IT SKILL STANDARDS 2020 AND BEYOND

"Technical Project Management"

Job Cluster

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Technical Project Management

The definition for Technical Project Management as developed by approximately 100 Thought Leaders (mostly Chief Technology Officers and Chief Information Officers) through three meetings and follow-up surveys to gain consensus is:

> Technical Project Management comprises the planning and management of a technical initiative from concept through to a concrete deliverable. This includes overall responsibility for outcomes and requires specific knowledge of technologies, applied methodologies and development models to ensure success in planning, managing budget, estimation and execution of the project. Additionally, this area is responsible for change management. The Technical Project Management serves as the liaison between the business and technical experts. This definition was adapted from Iasa Global with input from national IT Thought Leaders.

This packet includes…

Job skills as developed by subject matter experts (SMEs) via multiple synchronous meetings (Page 3).

The tasks, knowledge, skills and abilities (KSAs) were developed with a focus 12 to 36 months in the future for an entry-level employee working in that specific cluster.

More specific definitions can be found within the KSA list.

The average was calculated from the subject matter expert votes.

- A vote of "4" indicated the item must be covered in the curriculum.
- A vote of "3" indicated the item should be covered in the curriculum.
- A vote of "2" indicated that it would be nice for the item to be covered in the curriculum.
- A vote of "1" indicated the item should not be covered in the curriculum.

Employability Skills as developed by SMEs via multiple synchronous meetings (Page 6).

Employability competencies are essential for every IT job and are based on what the work requires. SMEs were offered three clearly-defined “levels of proficiency” for each employability skill. The proficiency scale is defined as Level 1 – basic; Level 2- intermediate; and Level 3 - advanced. The levels are cumulative, so a “Level 3” assumes the employee can perform all characteristics of “Level 1” and “Level 2.”

For each employability skill, SMEs selected the competency levels that best aligned with what would be expected from an entry-level worker for the job cluster in question.

Key Performance Indicators (KPIs) as developed by SMEs (Page 7).

Key Performance Indicators answer the question, “How do we know when a task is performed well?”

A search was performed to locate validated/verified KPIs for technician level work in IT fields. Sources included the Texas Skill Standards System, National Skill Standards Board, National Institute of Standards and Technology and other sources. The identified KPIs were then cross-referenced to the tasks for the

ITSS 2020 job clusters. They were reviewed and revised by a group of the same subject matter experts who developed the tasks and KSAs for the cluster in a structured, facilitated verification session.

Student Learning Outcomes (SLOs) as identified by educators attending the KSA meetings (Page 8).

The SLOs are for use in the creation of curriculum to help define what the students will know and be able to demonstrate. Each of these SLOs can be observed, measured, and demonstrated.

Technical Project Management Tasks and KSAs

		Avg
Tasks SPECIFIC THINGS an entry level person would BE EXPECTED TO PERFORM on the job WITH LITTLE SUPERVISION.		
Project Plan		
T-1	Develop project plans, including defining scope and time requirements.	3.7
T-2	Identify information technology project resource requirements.	3.6
T-3	Develop guidelines for system implementation.	2.6
T-4	Perform needs analysis to determine opportunities for new and improved business process solutions, and participate in determining opportunities for new and improved business process solutions.	3.2
T-5	Identify interdependencies.	3.5
T-6	Analyze data to identify trends or relationships among variables.	3.1
T-7	Contribute contingency plans regarding project risks.	3.3
T-8	Provide input on project costs, design concepts, or design changes.	3.2
T-9	Ensure that appropriate Service-Level Agreements (SLAs) and underpinning contracts have been defined that clearly set out for the customer a description of the service and the measures for monitoring the service.	2.7
Tracking, Reporting, and Problem Solving		
T-10	Follow methods to monitor and measure risk, compliance, and assurance efforts.	3.2
T-11	Identify and track critical milestones.	3.8
T-12	Report project status.	3.9
T-13	Track duties, work schedules, or resources.	3.0
T-14	Prepare analytical reports.	3.3
T-15	Provide ongoing improvement and problem-solving support.	3.2
T-16	Collaborate with others to resolve information technology issues.	3.5
T-17	Provide recommendations for possible improvements and upgrades.	3.2
T-18	Review service performance reports identifying any significant issues and variances; initiating, where necessary, corrective actions; and ensuring that all outstanding issues are followed up.	3.1
T-19	Participate in project phase review.	3.8
T-20	Manage the change control process.	3.1
Customers/Stakeholders		
T-21	Coordinate and manage the overall expectations provided to a customer/project stakeholder, end-to-end, as it relates to the project.	2.9
T-22	Gather feedback on customer satisfaction and internal service performance to foster continual improvement.	3.5
T-23	Manage the internal relationship with information technology (IT) process owners supporting the service, assisting with the definition and agreement of Operating Level Agreements (OLAs).	2.8
T-24	Develop information communication procedures.	3.0
T-25	Work with other service managers and product owners to balance and prioritize services to meet overall customer requirements, constraints, and objectives.	3.5
Knowledge Knowledge focuses on the understanding of concepts. It is theoretical. An individual may have an understanding of a topic or tool or some textbook knowledge of it but have no experience applying it. For example, someone might have read hundreds of articles on health and nutrition, many of them in scientific journals, but that doesn't make that person qualified to dispense advice on nutrition.		
K-1	Knowledge of emerging technologies.	2.7
K-2	Knowledge of risk management processes (e.g., methods for assessing and mitigating risk).	3.5
K-3	Knowledge of benchmarking.	3.2
K-4	Knowledge of information technology (IT) architectural concepts and frameworks, regulations, and mapping.	3.1

