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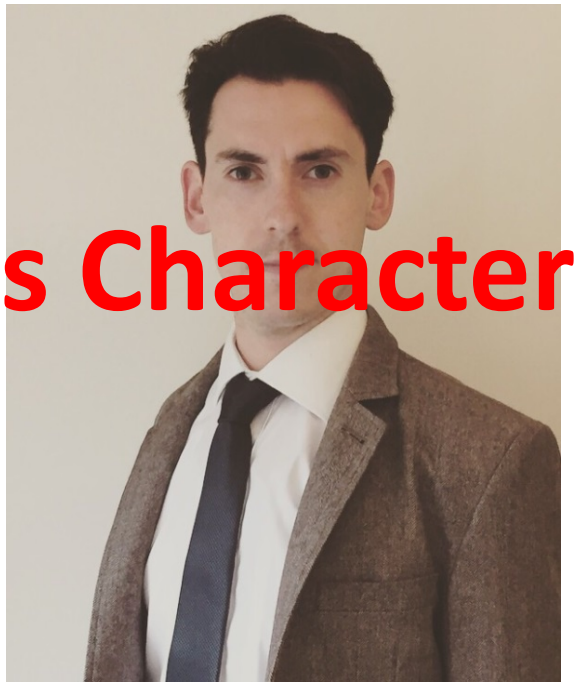
NO COUNTRY LEFT BEHIND

Developing a rating-specific competency model for Sarah and Pete

Sarah

Pete



WARNING- Fictitious Characters

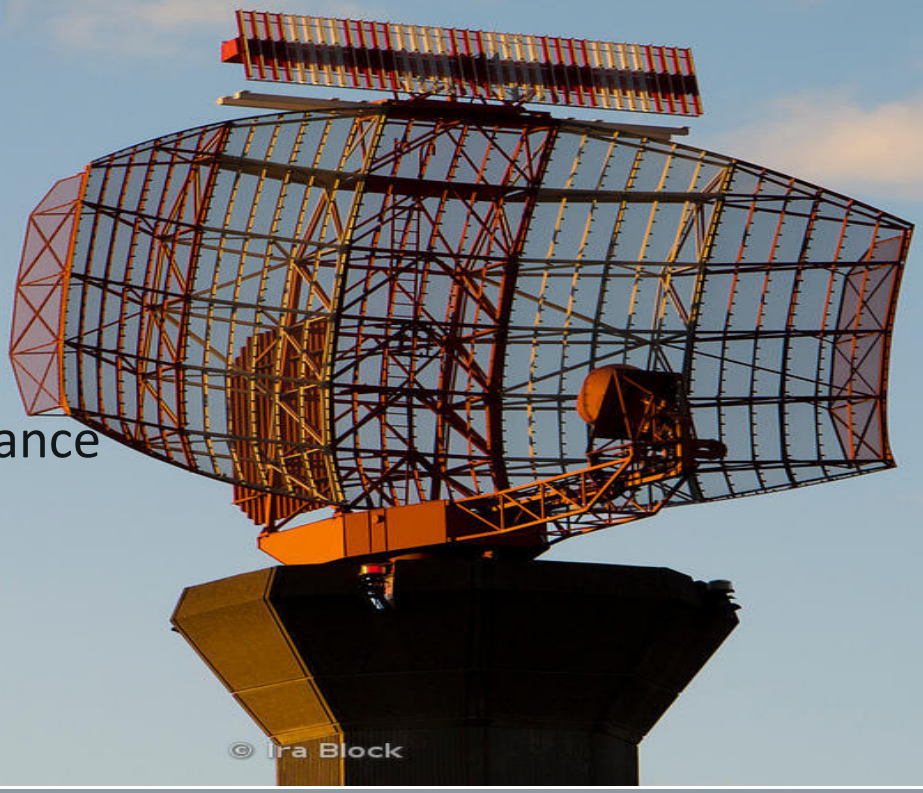
Supervise Monitor and Configure airfield assets:

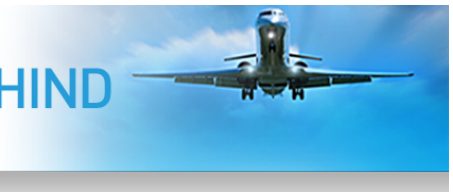
- VOR
- DF
- AGA & GG Comms
- Surveillance Systems

SMALLAIRPORT

ANSP XYZ

- Undertake a System Monitoring & Control function
- Perform complex maintenance tasks
- Unsupervised
- Small range of surveillance systems





Sarah - Qualifications and Experience

- 23, Polish, Multilingual
- Studied in Poland, Belgium and the UK
- Qualifications:
  - Foundation studies in Psychology (1 year university)
  - Bachelor of Engineering – Electrical
- Internships:
  - 4 weeks basic psychology, university hospital
  - 6 Weeks basic in electrical engineering
  - 10 Weeks advanced in electrical engineering
- Work Experience:
  - Part time hospitality (bar work)

Pete - Qualifications and Experience

- 37, American, educated in the USA
- University Education :
- Bachelor of Engineering – Massachusetts Institute of Technology USA.
- Internships:
- 6 weeks basic in electrical engineering
- 8 Weeks advanced in electrical engineering
- Work Experience:
- 6 Years at a large and established surveillance manufacturer (USA) Developing surveillance software
- 3 Years at a large and established surveillance manufacturer(UK). Marketing and selling surveillance products
- 4 Years at large multinational telecoms company. Maintaining and operating networks.

