CBTA/EBT Workshop

ADDIE Model

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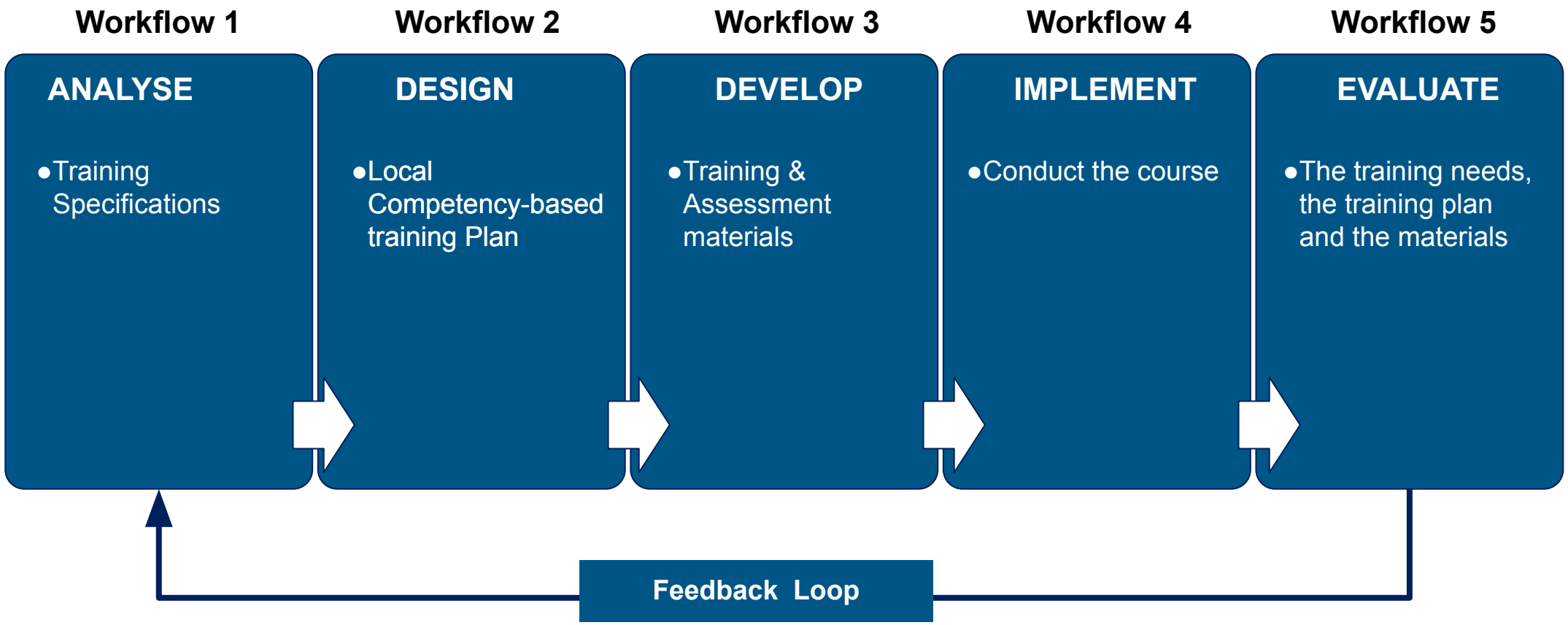
ISD - ADDIE Model



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ADDIE MODEL - Workflow 1

INPUT	PROCESS	OUTPUT
Training request	Identify the purpose of the training required	Training specification
Task list	Identify the tasks associated with the purpose of the training	
Operational documents	Identify the operational requirements	
Technical documents	Identify the technical requirements	
Regulatory documents	Identify the regulatory requirements	
Organisational documents	Identify the organisational requirements	
	Identify any other requirements	
	Identify simulator equipments	

Analyse training need

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ADDIE Model - WF1

- **TASK LIST**

INPUT	PROCESS	OUTPUT
Training request	Identify the purpose of the training required	Training specification
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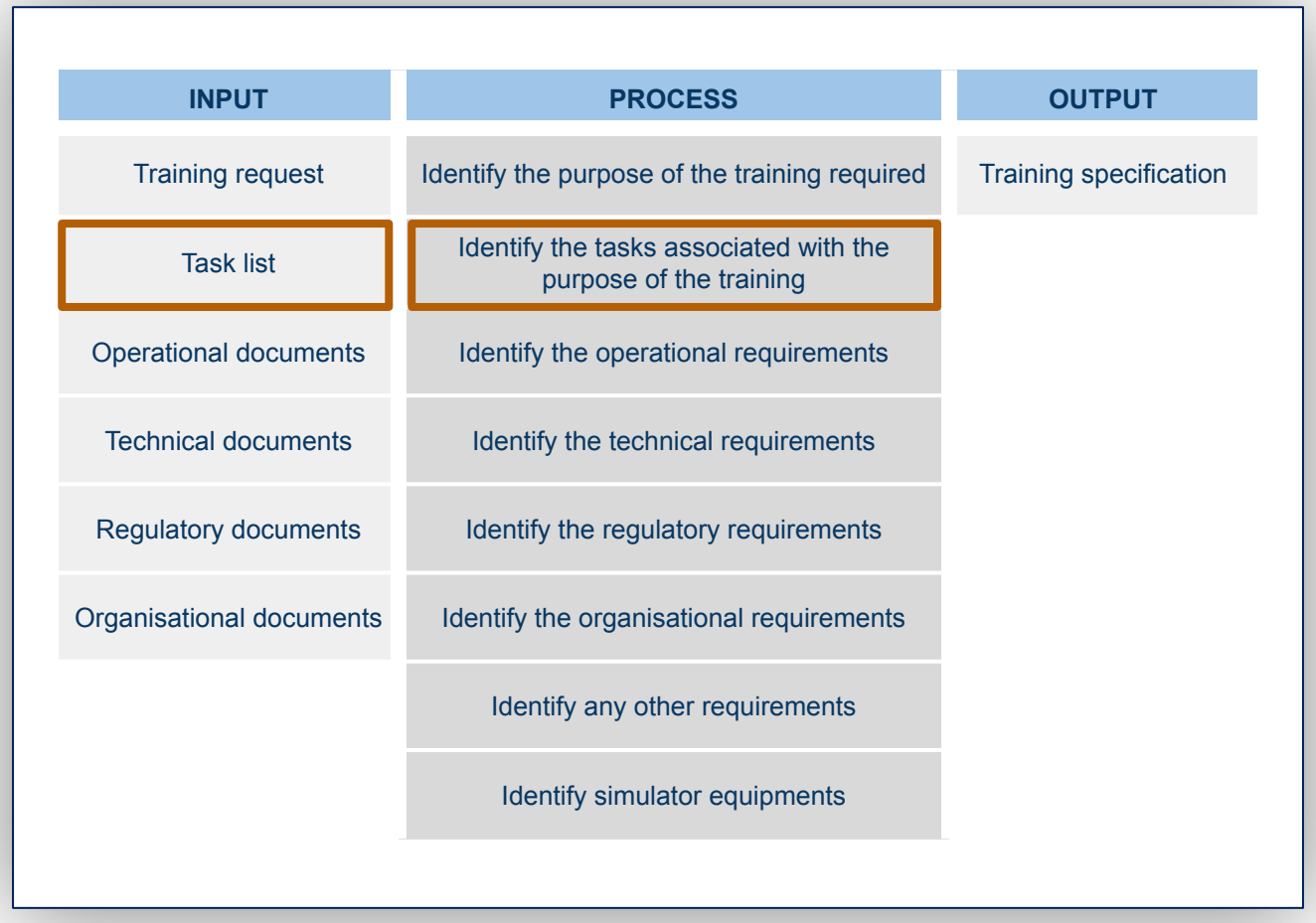
Analyse training need