K-5	Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.	2.7
K-6	Knowledge of Risk Management Framework (RMF).	3.1
K-7	Knowledge of resource management principles and techniques.	3.5
K-8	Knowledge of business and management principles involved in strategic planning, resource allocation, coordination of human resources modeling, leadership technique, production methods, and coordination of people and resources.	3.3
K-9	Knowledge of system life cycle management principles, including software security and usability.	2.9
K-10	Knowledge of the organization’s enterprise information technology (IT) goals and objectives.	3.0
K-11	Knowledge of how information needs and collection requirements are translated, tracked, and prioritized across the extended enterprise.	3.0
K-12	Knowledge of the organization's core business/mission processes.	3.1
K-13	Knowledge of project management software and planning tools, including tracking and milestones.	3.6
K-14	Knowledge of risk/threat assessment.	2.7
K-15	Knowledge of principles and processes for providing customer and professional services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.	3.2
K-16	Knowledge of company system's hierarchy, system procedures and constraints, and standard operating procedures regarding project plan evaluation, resource allocation and availability, as well as project reviews and changes.	3.4
K-17	Knowledge of information technology (IT) acquisition/procurement requirements and life cycle process.	2.6
K-18	Knowledge of capabilities and requirements analysis.	3.3
K-19	Knowledge of industry-standard and organizationally-accepted analysis principles and methods.	3.2
K-20	Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.	3.5
K-21	Knowledge of agile methodologies (iterative/adoptive).	3.8
K-22	Knowledge of waterfall methodology.	2.6
K-23	Knowledge of the elements of a Scrum board and how they operate.	2.9
K-24	Knowledge of documentation mechanisms and procedures.	3.6
K-25	Knowledge of project management terminology (specifically definitions and roles of Product Manager, Program Manager and Project Manager).	3.7
Skills The capabilities or proficiencies developed through training or hands-on experience. Skills are the practical application of theoretical knowledge. Someone can take a course to gain knowledge of concepts without developing the skills to apply those concepts. Development of skills requires hands-on application of the concepts.		
S-1	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.	2.9
S-2	Skill to translate, track, and prioritize information needs and intelligence collection requirements across the extended enterprise.	2.7
S-3	Skill in thinking critically, evaluating pros and cons of different ways to solve a problem.	3.7
S-4	Skill in writing materials for co-workers or customers.	3.5
S-5	Skill in reading work-related information.	3.9
S-6	Skill in coordinating and changing what is done based on other people's actions.	3.5
S-7	Skill in managing your time and the time of other people.	3.7
S-8	Skill in listening to others, not interrupting, and asking good questions.	3.9
S-9	Skill in actively learning - Figuring out how to use new ideas or things.	3.5
S-10	Skill in communicating with others virtually and in person.	3.8
S-10a	Skill in sharing and presenting information to others.	3.8

