



Fostering Partnerships in T&E and Acquisition

Test and Evaluation Competency Model Development Project

by

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Topics

- FAA Competency Models & Certification Program Business Drivers
- FAA Certification Program Components
- Competency Model Components
- Competency Model Development Methodology
- Test & Evaluation Competencies Titles
- Test & Evaluation Criticality Assessment
- Conclusion and Contact



Competency & Certification Business Drivers - NextGen

Need to develop / acquire workforce to support NextGen

- **NAPA Report “Identifying the Workforce to Respond to a National Imperative: The Next Generation Air Transportation Systems”**
 - Identify the skills needed by non-operational/acquisition workforce to accomplish transition to NextGen
 - Identify strategies for acquiring the necessary workforce competencies
- **GAO Report “Next Generation Air Transportation System, Status of Systems Acquisition and the Transition to the Next Generation Air Transportation System**
 - Need to compare the skills needed for NextGen with the current staff resources




Competency & Certification Business Drivers – Employee Growth

Helping FAA employees manage and grow their careers

- **Employees need the structure required to map out a career path in professions that are rewarding for them and important to the future success of the FAA**
 - Defined career paths and / or certification models based on federal government and industry standards
- **Employees need support in developing the knowledge, skills and abilities necessary to progress through career models within their chosen profession**
 - Training curriculum that matches certification requirements
 - Practices that help guide work
 - Communities of Practice to establish work relationships



FAA Acquisition Certification Program Components

- **Competency Model with three (3) Proficiency Levels** 
 - Competency Titles, Definitions and Behavioral Indicators
- **Certification Requirements for three (3) Proficiency Levels**
 - **Formal Training**
 - Academic Degree(s)
 - **Agency Training**
 - Acquisition Process Training
 - Competency Related Training
 - **Relevant Experience**
 - Time Requirement
 - Experience related to Competencies
- **Applicant Certification Approval Process**





FAA Acquisition Certification Program Status

Defined Certification Programs:	<ul style="list-style-type: none">• Program Manager• Integrated Logistics Support Mgr• Contracting Officer/Specialist• Contracting Officers Technical Rep• Cost Estimating
Certification Programs in Development:	<ul style="list-style-type: none">• Test & Evaluation• System Engineering
Certification Programs under consideration:	<ul style="list-style-type: none">• Business and Financial Management• Software Engineering• Human Factors Specialist



FAA Acquisition Competency Model Components

Components

- Competency Titles
 - Competency Definitions
 - Behavioral Indicators
 - Importance Ratings (IMP)
 - Required at Entry Ratings (RAE)
- Competency Dictionary

COMPETENCY TITLE	COMPETENCY BEHAVIORAL INDICATORS For BASIC (Level I)
Acquisition and Contracts	<p>3</p> <p>a) Supports the preparation and implementation of an acquisition strategy</p> <p>b) Reviews the implementation of an acquisition strategy with an on-going risk/opportunity management process</p> <p>c) Develops source selection criteria, including risk analysis methods related to the acquisition of products and services</p>

EXAMPLE

COMPETENCY TITLE	COMPETENCY DEFINITION	(GS 7/9; F/G Pay Band)		(GS 11/12; H Pay Band)		(GS 13; I Pay Band)		(GS 14/15; J Pay Band)	
		IMP	RAE	IMP	RAE	IMP	RAE	IMP	RAE
Acquisition and Contracts	Knowledge of the FAA Acquisition Management System (AMS), solicitation, negotiation, development, selection, and administration of contracts/services in compliance with: public law, executive orders, and other applicable regulations, policies, and requirements. Ability to incorporate the defined T&E approach in the solicitation and contractual documents.	2.15	1.08	3.00	1.15	3.69	1.69	4.54	1.85
Test Management	Ability to plan and manage test projects. Understanding of Program/Project Management processes and ability to appropriately apply the processes to a test and evaluation project. Incorporates Verification and Validation (V&V) principles to the management of test and evaluation activities.	2.46	1.15	3.00	1.51	3.69	1.62	4.85	1.92