ADDIE MODEL - Workflow 1



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Analyse training need

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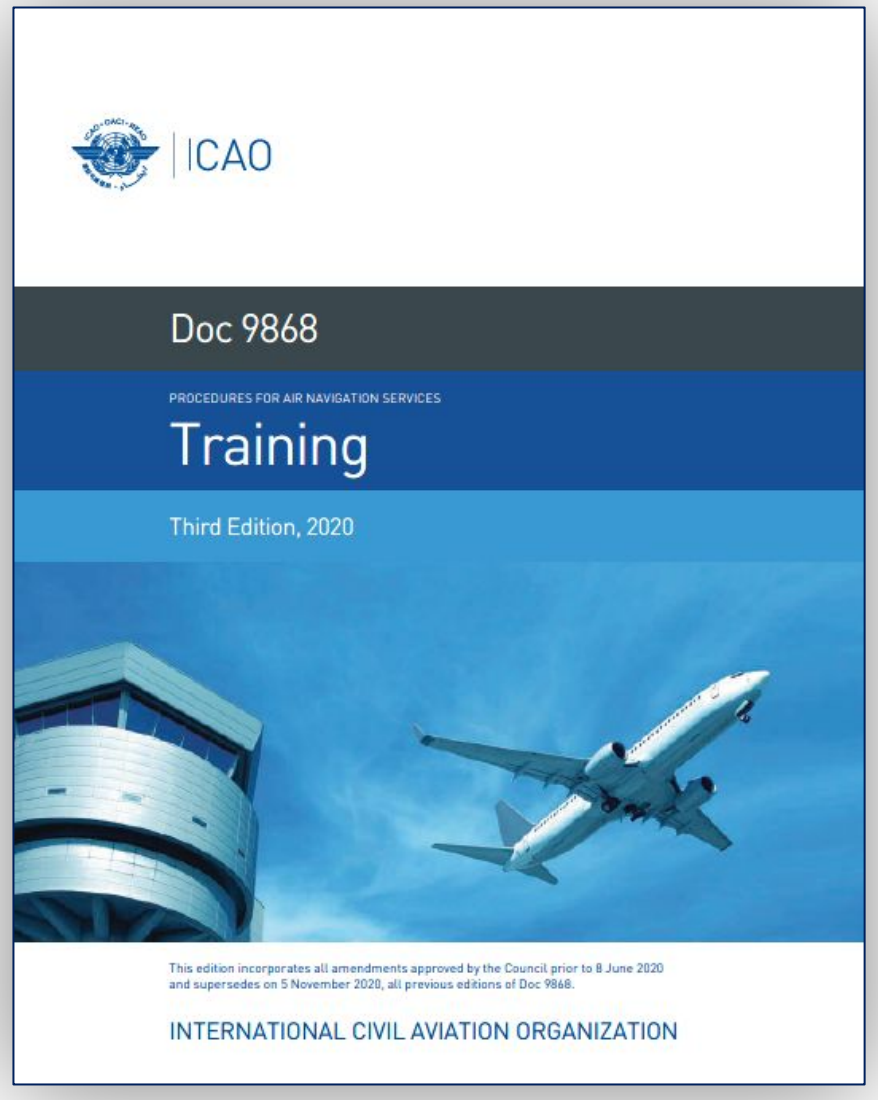
Task List



FLIGHT PHASE ⇒ TASKS ⇛ SUBTASKS
PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS
PERFORM TAKEOFF ⇒ Perform Takeoff roll ⇛ Applies takeoff thrust ⇛ Checks engine parameters …
PERFORM CLIMB
PERFORM CRUISE
PERFORM DESCENT
PERFORM APPROACH
PERFORM LANDING
PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS

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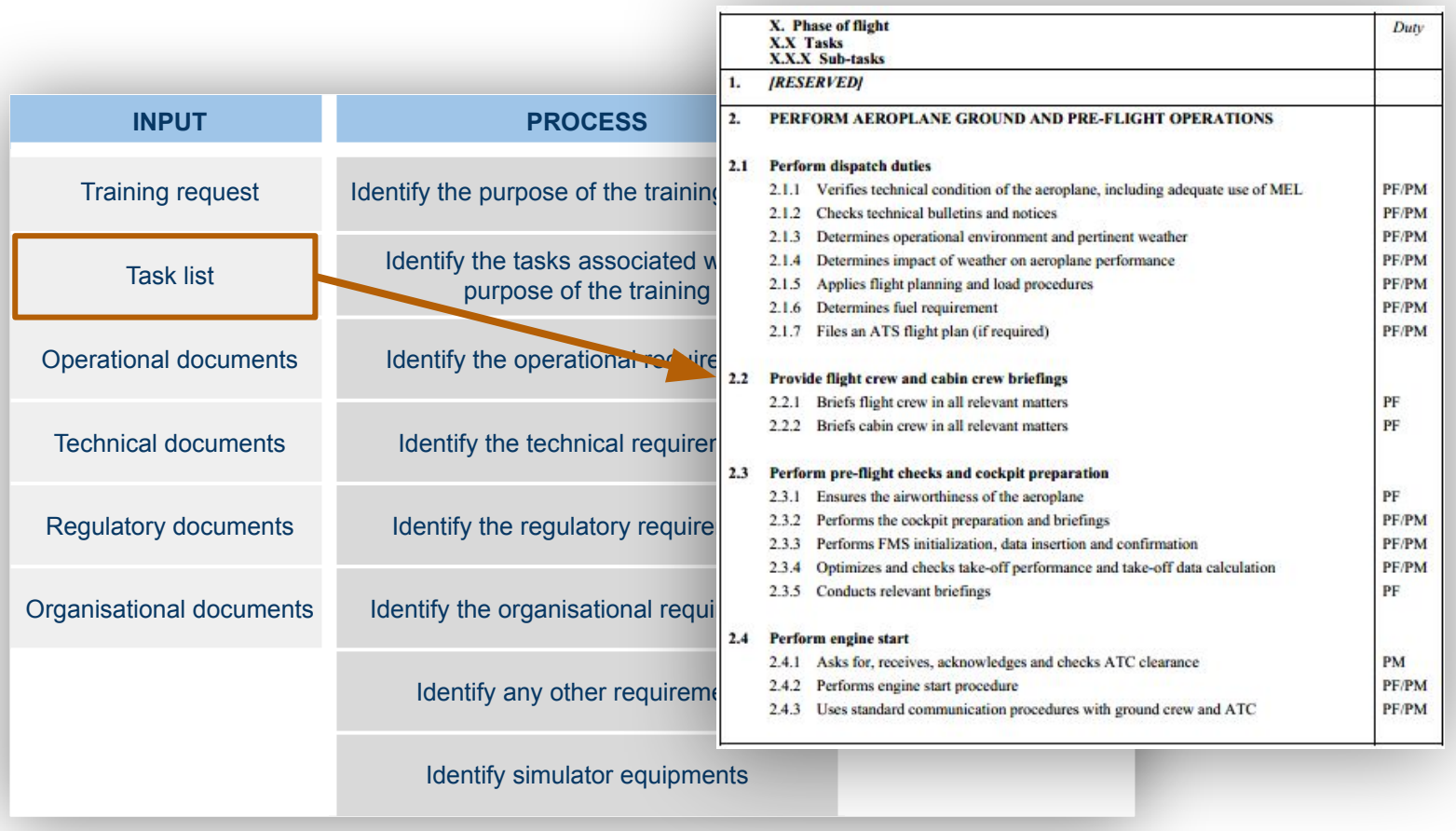
CBTA Instructional System Design (ISD)



- **Activity as Pilot in Commercial Air Transport / MPO**

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ISD - ADDIE Model - Task List

COMMERCIAL AIR TRANSPORT

ICAO Doc 9868 - PANS-TRG

FLIGHT PHASE ⇒ TASKS ⇒ SUBTASKS
PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS
PERFORM TAKEOFF ⇒ Perform Takeoff roll ⇛ Applies takeoff thrust ⇛ Checks engine parameters ...
PERFORM CLIMB
PERFORM CRUISE
PERFORM DESCENT
PERFORM APPROACH
PERFORM LANDING
PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS

200 + Sub Tasks

SINGLE PILOT OPERATIONS - VFR

3.1 Perform pre-take-off and pre-departure preparation
3.2 Perform take-off roll
3.3 Perform transition to instrument flight rules (to be removed)
3.4 Perform initial climb to flap retraction altitude
3.6 Perform navigation

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ISD - ADDIE Model - Task & Subtask List

COMMERCIAL AIR TRANSPORT

ICAO Doc 9868 - PANS-TRG

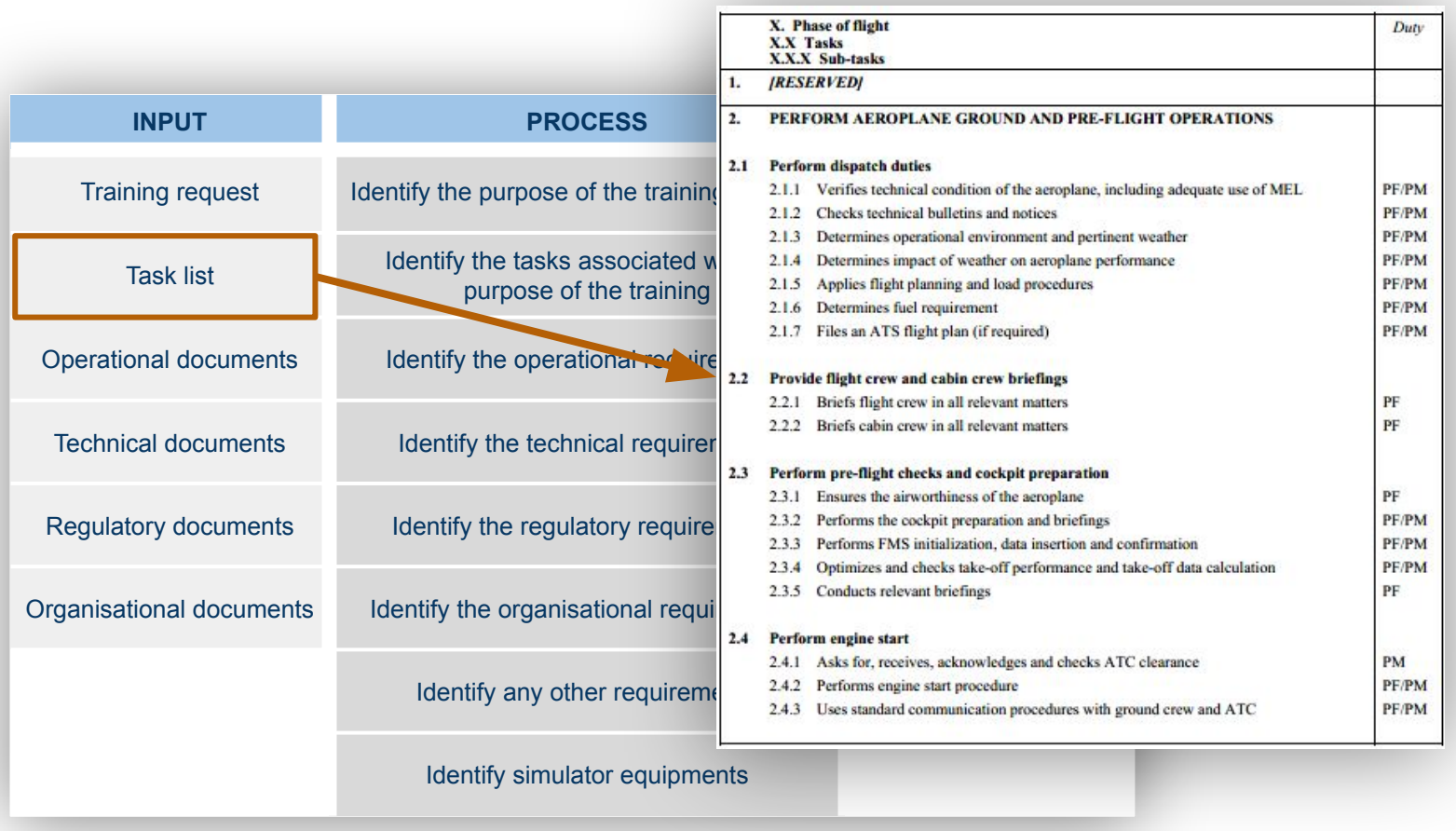
FLIGHT PHASE ⇒ TASKS ⇛ SUBTASKS
PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS
PERFORM TAKEOFF ⇒ Perform Takeoff roll ⇛ Applies takeoff thrust ⇛ Checks engine parameters ...
PERFORM CLIMB
PERFORM CRUISE
PERFORM DESCENT
PERFORM APPROACH
PERFORM LANDING
PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS

200 + Sub Tasks

SINGLE PILOT OPERATIONS - VFR - LIGHT Aircraft

7.1 Perform approach in general	7.1.1 Executes approach according to procedures and situation
7.1 Perform approach in general	*7.1.2 Selects appropriate level/mode of automation (to be removed)*
….	….
7.1 Perform approach in general	7.1.4 Operates controls smoothly and with coordination
7.1 Perform approach in general	7.1.5 Performs speed reduction and flap extension
7.1 Perform approach in general	7.1.6 Performs relevant checklists
….	…..
7.2 Perform precision approach	*7.2.1 Performs ILS approach (to be removed)*
….	*…*
7.2 Perform precision approach	*7.2.4 Performs GPS/GNSS approach (to be removed)*
…	….
7.4 Perform approach with visual reference to ground	7.4.1 Performs standard visual approach
….	…..

CBTA Instructional System Design (ISD)



- **What about Steep Turn? Slow Flight …**

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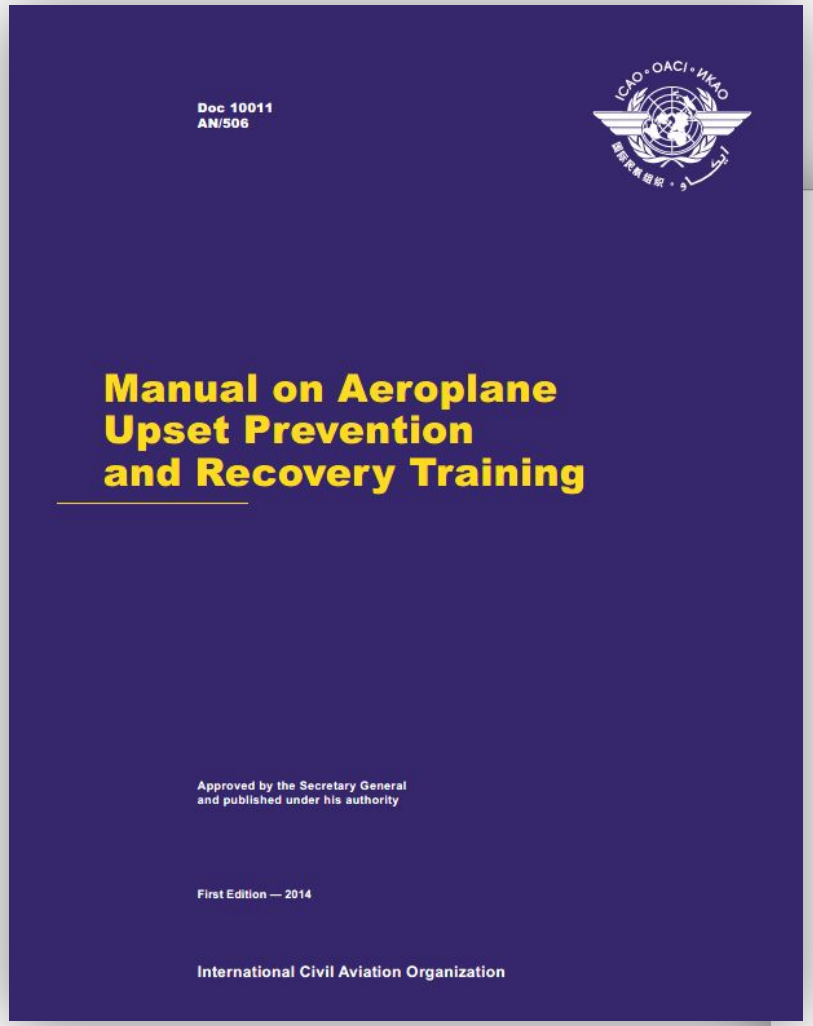