S-11	Skill in monitoring: Keeping track of how well people and/or groups are doing in order to make improvements.	3.1
S-12	Skill in social perceptiveness - Understanding people's reactions.	3.3
S-13	Skill in problem solving: Noticing a problem and figuring out the best way to solve it.	3.2
S-14	Skill in negotiating: Bringing people together to solve differences.	3.3
S-15	Skill in using productivity software, spreadsheets, word processing, email, collaboration tools, and file-sharing.	3.8
S-16	Skill in working with agile teams.	3.8
S-17	Skill in conflict resolution.	3.9
S-18	Skill in facilitation.	3.7
S-19	Skill in effectively influencing others.	3.2
S-20	Skill in documenting key decisions.	3.7
S-21	Skill in effectively managing change and the communication and enforcement thereof.	3.0
S-22	Skill in adaptive project management.	3.5
Abilities Abilities have historically been used to describe the innate traits or talents that a person brings to a task or situation. Many people can learn to negotiate competently by acquiring knowledge about it and practicing the skills it requires. A few are brilliant negotiators because they have the innate ability to persuade. In reality, abilities may be included under skills or may be separated out.		
A-1	Ability to use rules to solve problems.	3.5
A-2	Ability to make general rules or come up with answers from detailed information.	3.1
A-3	Ability to sequence and arrange activities.	3.8
A-4	Ability to brainstorm ideas.	3.4
A-5	Ability to adjust plans and milestones to changing priorities or customer requirements.	3.7
A-6	Ability to critique project plans.	3.4
A-7	Ability to develop alternative plans and workarounds.	3.3
A-8	Ability to diagram or document interdependencies.	3.5
A-9	Ability to forecast project resource and budgetary needs.	3.3
A-10	Ability to evaluate impact of changes on project plan.	3.5
A-11	Ability to develop and deliver presentations.	4.0

Technical Project Management Employability Skills

Workplace Professionalism & Work Ethics	Level 1 - Employee learns expectations of workplace environment (professional behavior and ethics) and adheres to practices with some guidance. Level 2 - Employee exhibits sound professionalism, judgment, and integrity and accepts responsibility for own behavior. Employee exhibits these qualities without guidance but occasionally refers to policies as needed.
Written Communication	Level 1 - Employee understands written instructions and executes tasks with guidance and feedback from supervisor. Employee clearly communicates concepts in writing. Level 2 - Employee comprehends and executes written instructions with minimal guidance. Employee composes well-organized written documents.
Oral Communication	Level 1 - Employee understands oral instructions and executes tasks with guidance and feedback from supervisor. Employee communicates concepts orally while clarifying for meaning. Employee develops listening skills. Level 2 - Employee comprehends and executes oral instructions with minimal guidance and exhibits good listening skills. Employee clarifies for meaning without needing prompting from supervisor.
Teamwork	Level 1 - With guidance and feedback from supervisor, employee obeys team rules and understands team member roles. Employee actively participates in team activities, volunteers for special tasks, and establishes rapport with co-workers. Level 2 - Employee demonstrates commitment, enthusiasm and supports team members. Employee follows up on assigned tasks and leads by example.
Problem Solving & Critical Thinking	Level 1 - Employee identifies the problem and relevant facts and principles with guidance and feedback from supervisor. Employee summarizes existing ideas and demonstrates creative thinking process while problem solving.
Organization and Planning	Level 1 - Employee prepares schedule for self, monitors and adjusts task sequence, and analyzes work assignments with guidance from supervisor. Level 2 - Employee manages timelines and recommends timeline adjustments. Employee escalates timeline-impacting issues as appropriate.
Adaptability and Flexibility	Level 1 - With guidance and feedback from supervisor, employee is able to adjust ways of doing work based on changing dynamics. Working under pressure is difficult, but employee makes it through the project with guidance and oversight. Level 2 - Employee makes inquiries of co-workers regarding possible changes needed in ways of doing work and adapts accordingly. Observes co-workers increasing work productivity under pressure and follows their lead.
Initiative	Level 1 - Employee finishes a step in a project and waits for direction before going on to the next step. Level 2 - Employee finishes multiple steps in a project and appropriately begins working on the next step without being asked.
Accuracy	Level 1 - Employee makes mistakes routinely but is committed to learning to adjust work habits to prevent them in the future. Level 2 - Employee occasionally makes mistakes but quickly makes adjustments to work habits to avoid making the same mistake twice.
Cultural Competence	Level 1 - Employee is inexperienced with working with diverse teams. With support and guidance and getting to know team members, employee develops working relationships. Level 2 - Employee is committed to working with diverse teams but struggles when differences arise. Employee identifies those challenges and works with colleagues to find ways to work effectively.
Self and Career Development	Level 1 - Employee requires feedback and direction from supervisor regarding improvement needed in professional and technical skills. Employee follows through with skills development with monitoring by supervisor. Level 2 - Employee builds upon self-assessment experience and can develop a professional and technical skills improvement plan in conjunction with supervisor. Employee completes development plan without prompting from supervisor.

Technical Project Management Key Performance Indicators

For the entry-level employee, all tasks are typically done under supervision for much of the first year and then with some independence with verification after the employee has more experience. All tasks are done according to company guidelines.