- Does Sarah require the same training as Pete?
- Do they both perform the same activities?
- Do they both require the same competencies?
- Do they need to perform to the same standards?
- How do we know when they are competent?
- How do they know when they are competent?

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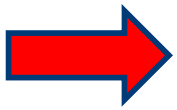
SMALLAIRPORT

Sarah's role will be an SMC ATSEP responsible for the supervision, monitoring and configuration of the airfield equipment (VOR, DF, AGA & GG Comms and Surveillance Systems)

ANSP XYZ

Pete, is going to work for a larger ANSP with more systems. His job will be more specialist, responsible for supervision and in depth maintenance activities on a narrow band of surveillance systems.

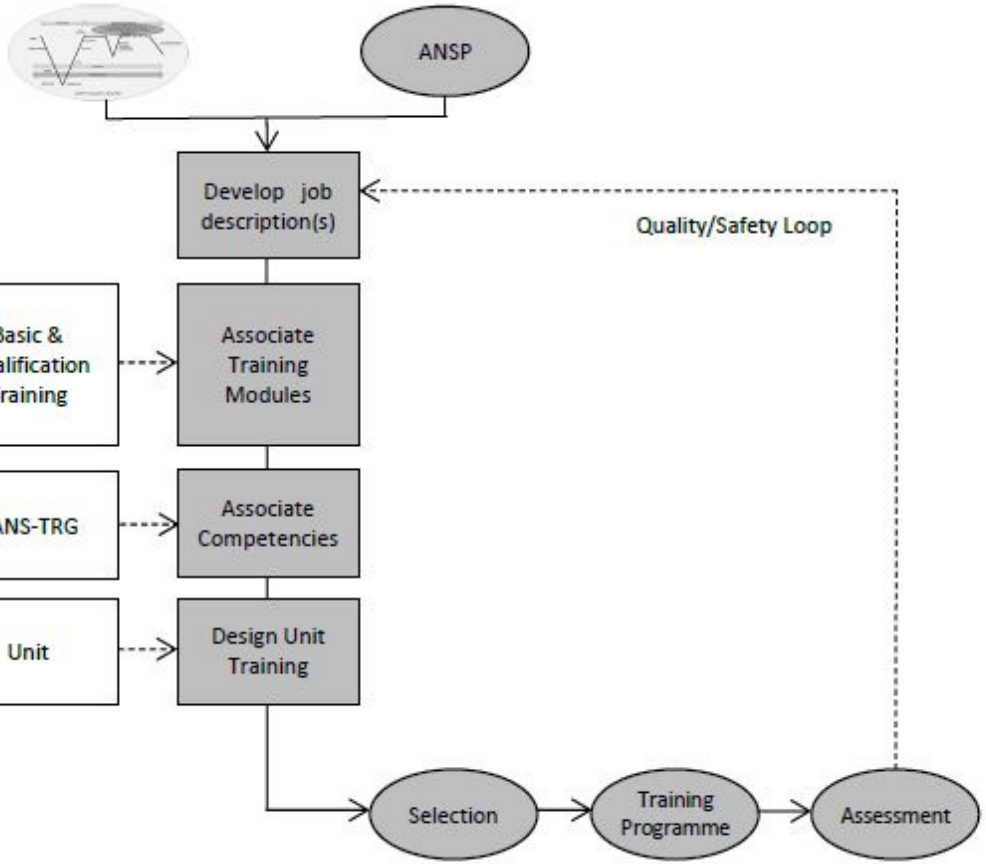


Step 1
Define profiles and activities within the ANSP's predetermined ATSEP scope and develop job description (s)