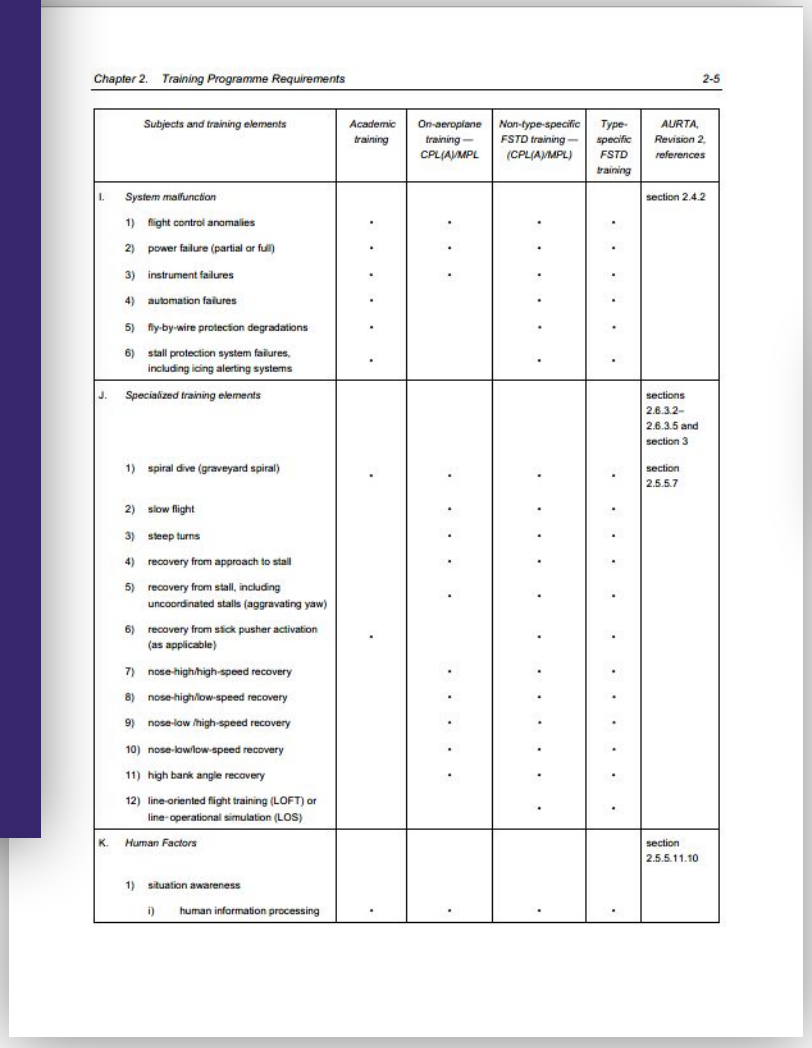

Subjects and training elements	*Academic training*	*On-aeroplane training — CPL(A)/MPL*	*Non-type-specific FSTD training — (CPL(A)/MPL)*	*Type-specific FSTD training*	*AURTA, Revision 2, references*
I. *System malfunction*					section 2.4.2
1) flight control anomalies	•	•	•	•	
2) power failure (partial or full)	•	•	•	•	
3) instrument failures	•	•	•	•	
4) automation failures	•		•	•	
5) fly-by-wire protection degradations	•		•	•	
6) stall protection system failures, including icing alerting systems	•		•	•	
J. *Specialized training elements*					sections 2.6.3.2–2.6.3.5 and section 3
1) spiral dive (graveyard spiral)	•	•	•	•	section 2.5.5.7
2) slow flight		•	•	•	
3) steep turns		•	•	•	
4) recovery from approach to stall		•	•	•	
5) recovery from stall, including uncoordinated stalls (aggravating yaw)		•	•	•	
6) recovery from stick pusher activation (as applicable)	•		•	•	
7) nose-high/high-speed recovery		•	•	•	
8) nose-high/low-speed recovery		•	•	•	
9) nose-low /high-speed recovery		•	•	•	
10) nose-low/low-speed recovery		•	•	•	
11) high bank angle recovery		•	•	•	
12) line-oriented flight training (LOFT) or line- operational simulation (LOS)			•	•	
K. *Human Factors*					section 2.5.5.11.10
1) situation awareness					
i) human information processing	•	•	•	•	

Specialized Training Elements

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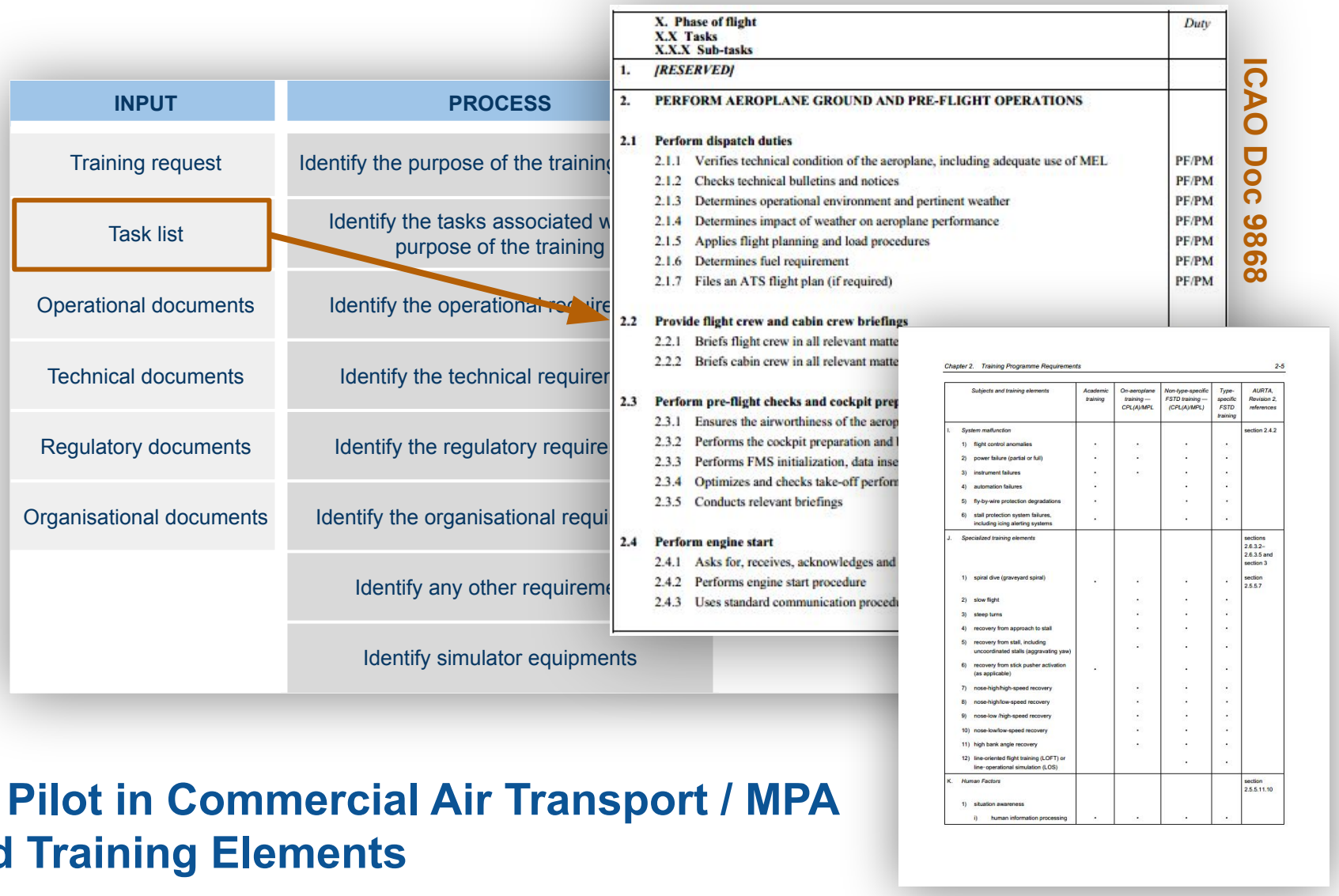
CBTA Instructional System Design (ISD)