	Task	Key Performance Indicators
	Project Plan	
T-1	Develop project plans, including defining scope and time requirements.	Criteria for satisfying stakeholder needs are identified. The size and the specifics of the project are documented accurately and completely. Appropriate stakeholders and decision-makers are identified in a timely manner. Tasks requiring long lead times are identified to avoid project delays. Escalation procedures are clearly identified and agreed upon. Detailed task list is developed (work breakdown structures). Time requirements are realistic and accommodate the time for the management approved process. Estimates of time, materials, and capabilities needed are accurately identified. Activities dependent upon other activities are sequenced appropriately. Approval points, milestones, and go/no go decision points are defined to allow for project review, evaluation, postponement, and cancellation. Task priorities are assigned. The constraints and potential conflicts are accurately identified.
T-2	Identify information technology project resource requirements.	
T-3	Develop guidelines for system implementation.	
T-4	Perform needs analysis to determine opportunities for new and improved business process solutions, and participate in determining opportunities for new and improved business process solutions.	
T-5	Identify interdependencies.	
T-6	Analyze data to identify trends or relationships among variables.	
T-7	Contribute contingency plans regarding project risks.	
T-8	Provide input on project costs, design concepts, or design changes.	
T-9	Ensure that appropriate Service-Level Agreements (SLAs) and underpinning contracts have been defined that clearly set out for the customer a description of the service and the measures for monitoring the service.	
	Tracking, Reporting, and Problem Solving	
T-10	Follow methods to monitor and measure risk, compliance, and assurance efforts.	Project outcomes are in scope, on time, on budget, and customer satisfaction is evaluated against project goals. Complete project phase results are documented, reviewed, and clearly communicated. Lessons learned are clearly documented and communicated. Performance metrics associated with the process are captured and documented. Significant problems are immediately reported. Milestones and schedules are clearly understood and communicated.
T-11	Identify and track critical milestones.	
T-12	Report project status.	
T-13	Track duties, work schedules, or resources.	
T-14	Prepare analytical reports.	
T-15	Provide ongoing improvement and problem-solving support.	
T-16	Collaborate with others to resolve information technology issues.	
T-17	Provide recommendations for possible improvements and upgrades.	
T-18	Review service performance reports identifying any significant issues and variances; initiating, where necessary, corrective actions; and ensuring that all outstanding issues are followed up.	
T-19	Participate in project phase review.	
T-20	Manage the change control process.	
	Customers/Stakeholders	
T-21	Coordinate and manage the overall expectations provided to a customer/project stakeholder, end-to-end, as it relates to the project.	Relationships are managed so that customers are satisfied with their service. Customers are contacted on a regular basis to provide input on important issues. Feedback from customers is analyzed for important and underlying concerns. Recommendations for continual improvement based on customer feedback are gathered and/or developed. Customer feedback and requests are communicated effectively to appropriate personnel in a timely manner.
T-22	Gather feedback on customer satisfaction and internal service performance to foster continual improvement.	
T-23	Manage the internal relationship with information technology (IT) process owners supporting the service, assisting with the definition and agreement of Operating Level Agreements (OLAs).	
T-24	Develop information communication procedures.	
T-25	Work with other service managers and product owners to balance and prioritize services to meet overall customer requirements, constraints, and objectives.	