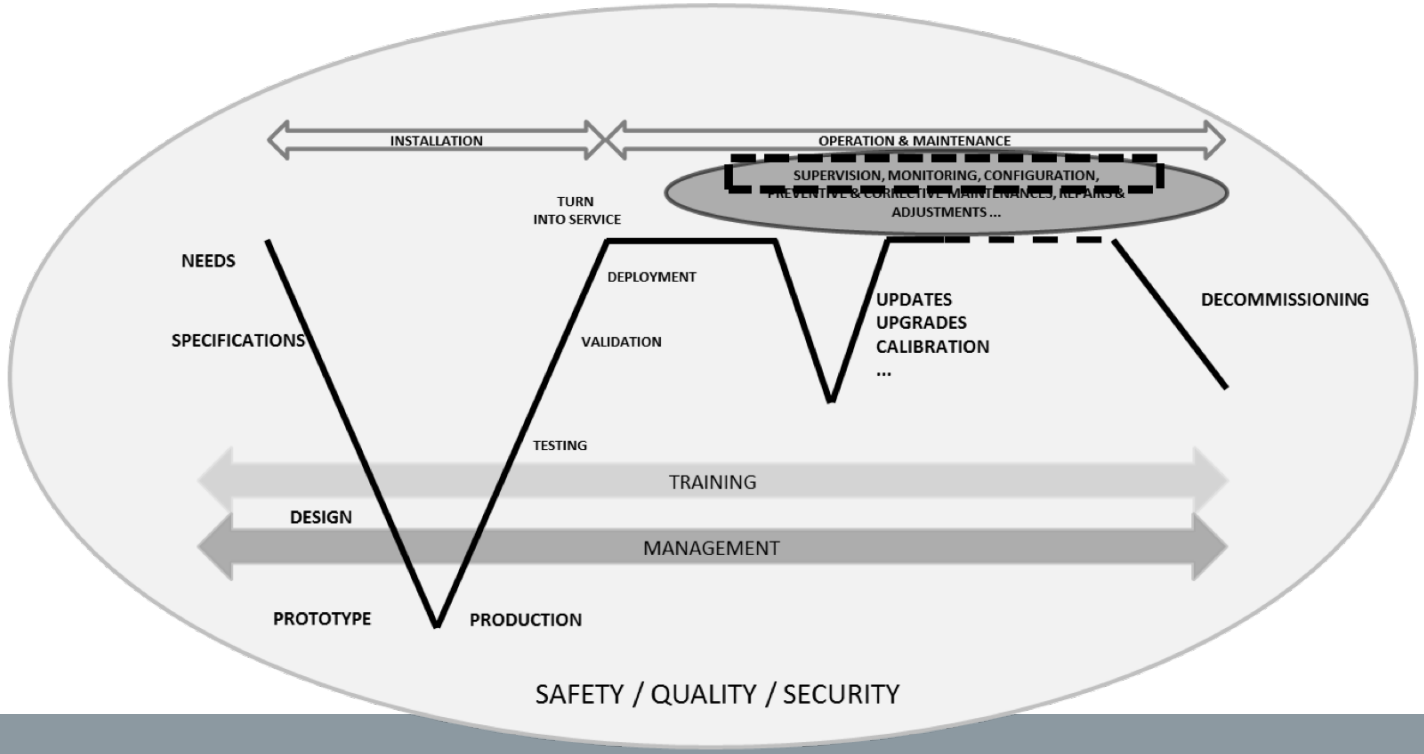
Step 2
Associate initial training modules to ATSEP job objective as identified in job description

Step 3
Associate competency units, competency elements and performance criteria to the ATSEP tasks.

Step 4
Develop training and assessment plans for unit training.



Profile the ATSEP (Scope)



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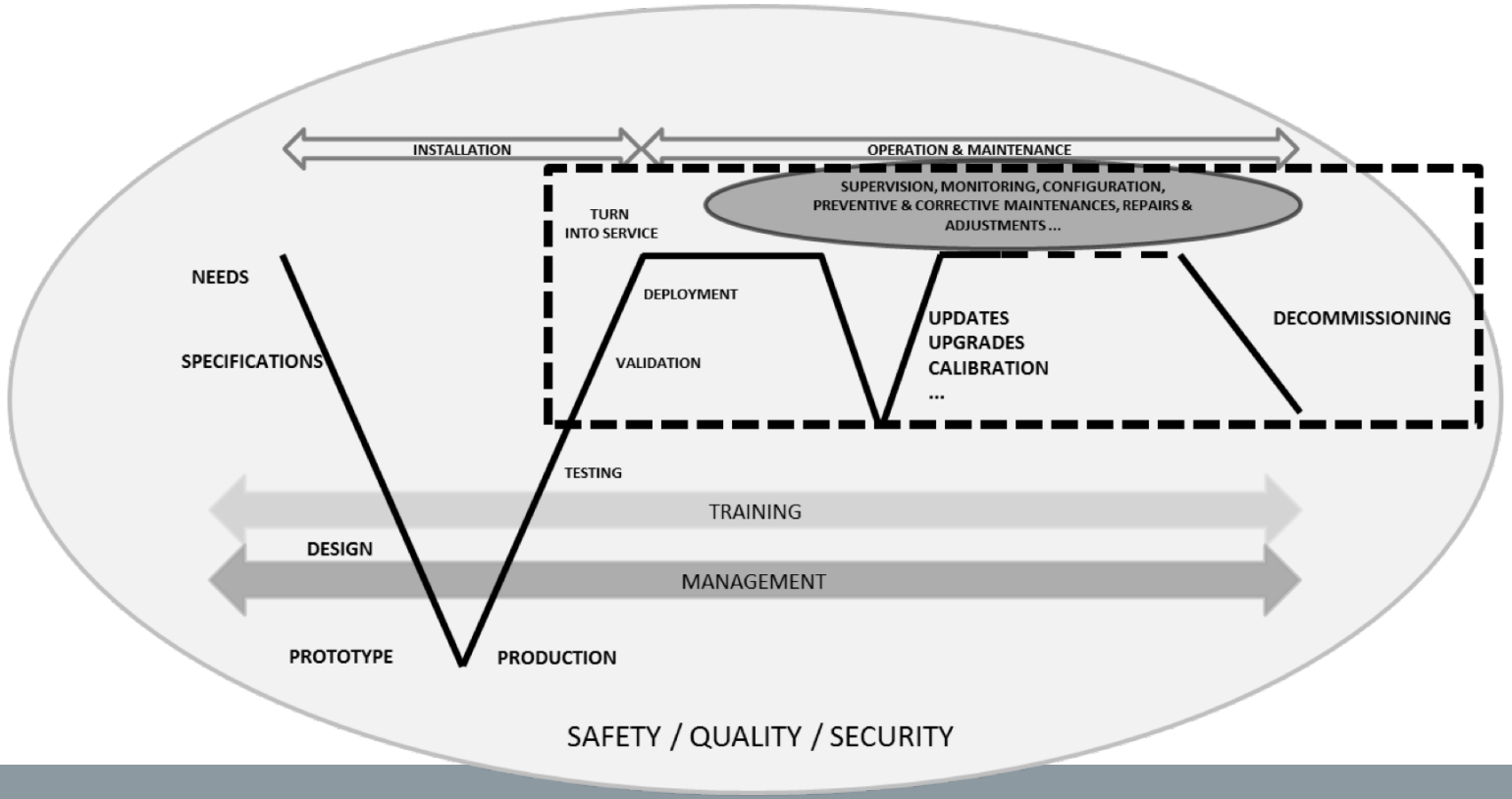
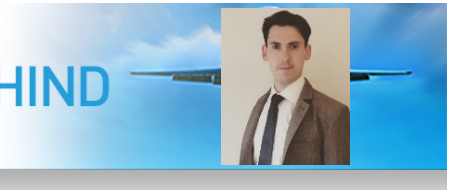


