed without system security considerations. Knowledge of network protocols such as TCP/IP, Dynamic Host Configuration, Domain Name System (DNS), and directory services. Knowledge of network design processes, to include understanding of security objectives, operational objectives, and trade-offs. 	Additional

Technical Competency	Comp ID	Definition	Work Role Related KSAs	Importance
Legal, Government, and Jurisprudence	C030	KSAs that relate to laws, regulations, policies, and ethics that can impact organizational activities.	 Knowledge of laws, regulations, policies, and ethics as they relate to cybersecurity and privacy. Knowledge of applicable laws, statutes (e.g., in Titles 10, 18, 32, 50 in U.S. Code), Presidential Directives, executive branch guidelines, and/or administrative/criminal legal guidelines and procedures. Knowledge of laws, policies, procedures, or governance relevant to cybersecurity for critical infrastructures. 	Additional
Systems Testing and Evaluation	C050	KSAs that relate to the principles, methods, and tools for analyzing and administering systems test and evaluation procedures, as well as technical characteristics of IT systems, including identifying critical operational issues.	 Knowledge of systems testing and evaluation methods. Skill in applying organization-specific systems analysis principles and techniques. Skill in conducting reviews of systems. 	Additional

$1.5 \quad \textbf{Suggested Qualifications / Capability Indicators}$

Table 5. 641-Systems Requirements Planner Suggested Qualifications / Capability Indicators

For indicators of capability for the 641-Systems Requirements Planner work role, please see <u>Draft NIST 18193 - National Initiative for Cybersecurity Education (NICE) Framework Work Role Capability Indicators</u>		
Section to be populated with updated DoD-8140 Qualification Matrix for 641-Systems Requirements Planner.		

2 APPENDIX: 641-SYSTEMS REQUIREMENTS PLANNER TASK ANALYSIS AND KSA MAPPING

2.1 KEY TO READING THE TASK ANALYSIS AND KSA MAPPING

Table 6. Key to Reading the Task Analysis and KSA Mapping

Proficiency	Task Statement	Importance
As Written	Task as written within the NICE Cybersecurity Workforce Framework (NICE Framework).	Overall Importance to Work
As Written		Role
Entry	Example behavioral indicator / task permutation for performing this task at an Entry skills proficiency level. Example behavioral indicator / task permutation for performing this task at an Intermediate skills proficiency level. Example behavioral indicator / task permutation for performing this task at an Advanced skills proficiency level.	
Intermediate		
Advanced		

Table 7. Primary Knowledge, Skills, and Abilities Required to Perform the above Task

KSA ID	Description	Competency
ID of K, S, or A	Knowledge, Skill or Ability needed to perform the task as written within the NICE Framework	Competency mapped to the individual K, S, or A.

2.2 641-Systems Requirements Planner Task Analysis and KSA Mapping

Table 8. T0033 Task Analysis

Proficiency	Task Statement	Importance
As Written within Framework	Conduct risk analysis, feasibility study, and/or trade-off analysis to develop, document, and refine functional requirements and specifications.	Core
Entry	refine functional requirements and specifications. Conduct risk analysis, feasibility study, and/or trade-off analysis to develop, document, and refine functional	
Intermediate		
Advanced Oversee risk analysis, feasibility study, and/or trade-off analysis to develop, document, a requirements and specifications.		fine functional

Table 9. Primary Knowledge, Skills, and Abilities Required to Perform the above Task

KSA ID	Description	Competency
	TO BE COMPLETED	

Table 8. T0039 Task Analysis

Proficiency	Task Statement	Importance
As Written within Framework	Consult with customers to evaluate functional requirements.	Core
Entry	Follow up with customers after functional requirements are evaluated.	
Intermediate	Consult with customers to evaluate functional requirements.	
Advanced Investigate and brief customers' concerns before evaluating functional requirements.		

 $\textit{Table 9. Primary Knowledge, Skills, and Abilities Required to Perform the above \textit{Task}}\\$

KSA ID	Description	Competency
	TO BE COMPLETED	

Table 10. T0052 Task Analysis

Proficiency	Task Statement	Importance
As Written within Framework	Define project scope and objectives based on customer requirements.	Core
Entry	Document and implement project scope and objectives based on customer requirements.	
Intermediate	Define project scope and objectives based on customer requirements.	
Advanced Review and approve project scope and objectives based on customer requirements.		

 $\textit{Table 11. Primary Knowledge, Skills, and Abilities Required to Perform the above \textit{Task}}\\$

KSA ID	Description	Competency
	TO BE COMPLETED	

Table 12. T0235 Task Analysis

Proficiency	Task Statement	Importance
As Written within Framework	Translate functional requirements into technical solutions.	Core
Entry	Assist others with translating functional requirements into technical solutions.	
Intermediate	Translate functional requirements into technical solutions.	
Advanced Brief others on how functional requirements are translated into technical solutions.		

 $\textit{Table 13. Primary Knowledge, Skills, and Abilities Required to Perform the above \textit{Task}}\\$

KSA ID	Description	Competency
	TO DE COMPLETED	
	TO BE COMPLETED	

Table 14. T0300 Task Analysis

Proficiency	Task Statement	Importance
As Written within Framework	within Develop and document User Experience (UX) requirements including information architecture and user interface requirements.	
Entry	Assist with developing and documenting User Experience (UX) requirements including information architecture and user interface requirements. Develop and document User Experience (UX) requirements including information architecture and user interface requirements.	
Intermediate		
Advanced Oversee the development and documentation of User Experience (UX) requirements including in and user interface requirements.		information architecture

Table 15. Primary Knowledge, Skills, and Abilities Required to Perform the above Task

KSA ID	Description	Competency
	TO BE COMPLETED	