Technical Project Management Student Learning Outcomes		
	Knowledge	**Student Learning Outcomes**
K-1	Knowledge of emerging technologies.	Name the basic business systems from their hierarchy and procedures to project planning, evaluation, strategic planning, resource allocation, human resource usage, and enterprise information technology.
K-16	Knowledge of company system's hierarchy, system procedures and constraints, and standard operating procedures regarding project plan evaluation, resource allocation and availability, as well as project reviews and changes.	
K-7	Knowledge of resource management principles and techniques.	
K-8	Knowledge of business and management principles involved in strategic planning, resource allocation, coordination of human resources modeling, leadership technique, production methods, and coordination of people and resources.	
K-10	Knowledge of the organization’s enterprise information technology (IT) goals and objectives.	
K-25	Knowledge of project management terminology (specifically definitions and roles of Product Manager, Program Manager and Project Manager).	
K-9	Knowledge of system life cycle management principles, including software security and usability.	Show the use of waterfall methodology and/or Scrum boards in designing an information technology/engineering project, including project concepts such as system life cycle, management principles, and software security and usability.
K-11	Knowledge of how information needs and collection requirements are translated, tracked, and prioritized across the extended enterprise.	
K-21	Knowledge of agile methodologies (iterative/adoptive).	
K-22	Knowledge of waterfall methodology.	
K-23	Knowledge of the elements of a Scrum board and how they operate.	
K-2	Knowledge of risk management processes (e.g., methods for assessing and mitigating risk).	Describe how to find potential issues and resolve them before they become a problem.
K-6	Knowledge of Risk Management Framework (RMF).	
K-14	Knowledge of risk/threat assessment.	
K-3	Knowledge of benchmarking.	Show iterative and adaptive technologies within project management software and planning tools, including tracking and milestones to keep project stakeholders informed.
K-13	Knowledge of project management software and planning tools, including tracking and milestones.	
K-24	Knowledge of documentation mechanisms and procedures.	
K-4	Knowledge of information technology (IT) architectural concepts and frameworks, regulations, and mapping.	List practical applications of acquisition/procurement (IT), engineering science and technology, life cycle processes, and design principles.
K-5	Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.	
K-17	Knowledge of information technology (IT) acquisition/procurement requirements and life cycle process.	
K-12	Knowledge of the organization's core business/mission processes.	Tell how to translate, track, and prioritize information collection and needs requirements within a business setting using accepted analysis methods.
K-15	Knowledge of principles and processes for providing customer and professional services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.	
K-18	Knowledge of capabilities and requirements analysis.	
K-19	Knowledge of industry-standard and organizationally-accepted analysis principles and methods.	
K-20	Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.	Select the proper structure and content of the English language, including the correct use of composition and grammar.
	Skills	**Student Learning Outcomes**
S-1	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.	Monitor progress against plan and develop recommendations for alternative approaches to problems that arise; provide guidance to the project stakeholders.
S-3	Skill in thinking critically, evaluating pros and cons of different ways to solve a problem.	
S-9	Skill in actively learning - Figuring out how to use new ideas or things.	
S-11	Skill in monitoring: Keeping track of how well people and/or groups are doing in order to make improvements.	
S-13	Skill in problem solving: Noticing a problem and figuring out the best way to solve it.	
S-6	Skill in coordinating and changing what is done based on other people's actions.	Develop a Gantt chart using productivity software (spreadsheets, word processing, email, collaboration tools, and file sharing) to manage time and manage the time of others.
S-7	Skill in managing your time and the time of other people.	
S-15	Skill in using productivity software, spreadsheets, word processing, email, collaboration tools, and file-sharing.	
S-2	Skill to translate, track, and prioritize information needs and intelligence collection requirements across the extended enterprise.	Develop a project model that demonstrates the ability to translate, track, and prioritize information using intelligent information collecting procedures.
S-4	Skill in writing materials for co-workers or customers.	
S-5	Skill in reading work-related information.	
S-10	Skill in communicating with others virtually and in person.	Build an agile team, and with the team, demonstrate skills in presenting and sharing information, (both virtually and in-person), with other members. Focus on improving skills in influencing others, facilitation, and conflict resolution within the team.
S-10a	Skill in sharing and presenting information to others.	
S-14	Skill in negotiating: Bringing people together to solve differences.	
S-16	Skill in working with agile teams.	
S-17	Skill in conflict resolution.	
S-18	Skill in facilitation.	
S-19	Skill in effectively influencing others.	

S-20	Skill in documenting key decisions.	Construct project plans that will define scope, communication procedures, system implementation, time requirements, and document key decisions.
S-21	Skill in effectively managing change and the communication and enforcement thereof.	
S-8	Skill in listening to others, not interrupting, and asking good questions.	Apply effective collaboration and communication skills to improve team productivity.
S-12	Skill in social perceptiveness: Understanding people's reactions.	
S-22	Skill in adaptive project management.	
	Abilities	**Student Learning Outcomes**
A-1	Ability to use rules to solve problems.	Apply general rules or develop answers from detailed information and develop new ideas through brainstorming as well as model new ideas critiquing project plans.
A-2	Ability to make general rules or come up with answers from detailed information.	
A-4	Ability to brainstorm ideas.	
A-6	Ability to critique project plans.	
A-3	Ability to sequence and arrange activities.	Organize activities sequentially and make use of the ability to adjust plans and milestones to develop alternate plans or workarounds to changing priorities or customer requirements.
A-5	Ability to adjust plans and milestones to changing priorities or customer requirements.	
A-7	Ability to develop alternative plans and workarounds.	
A-9	Ability to forecast project resource and budgetary needs.	Construct a forecast or project resources and budgetary needs based on a specific scenario.
A-8	Ability to diagram or document interdependencies.	Develop diagrams or documents showing interdependencies used to evaluate the impact of changes on a project plan. Further, create and deliver presentations which document the changes and deliver the presentation to a customer.
A-10	Ability to evaluate impact of changes on project plan.	
A-11	Ability to develop and deliver presentations.	