Profile the ATSEP (Job Description)

Item	Description
Job title	SMC ATSEP at regional airport SMALLAIRPORT
Job objective	Supervise, monitor and configure the related equipment (VOR, DF, R/T system, ASR)
Entry level	Technician with 4 years of previous job experience (minimum) or Bachelor of engineering with initial job experience
General nature of the job	Responsible execution of activities for supervision, monitoring and configuration of the related equipment
Key responsibilities	• Operational availability of the related equipment • Compliance to regulatory requirements • Compliance to internal procedures
List of tasks	• Monitors the following systems VOR, DF, R/T and ASR • Receive and forward error messages • Initiate maintenance activities based on messages received • Relate to manufacturer for maintenance activities • Inform customers on status of troubleshooting process • Document and report



Profile the ATSEP (Job Description)

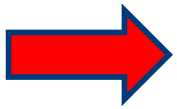
Item	Description
Job title	In-depth maintenance on surveillance systems
Job objective	Perform comprehensive tasks in the maintenance of complex surveillance systems with terminal responsibility for results
Entry level	Bachelor of engineering with 6 years of previous job experience (minimum) or Master of engineering with initial job experience
General nature of the job	Self-responsible execution of in-depth maintenance tasks of all levels in the field on Raytheon long range radar, primary & secondary
Key responsibilities	• Efficient maintenance & repair processes • Compliance to regulatory requirements • Compliance to internal procedures

Profile the ATSEP (Job Description)

Item	Description
List of tasks	• Monitor the surveillance system • Reduce primary radar false target rate due to weather • Conduct fault analysis • Troubleshoot the system • Inspect and conduct in-depth maintenance • Maintain hardware and repair fixed components • Install new software/firmware versions • Exchange faulty hardware • Adjust local adaptation data

Profile the ATSEP (Job Description)

Item	Description
List of tasks	• Cooperate with relevant partners in investigation of errors • Manage hardware configuration • Conduct initial turning on system in to service after validation • Conduct consultation with customers



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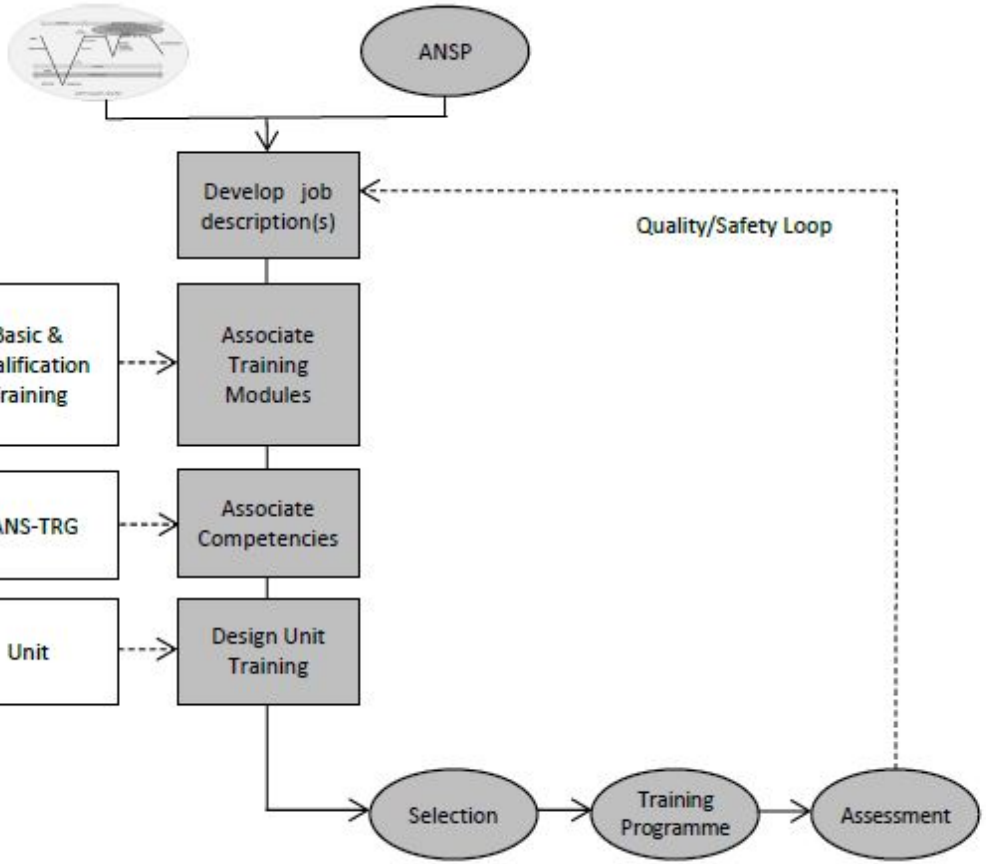
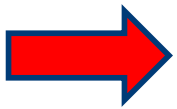