Competency Dictionary Page

Components 1-3

EXAMPLE

COMPETENCY TITLE: Test Management

DEFINITION: Ability to plan and manage test projects. Understanding of Program/Project Management processes and ability to appropriately apply the processes to a test and evaluation project. Incorporates Verification and Validation (V&V) principles to the management of test and evaluation activities

Proficiency Level

Behavioral Indicators

<p>Advanced (Level 3)</p>	<p>a) Serves as a direct liaison between T&E teams and the Program Management Office to define the overall test program that incorporates with V&V principles</p> <p>b) Identifies and coordinates T&E personnel, schedules, deliverables and financial resource requirements; obtain strategy agreement (PjSA – Project Scope Agreement)</p>
<p>Intermediate (Level 2)</p>	<p>a) Provides input into the project agreement that includes annual staffing and funding estimates, schedule and deliverables</p> <p>b) Develops test plans (e.g., TEMPs) for T&E projects; contributes to the plans for future project resource needs, limitations, and challenges</p>
<p>Basic (Level 1)</p>	<p>a) Uses project management tools to plan, organize, and monitor project tasks</p> <p>b) Follows established schedule in the delivery of products and services and reports progress</p>

Note the progression in the Behavioral Indicator statements from the Basic through Advanced levels.

Typically, increased responsibility, scope, depth, and complexity are representative of higher levels of proficiency



Competency Criticality Assessment Criteria

Components 4 & 5

Importance:
Ratings to establish the significance of the competency to successful performance in the occupation

RATING	RATING DESCRIPTION
5 – Extremely Important	This competency is critical for successful job performance and mission accomplishment. Not possessing this competency will certainly create failure on the job.
4 – Very Important	This competency is very important for successful job performance and mission accomplishment. Not possessing this competency will inhibit successful job performance.
3 – Important	This competency is important to successful job performance and mission accomplishment. Not possessing this competency will likely have a consequence on successful job performance.
2 – Somewhat Important	This competency is only somewhat important to job performance and mission accomplishment. Possessing this competency has only a minor influence on successful job performance.
1 – Not at All Important	Possessing this competency has no effect on successful job performance and mission accomplishment.

Required at Entry:
Identifies the competencies that are required on day 1 of the job versus those that can be learned over time

RATING	RATING DESCRIPTION
2 – Required at Entry	It is essential that an individual possess this competency at the time of entry. Possessing this competency at the time of entry is absolutely critical for successful job performance.
1 – Not Required at Entry	It is not necessary for an individual to possess this competency at the time of entry. Not possessing this competency will not affect successful job performance in the first 3-6 months on the job.

Criticality: An evaluation of Importance and Required at Entry ratings to determine which competencies should be used to make personnel decisions

IF...		THEN...
Importance	Required at Entry	
≥ 3.00	≥ 1.50	Critical at Entry, Critical for Job Performance
< 3.00	≥ 1.50	Reassess Rating or Eliminate Competency from List for Role/Occupational Series
≥ 3.00	< 1.50	Not Critical at Entry, Potential for Training or Development
< 3.00	< 1.50	Not Important, Not Required at Entry; Omit from List for Role/Occupational Series



Std Competency Model Development Process

STEP 1: PLANNING AND PREPARATION

- Review pertinent documentation, such as:
 - Job/position descriptions
 - Existing competencies
 - Skill set inventories

STEP 2: COMPETENCY DEVELOPMENT

- **Conduct interviews** with SMEs
- **Conduct Focus Group 1:** Validate competency titles and definitions
- **Conduct Focus Group 2:** Finalize/ validate the competency dictionary
- **Conduct Focus Group 3:** Determine Criticality- obtain competency Importance and Required at Entry ratings

STEP 3: STAKEHOLDER APPROVAL(S)

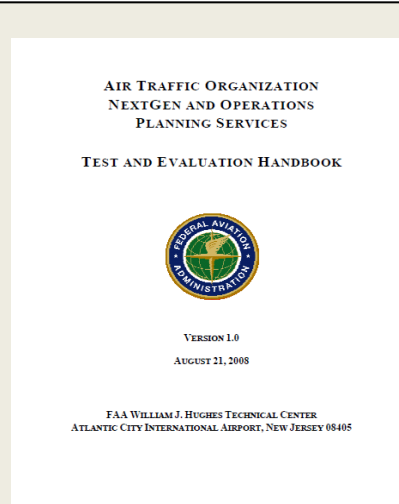
- Vet and Submit Final Test and Evaluation Competency Model to Stakeholder for Formal Approval of the Competency Model
- Seek Stakeholder Approval to continue the development of the T&E Certification Program.