- **Activity as Pilot in Commercial Air Transport / MPA**
- **Specialized Training Elements**

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ADDIE Model - WF1

- **Training Specifications**

Example - MPL Course

Attachment B to Chapter 2

EXAMPLE OF MPL TRAINING SPECIFICATIONS

The table below contains an example of a completed training specification for an initial multi-crew pilot licence course.

	Purpose
What is the purpose of the training?	To train ab initio aeroplane pilots for co-pilot duties.
State the phase(s) of training.	Core Flying Skills and Basic Phases (ab initio pilot training on single- and/or multi-pilot, and single- and/or multi-engine aeroplane) Intermediate Phase (reinforcement of multi-crew coordination and IFR operations). Advanced Phase (type rating and instrument qualification on multi-pilot, multi-engine turbine-powered aeroplane used in commercial air transport operations).
What qualification, if any, will the trainee achieve on successful completion of the training?	Multi-crew pilot licence with aircraft type rating and instrument privileges as appropriate to proceed for commercial air transport line training (initial operating experience).
	Tasks
Describe the tasks associated with the purpose of the training.	The trainee shall carry out the following tasks: 1) flight planning and preparation; 2) aeroplane checks and cockpit procedures, radio-telephony procedures, CRM and TEM; 3) basic aircraft handling in the phases of flight in both VFR and IFR conditions, with asymmetric concepts; 4) aeroplane upset prevention and recovery; 5) cross-country flying procedures and technique, including diversion procedures; 6) basic and applied instrument flying technique, including standard instrument departure (SID), standard instrument arrival (STAR), airways tracking, holding procedures, arrival and approach charts and procedures (precision and non-precision), missed approach procedures; 7) solo flight and night flying operations;

Example - Type Rating Course

TRAINING SPECIFICATION

A350 Type Rating Course

Purpose	
What is the purpose of the training?	A350 Type Rating Course for an Operator.
What is(are) the phase(s) of training (e.g. initial, unit, refresher, recurrent and/or conversion training)?	A350 Type Rating Course in the context of a conversion course (e.g. from B737 to A350)
What qualification, if any, will the trainee achieve on successful completion of the training?	A350 Type Rating

Tasks		
What are the tasks associated with the purpose of the training?	2. PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS	2.1 Perform dispatch duties
		2.2 Provide flight crew and cabin crew briefings
		2.3 Perform pre-flight checks and cockpit preparation
		2.4 Perform engine start
		2.5 Perform taxi
		2.6 Manage abnormal and emergency situations
		2.7 Communicate with cabin crew, passengers and company
	3. PERFORM TAKE-OFF	3.1 Perform pre-take-off and pre-departure preparation
		3.2 Perform take-off roll
		3.3 Perform transition to instrument flight rules
		3.4 Perform initial climb to flap retraction altitude
		3.5 Perform rejected take-off
		3.6 Perform navigation
		3.7 Manage abnormal and emergency situations
	4. PERFORM CLIMB	4.1 Perform standard instrument departure/en-route navigation
		4.2 Complete climb procedures and checklists

DATA
(Annex to Training Specification)