Predefined Training Modules	Job Objective
	Supervise, monitor and configure the related equipment (VOR, DF, R/T system, ASR)
Basic	X
Qualification communication	X
Qualification navigation	X
Qualification surveillance	X
Qualification data processing/automation	
Qualification SMC	X
Qualification infrastructure	X
Qualification engineering	

Predefined Training Modules	Job Objective
	Perform comprehensive tasks in the maintenance of complex surveillance systems with terminal responsibility for results
Basic	X
Qualification communication	
Qualification navigation	
Qualification surveillance	X
Qualification data processing/automation	
Qualification SMC	X
Qualification infrastructure	
Qualification engineering	



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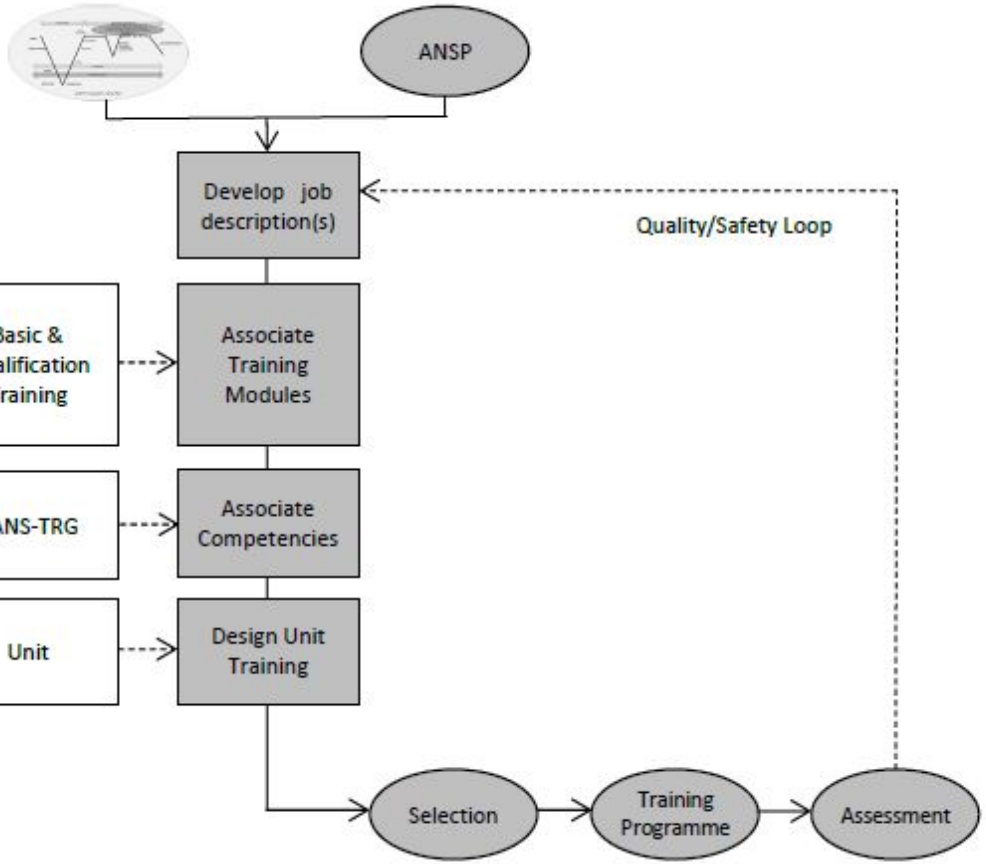

Associate the competencies from the competency framework

ATSEP Task	Competency Units / Competency Elements										
	Engineering	Situation Awareness	Service Provision	Coordination	Management of non-routine Situations	Problem Solving and Decision Making	Self Management and Continuous Learning	Workload Management	Teamwork	Communication
Monitoring of the VOR, DF, r/t, ASR system		2.1 2.2 2.3	3.1				7.2 7.5	8.4		
Receiving and forwarding error messages		2.2	3.2	4.1	5.2		7.2 7.5			10.2
Initiating maintenance activities based on error messages received				4.1 4.2	5.2		7.2 7.5	8.4		
Relating to manufacturer for maintenance activities				4.2	5.2		7.2 7.5	8.4		10.2
Informing customers (airport) on status of troubleshooting process				4.2			7.2 7.5			10.2
Documenting and reporting			3.2				7.2 7.5	8.4		
Summary of Competency Elements		***2.1*** ***2.2*** ***2.3***	***3.1*** ***3.2*** ***3.3***	***4.1*** ***4.2***	***5.2***		***7.2*** ***7.5***	***8.4***		***10.2***