ACTIVITIES

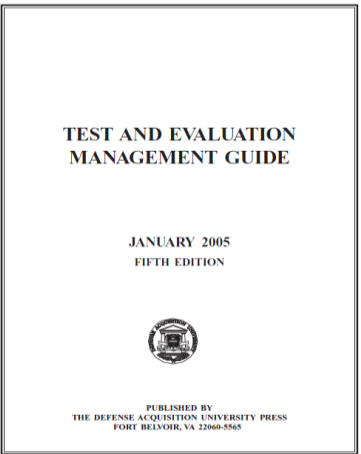


T & E Competency Model Development Step 1

**FAA ATO
NextGen & Ops
Planning
Services
T&E Handbook**



**DAU Test and
Evaluation
Management
Guide**



**DAU Certification
Course for Test &
Evaluation
Professionals**

Task and Skills Analysis (TASA) Table

TASK ID	DATA	TASK	ISSUES	KNOWLEDGE/SKILLS
T1		Support Requirements Development		
T1.1		Provide/Validate/Update/Verify/Manage/Control/Track		<ul style="list-style-type: none"> 1. Knowledge of DoD and DoD Process 2. Knowledge of Program/Management 3. Knowledge of Test/Analysis 4. Knowledge of System Engineering 5. Knowledge of System Requirements/Analysis 6. Knowledge of Test/Analysis 7. Knowledge of Test/Analysis 8. Knowledge of Test/Analysis 9. Knowledge of Test/Analysis 10. Knowledge of Test/Analysis
T1.2		Review/Control/Manage/Report/Document		<ul style="list-style-type: none"> 1. Knowledge of DoD and DoD Process 2. Knowledge of Program/Management 3. Knowledge of Test/Analysis 4. Knowledge of System Engineering 5. Knowledge of System Requirements/Analysis 6. Knowledge of Test/Analysis 7. Knowledge of Test/Analysis 8. Knowledge of Test/Analysis 9. Knowledge of Test/Analysis 10. Knowledge of Test/Analysis
T1.3		Develop Test/Analysis		<ul style="list-style-type: none"> 1. Knowledge of DoD and DoD Process 2. Knowledge of Program/Management 3. Knowledge of Test/Analysis 4. Knowledge of System Engineering 5. Knowledge of System Requirements/Analysis 6. Knowledge of Test/Analysis 7. Knowledge of Test/Analysis 8. Knowledge of Test/Analysis 9. Knowledge of Test/Analysis 10. Knowledge of Test/Analysis
T1.4		Develop/Validate/Verify/Manage/Control/Track		<ul style="list-style-type: none"> 1. Knowledge of DoD and DoD Process 2. Knowledge of Program/Management 3. Knowledge of Test/Analysis 4. Knowledge of System Engineering 5. Knowledge of System Requirements/Analysis 6. Knowledge of Test/Analysis 7. Knowledge of Test/Analysis 8. Knowledge of Test/Analysis 9. Knowledge of Test/Analysis 10. Knowledge of Test/Analysis

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T1.2		Develop Test/Analysis		<ul style="list-style-type: none"> 1. Knowledge of DoD and DoD Process 2. Knowledge of Program/Management 3. Knowledge of Test/Analysis 4. Knowledge of System Engineering 5. Knowledge of System Requirements/Analysis 6. Knowledge of Test/Analysis 7. Knowledge of Test/Analysis 8. Knowledge of Test/Analysis 9. Knowledge of Test/Analysis 10. Knowledge of Test/Analysis
T1.3		Develop/Validate/Verify/Manage/Control/Track		<ul style="list-style-type: none"> 1. Knowledge of DoD and DoD Process 2. Knowledge of Program/Management 3. Knowledge of Test/Analysis 4. Knowledge of System Engineering 5. Knowledge of System Requirements/Analysis 6. Knowledge of Test/Analysis 7. Knowledge of Test/Analysis 8. Knowledge of Test/Analysis 9. Knowledge of Test/Analysis 10. Knowledge of Test/Analysis
T1.4		Develop/Validate/Verify/Manage/Control/Track		<ul style="list-style-type: none"> 1. Knowledge of DoD and DoD Process 2. Knowledge of Program/Management 3. Knowledge of Test/Analysis 4. Knowledge of System Engineering 5. Knowledge of System Requirements/Analysis 6. Knowledge of Test/Analysis 7. Knowledge of Test/Analysis 8. Knowledge of Test/Analysis 9. Knowledge of Test/Analysis 10. Knowledge of Test/Analysis