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Adapted Competency Model

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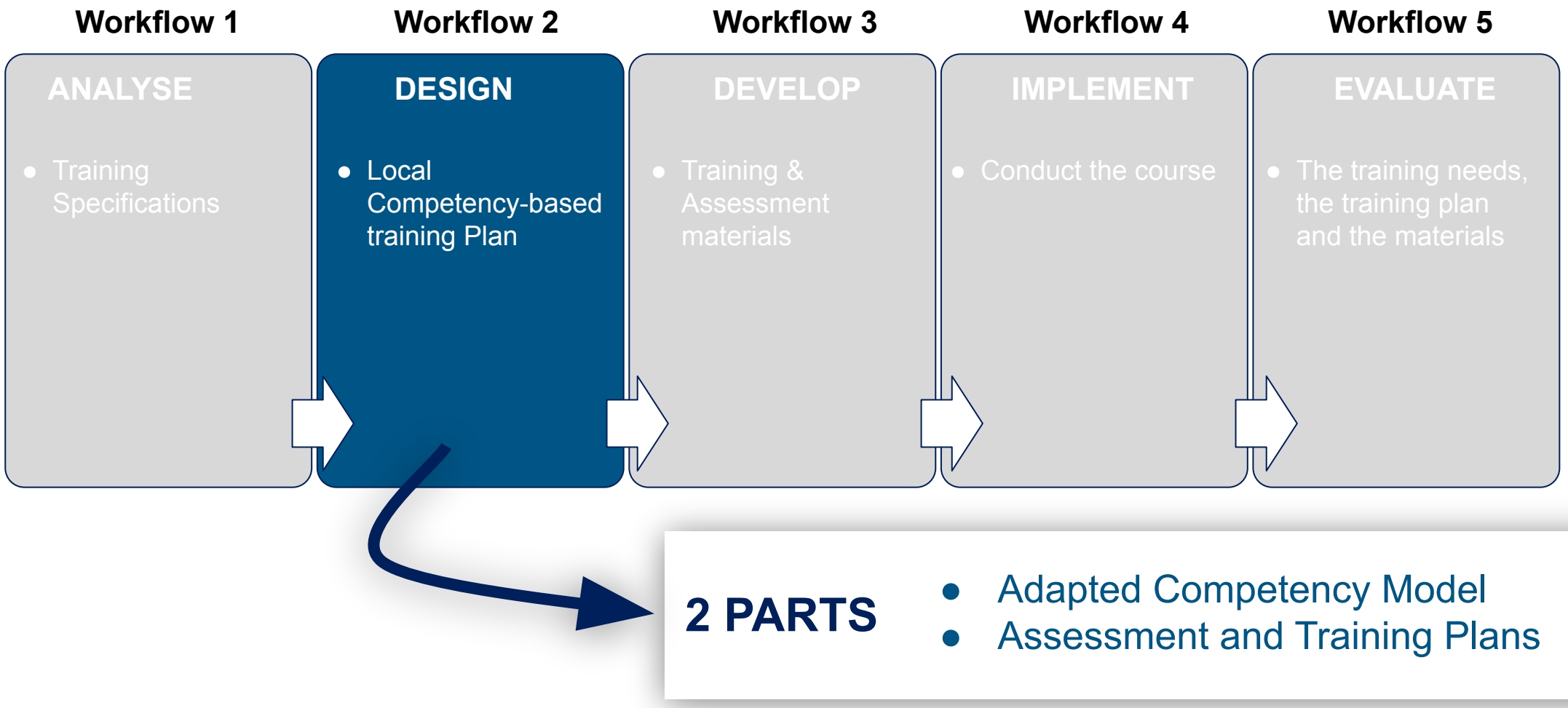
Workflow 1
Workflow 2
Workflow 3
Workflow 4
Workflow 5
ANALYSE
Training Specifications
DESIGN
Local Competency-based training Plan
DEVELOP
Training & Assessment materials
IMPLEMENT
Conduct the course
EVALUATE
The training needs, the training plan and the materials
2 PARTS
Adapted Competency Model
Assessment and Training Plans

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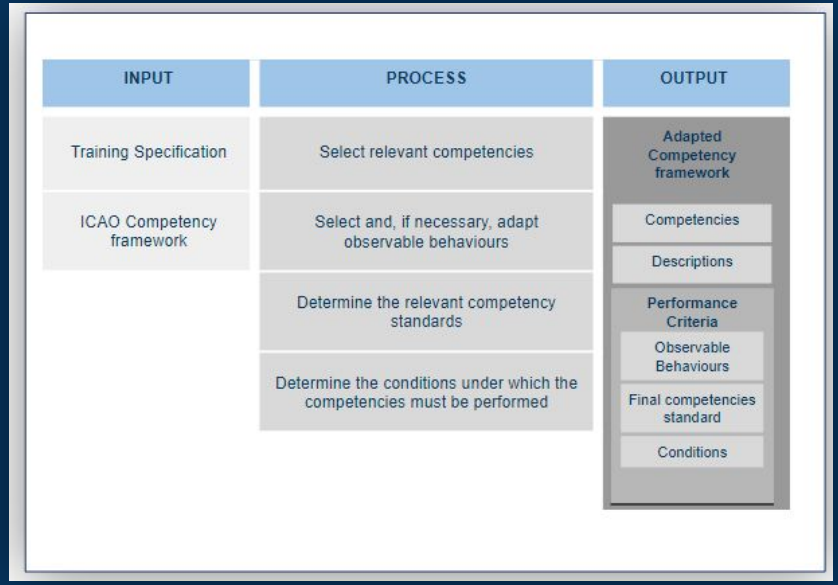
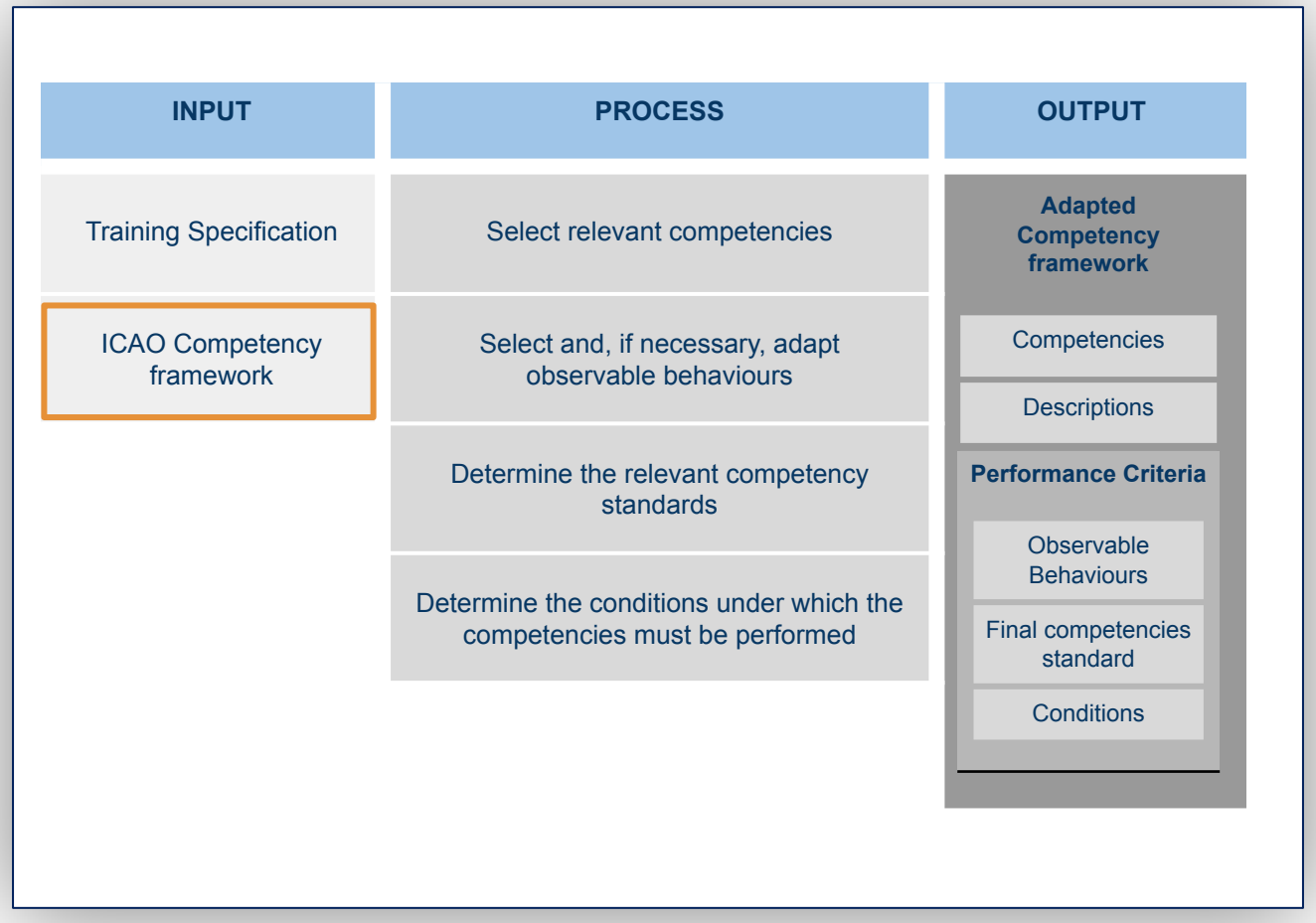
ADDIE Model - Workflow 2.1