Associate the competencies from the competency framework

ATSEP Task	Competency Units / Competency Elements									
	Engineering	Situation Awareness	Service Provision	Coordination	Management of non-routine Situations	Problem Solving and Decision Making	Self Management and Continuous Learning	Workload Management	Teamwork	Communication
Monitoring of the surveillance system		2.1 2.3	3.1				7.2 7.5			
Reducing primary radar false target rate due to weather conditions							7.2	8.4		
Fault analysis	1.7 1.8	2.1 2.2	3.3	4.2	5.3		7.2 7.5	8.1		
Troubleshooting of the system	1.7	2.1 2.2	3.3	4.1 4.2	5.3	6.1 6.2	7.2 7.5	8.4		10.2
Inspection and in-depth maintenance according to system handbook (manufacturer)	1.7	2.1	3.3	4.2	5.3	6.1 6.2	7.2 7.5	8.4		
Maintenance of hardware and repair of fixed components		2.1	3.3	4.2	5.3		7.2	8.4		
Installation of new software / firmware versions		2.1	3.3	4.2	5.3		7.2 7.5	8.4		

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Associate the competencies from the competency framework

ATSEP Task	Competency Units / Competency Elements									
	Engineering	Situation Awareness	Service Provision	Coordination	Management of non-routine Situations	Problem Solving and Decision Making	Self Management and Continuous Learning	Workload Management	Teamwork	Communication
Exchange of faulty hardware		2.1	3.3	4.2	5.3		7.2 7.5	8.4		
Adjustment of local adaptation data				4.2		6.1	7.2 7.5	8.4		
Cooperation with relevant partners in the investigation of cross-device errors	1.7 1.8					6.1 6.2	7.2 7.5		9.2	10.2
Hardware configuration management			3.2				7.2 7.5	8.4		
Initial turning of systems into service after validation	1.6	2.1				6.3	7.2 7.5	8.4	9.2	10.2
Customer consulting	1.1 1.3					6.1				10.1 10.2 10.4
Summary of Competency Elements	***1.1*** ***1.3*** ***1.6*** ***1.7*** ***1.8***	***2.1*** ***2.2*** ***2.3***	***3.1*** ***3.2*** ***3.3***	***4.1*** ***4.2***	***5.3***	***6.1*** ***6.2*** ***6.3***	***7.2*** ***7.5***	***8.4***	***9.2***	***10.1*** ***10.2*** ***10.4***

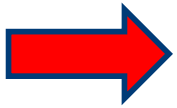
Performance Criteria

Competency Element	Performance Criteria
CE2.1	PC2.1
CE2.2	PC2.2, PC2.3
CE2.3	PC2.4, PC2.5
CE3.1	PC3.1
CE3.2	PC3.2
CE3.3	PC3.4
CE4.1	PC4.1
CE4.2	PC4.2
CE5.2	PC5.3, PC5.4
CE7.2	PC7.2
CE7.5	PC7.7
CE8.4	PC8.4
CE10.2	PC10.2, PC10.3

Performance Criteria

Competency Element	Performance Criteria
CE1.1	PC1.4
CE1.3	PC1.1
CE1.6	PC1.8, PC1.11
CE1.7	PC1.10
CE1.8	PC1.12
CE2.1	PC2.1
CE2.2	PC2.2
CE2.3	PC2.4
CE3.1	PC3.1
CE3.2	PC3.2
CE3.3	PC3.3
CE4.1	PC4.1
CE4.2	PC4.2
CE5.3	PC5.6
CE6.1	PC6.1, PC6.2

Competency Element	Performance Criteria
CE6.2	PC6.3
CE6.3	PC6.5
CE7.2	PC7.2
CE7.5	PC7.6, PC7.7
CE8.4	PC8.4
CE9.2	PC9.2
CE10.1	PC10.1
CE10.2	PC10.2, PC10.3
CE10.4	PC10.3