**FAA Test &
Evaluation Task
Analysis (TASA)
Report**



T & E Competency Model Development Step 2

- T&E Subject Matter Expert (SME) Interviews – 25 SMEs
- Series of SME Focus Group Meetings – 16 SMEs
 - Competency Titles and Definitions
 - Competency Behavioral Indicators
 - Criticality Assessment

STEP 2: COMPETENCY DEVELOPMENT

- Create data collection and analysis tools
- Conduct SME interviews; analyze SME interview data
- Conduct crosswalk of DoD competencies and FAA research
- Develop draft competency titles and definitions based on FAA SME input and DoD competencies
- **Conduct Focus Group 1:** Review/validate competency titles and definitions with SMEs
- Stakeholder Check-in
- **Conduct Focus Group 2 (Parts 1-3)** Review/ validate the technical and non-technical competency dictionary with SMEs
- Stakeholder Check-in
- **Conduct Focus Group 3:** Determine Criticality with SMEs– obtain competency Importance and Requirement at Entry





T & E Competency Model Development Step 3

- Vetting and Approval of T&E Competency Model
 - Acquisition Stakeholders
- Approval to continue the T&E Certification Program Development
 - Establish T&E certification requirements
 - Develop T&E Certification Applicant Approval Process
 - Identify and modify existing infrastructure for certification submission, tracking and monitoring



T & E Competency Model Titles

Test and Evaluation (T&E) Competency Titles

Technical Competencies

1	ACQUISITION AND CONTRACTS	7	SAFETY MANAGEMENT
2	DATA COLLECTION, ANALYSIS, AND REPORTING	8	SYSTEMS THINKING AND APPLICATION
3	NAS OPERATIONS	9	TECHNICAL WRITING
4	QUALITY CONTROL, QUALITY ASSURANCE, AND CONFIGURATION MANAGEMENT	10	TEST AND EVALUATION STANDARDS APPLICATION
5	REQUIREMENTS MANAGEMENT	11	TEST MANAGEMENT
6	RISK MANAGEMENT	12	TEST THEORY AND METHODS

Non-Technical Competencies

13	AGILITY	16	INTERPERSONAL RELATIONS AND INFLUENCE
14	COMMUNICATION	17	DECISION MAKING AND JUDGMENT
15	CUSTOMER FOCUS	18	TEAMWORK AND COLLABORATION



T & E Competency Dictionary Page

2. DATA COLLECTION, ANALYSIS, AND REPORTING

DEFINITION: Ability to identify, systematically collect, and organize relevant data. Ability to apply quantitative and qualitative data analysis tools, techniques, and technologies in order to make logical interpretations, conclusions, and inferences from the data and report findings to characterize system performance and risks.

PROFICIENCY LEVEL		BEHAVIORAL INDICATORS
3	Advanced	<ul style="list-style-type: none"> a) Evaluates and determines based on available data sets and analysis tools whether alternative sources, tools, techniques, or technologies should be used b) Develops innovative data collections tools, techniques, and methods c) Directs analytical processes used to analyze data, draw conclusions, make revisions, and articulates system performance and risk ensuring project objectives are met d) Educates and mentors others on data analysis tools, techniques, and methodologies and guides the formulation of logical data interpretation e) Presents and accurately conveys complex data analysis findings, implications, and limitations to stakeholder audiences with varying degrees of technical knowledge with the topic/subject
2	Intermediate	<ul style="list-style-type: none"> a) Collaborates with other organizations concerning data collection requirements b) Applies innovative tools and techniques to satisfy data collection requirements; uses systematic procedures to collect data and maintain information c) Applies analytical processes used to analyze data, draw conclusions, make revisions, and articulate system performance and risk ensuring project objectives are met d) Reviews data analysis performed by others and provides constructive feedback
1	Basic	<ul style="list-style-type: none"> a) Develops data collection plans with guidance b) Collects relevant data for evaluation activities c) Uses quantitative and qualitative data analysis tools and techniques to interpret the data and report findings



T & E Competency Criticality Assessment

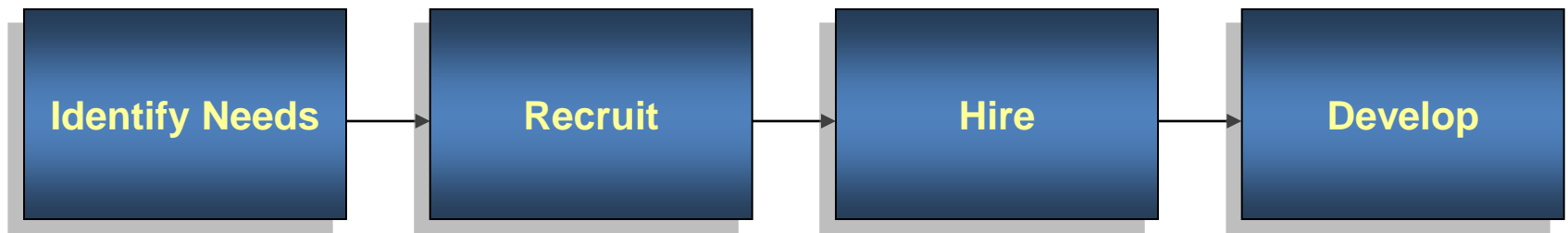
The competencies in each column below are listed in order of importance (from most critical to least important)

T&E- Basic Level (GS 7/9; F/G Pay Band)	T&E- Intermediate(1) Level (GS 11/12; H Pay Band)	T&E- Intermediate(2) Level (GS 13; I Pay Band)	T&E- Advanced Level (GS 14/15; J/K Pay Band)
Critical Competencies	Critical Competencies	Critical Competencies	Critical Competencies
NAS Operations	Data Collection, Analysis, and Reporting	Teamwork and Collaboration	Decision Making and Judgment
Data Collection, Analysis, and Reporting	NAS Operations	Data Collection, Analysis, and Reporting	NAS Operations
Communication	Teamwork and Collaboration	NAS Operations	Communication
Teamwork and Collaboration	Communication	Communication	Teamwork and Collaboration
Technical Writing	Technical Writing	Test Theory and Methods	Test Management
Interpersonal Relations and Influence	Test Theory and Methods	Customer Focus	Test and Evaluation Standards Application
Decision Making and Judgment	Quality Control, Quality Assurance, and Configuration Management	Technical Writing	Technical Writing
Important Competencies	Interpersonal Relations and Influence	Interpersonal Relations and Influence	Test Theory and Methods
Test and Evaluation Standards Application	Decision Making and Judgment	Test and Evaluation Standards Application	Interpersonal Relations and Influence
Test Theory and Methods	Customer Focus	Decision Making and Judgment	Data Collection, Analysis, and Reporting
Systems Thinking and Application	Agility	Agility	Agility
Agility	Important Competencies	Requirements Management	Customer Focus
Quality Control, Quality Assurance, and Configuration Management	Test and Evaluation Standards Application	Quality Control, Quality Assurance, and Configuration Management	Acquisition and Contracts
Requirements Management	Requirements Management	Risk Management	Risk Management
Customer Focus	Systems Thinking and Application	Acquisition and Contracts	Requirements Management
Risk Management	Test Management	Test Management	Systems Thinking and Application
Test Management	Risk Management	Systems Thinking and Application	Quality Control, Quality Assurance, and Configuration Management
Safety Management	Acquisition and Contracts	Important Competencies	Safety Management
Acquisition and Contracts	Safety Management	Safety Management	Important Competencies (No Competencies)



T & E Competency Model Conclusion

- Approved T&E Competency Model
 - Employee Career Progression
 - FAA Organization and NextGen Acquisition Programs



- Continue development of T&E Certification Program using T&E Competency Model as the foundation





Questions

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