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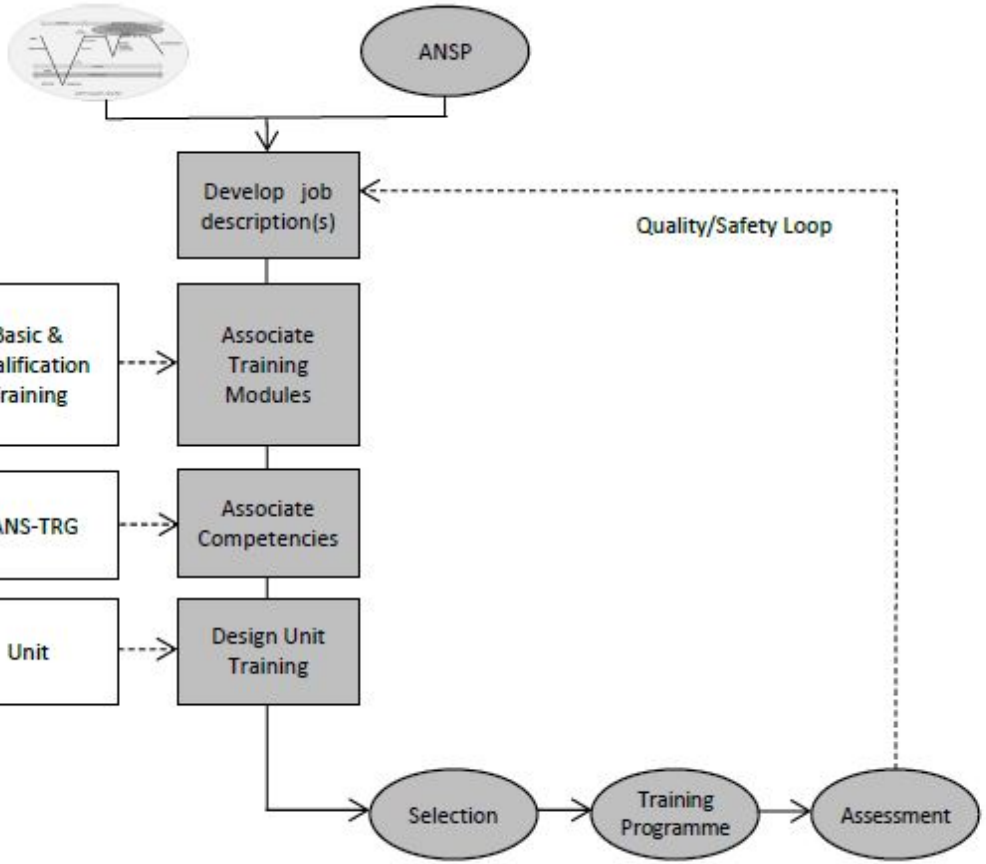

Design the training plan (training content)

Item	Provider	Duration [d]	Type	Remarks
Network training course	External	2	Classroom	Can be skipped if knowledge & skills already established
Overview training on VOR	External, e.g. manufacturer	2	Classroom + lab	
Overview training on r/t system	External, e.g. manufacturer	2	Classroom + lab	
Overview training on ASR	External, e.g. manufacturer	5	Classroom + lab	
Field training on VOR	Own unit	3	On-the job	
Field training on DF	Own unit	3	On-the job	
Field training on r/t system	Own unit	3	On-the job	
Field training on ASR	Own unit	5	On-the job	
Overview on procedures	Internal	1	Classroom	
Overview on documentation tools	Internal	½	Classroom	

Design the training plan (training sequence)

The training is grouped in a sequence as follows:

- ATSEP Basic course
- ATSEP Qualification courses
- For each system: theoretical course first, then OJT
- Unix, network, tools and procedures can be trained anywhere in the sequence

Design the training plan (training content)

Item	Provider	Duration [d]	Type	Remarks
Unix training course	External	5	Classroom	Can be skipped if knowledge & skills already established
Network training course	External	5	Classroom	Can be skipped if knowledge & skills already established
Training course on wave propagation	External	5	Classroom	Can be skipped if knowledge & skills already established
Overview training on surveillance system	External, e.g. manufacturer	15	Classroom + lab	
Field training on PSR	Own unit	20	On-the job	
Field training on MSSR	Own unit	15	On-the job	
Field training on Mode S	Own unit	10	On-the job	
Overview on procedures	Internal	2	Classroom	
Overview on documentation tools	Internal	1	Classroom	

Design the training plan (training sequence)

The training is grouped in a sequence as follows:

- ATSEP Basic course
- ATSEP Qualification courses
- For the surveillance system: theoretical course first, then OJT
- Unix, network, wave propagation, tools and procedures can be trained anywhere in the sequence

Competency

Final Competency Standards - FCS

↳ Performance Criteria

Interim Competency Standards - ICS

Design the training plan (evidence guide, example)

CU 2 – Situational Awareness				
P.C.		ICS 1	ICS 2	FCS
2.1	Monitors the CNS/ATM systems in own area of responsibility and contributing areas as well	Consistently monitors individual systems (VOR, DF, r/t, ASR) and responds in a timely manner with appropriate actions at times of low alarms/event rates.	Consistently monitors individual systems (VOR, DF, r/t, ASR) and responds in a timely manner with appropriate actions at times of high alarms/event rates and abnormal conditions.	Consistently monitors all systems (VOR, DF, r/t, ASR) and responds in a timely manner with appropriate actions at times of high alarms/event rates and abnormal conditions
2.2	Monitors the environmental conditions that have an impact on own and adjacent areas of responsibility and understands the impact on systems and services	Consistently demonstrates, under supervision, an awareness of the potential impact of environmental conditions (weather) on systems and services in own area of responsibility.	Consistently demonstrates, under supervision, an awareness of the potential impact of environmental conditions (weather) on systems and services in own and adjacent area of responsibility.	Independently monitors environmental conditions (weather) and responds with the appropriate actions in own and adjacent area of responsibility.
2.3	Monitors the relevant elements of the ATC operational situation	Demonstrates a awareness of the ATC operational situation with respect to traffic levels, equipment availability, open sectors, staffing levels.	Able to determine, under supervision, the most appropriate action taking into account the operational situation with respect traffic levels, equipment availability, open sectors, staffing levels.	Able to independently execute the most appropriate action taking into account the operational situation with respect traffic levels, equipment availability, open sectors, staffing levels.

Design the training plan (evidence guide, example)

CU 2 – Situational Awareness				
P.C.		ICS 1	ICS 2	FCS
2.4	Maintains awareness of the people involved in or affected by the operation	Demonstrates the ability to name ATSEP involved in or affected by operation	On request, demonstrates the ability to name all people involved in or affected by operation	In all activities demonstrates awareness of the people involved in or affected by the operation
2.5	Obtains information from all available monitoring sources	Demonstrates awareness of different monitoring sources	Demonstrates awareness of all different monitoring sources and obtains information from some of the monitoring sources	Demonstrates awareness of different information sources and obtains information from all (relevant) monitoring sources
ICS – Interim Competency Standard		**FCS – Final Competency Standard**		

Design the training plan (evidence guide, example)

CU 3 – Service Provision				
P.C.		ICS 1	ICS 2	FCS
3.1	Uses systems monitoring and diagnostic capabilities effectively	Demonstrates the ability to assess system status and interpret messages on all systems using the system management tools. Opening and closing of windows etc…		Demonstrates the ability to interact with all system management tools, using all the features in a safe and consistent manner.
3.2	Evaluates the operational consequences of CNS/ATM system anomalies or failures	Demonstrates an understanding of the consequences of system anomalies and failures post event through debrief sessions with mentor	Takes appropriate action in response to system anomalies and failures during low workload conditions. Intervention may be required by mentor during periods of high workload.	Independently takes appropriate action in response to system anomalies and failures in all workload conditions.
3.4	Uses prescribed operation procedures properly	Demonstrates awareness of available operating procedures and ability to apply them in mentored session	Demonstrates understanding of available operating procedures and applies them in low workload conditions	Demonstrates understanding of all available operating procedures and applies them in all workload conditions

ICS – Interim Competency Standard **FCS – Final Competency Standard**

Design the training plan (evidence guide, example

CU 2 – Situational Awareness				
	P.C.	ICS 1	ICS 2	FCS
2.1	Monitors the CNS/ATM systems in own area of responsibility and contributing areas as well	Consistently monitors individual systems (SUR) and responds in a timely manner with appropriate actions at times of low alarms/event rates.	Consistently monitors individual systems (SUR) and responds in a timely manner with appropriate actions at times of high alarms/event rates and abnormal conditions.	Consistently monitors all systems (SUR) and responds in a timely manner with appropriate actions at times of high alarms/event rates and abnormal conditions
2.2	Monitors the environmental conditions that have and impact on own and adjacent areas of responsibility and understands the impact on systems and services	Consistently demonstrates, under supervision, an awareness of the potential impact of environmental conditions (weather) on systems and services in own area of responsibility.	Consistently demonstrates, under supervision, an awareness of the potential impact of environmental conditions (weather) on systems and services in own and adjacent area of responsibility.	Independently monitors environmental conditions (weather) and responds with the appropriate actions in own and adjacent area of responsibility.
2.4	Maintains awareness of the people involved in or affected by the operation	Demonstrates the ability to name ATSEP involved in or affected by operation	On request, demonstrates the ability to name all people involved in or affected by operation	In all activities demonstrates awareness of the people involved in or affected by the operation

ICS – Interim Competency Standard **FCS – Final Competency Standard**

Design the training plan (evidence guide, example

CU 3 – Service Provision				
	P.C.	ICS 1	ICS 2	FCS
3.1	Uses systems monitoring and diagnostic capabilities effectively	Demonstrates the ability to assess system status and interpret messages on all systems using the system management tools. Opening and closing of windows etc…	Demonstrates the ability to interact with individual system management tools, using features in a safe and consistent manner.	Demonstrates the ability to interact with all system management tools, using all the features in a safe and consistent manner.
3.2	Evaluates the operational consequences of CNS/ATM system anomalies or failures	Demonstrates an understanding of the consequences of system anomalies and failures post event through debrief sessions with mentor	Demonstrates an understanding of the consequences of system anomalies and failures in event moderated by a mentor	Demonstrates an understanding of the consequences of system anomalies and failures online in all workload conditions
3.3	Switches from monitoring to intervention in a timely manner	Demonstrates the ability to switch from monitoring to intervention	Takes appropriate action in response to system anomalies and failures during low workload conditions. Intervention may be required by mentor during periods of high workload.	Independently takes appropriate action in response to system anomalies and failures in all workload conditions.

ICS – Interim Competency Standard **FCS – Final Competency Standard**

END

… finally, Sarah is competent to do her job ☺

END

… finally, Pete is competent to do his job ☺

- Does Sarah require the same training as Pete?
- Do they both perform the same activities?
- Do they both require the same competencies?
- Do they need to perform to the same standards?
- How do we know when they are competent?
- How do they know when they are competent?

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North American Central American and Caribbean (NACC) Office
Mexico City

South American (SAM) Office
Lima

ICAO Headquarters
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Western and Central African (WACAF) Office
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European and North Atlantic (EUR/NAT) Office
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Cairo

Eastern and Southern African (ESAF) Office
Nairobi

Asia and Pacific (APAC) Sub-office
Beijing

Asia and Pacific (APAC) Office
Bangkok

THANK YOU