- **ADAPTED COMPETENCY MODEL**



ADDIE MODEL - Workflow 2 - Part 1



Designed the adapted competency model

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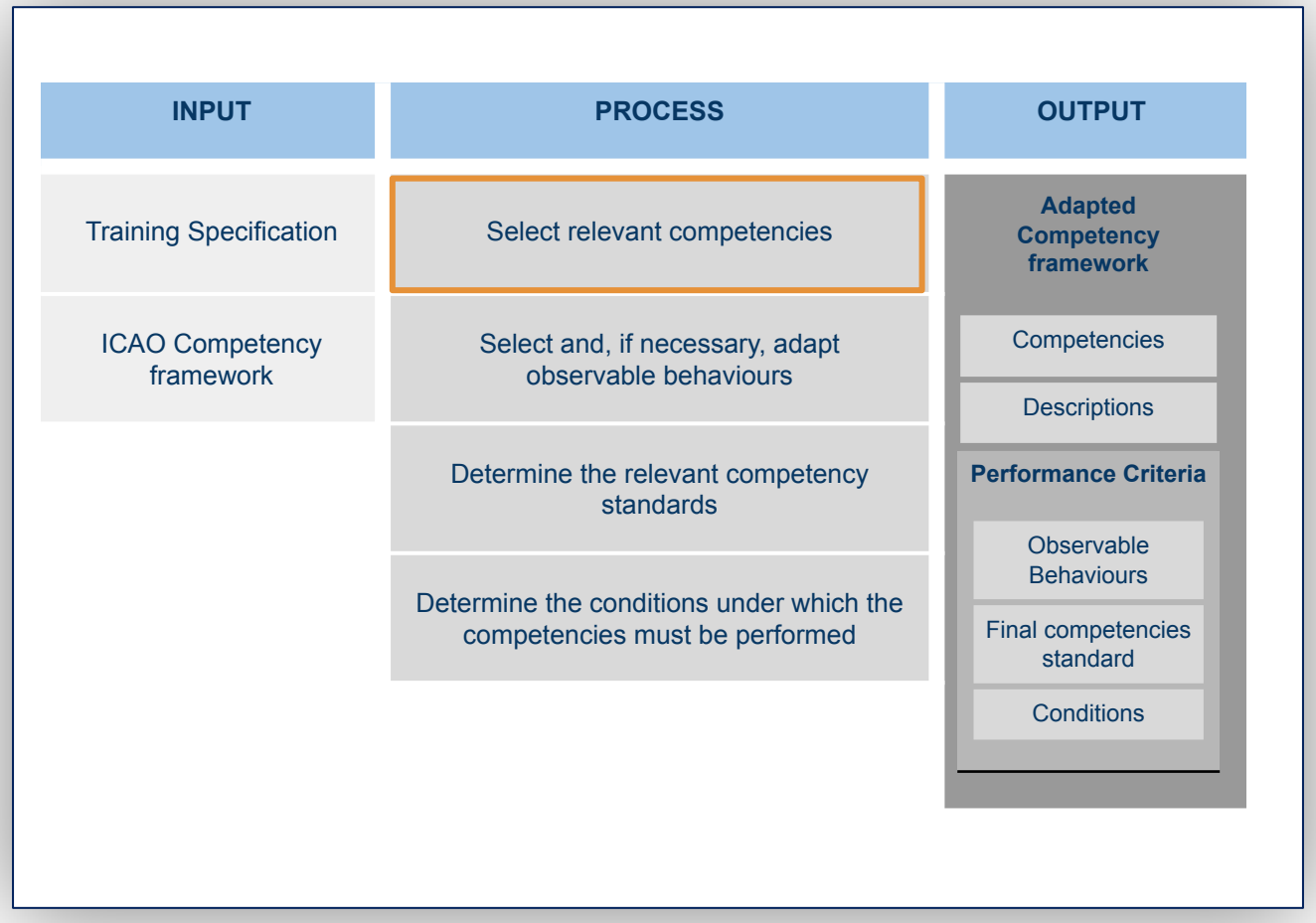
ICAO Competency Framework - Pilot Competencies

ACRONYM	PILOT COMPETENCIES
KNO	APPLICATION OF KNOWLEDGE
PRO	APPLICATION OF PROCEDURES AND COMPLIANCE WITH REGULATION
COM	COMMUNICATION
FPA	AEROPLANE FLIGHT PATH MANAGEMENT - AUTOMATION
FPM	AEROPLANE FLIGHT PATH MANAGEMENT - MANUAL CONTROL
LTW	LEADERSHIP AND TEAMWORK
PSD	PROBLEM SOLVING AND DECISION MAKING
SAW	SITUATION AWARENESS AND MANAGEMENT OF INFORMATION
WLM	WORKLOAD MANAGEMENT

ADDIE MODEL - Workflow 2 - Part 1



Designed the adapted competency model

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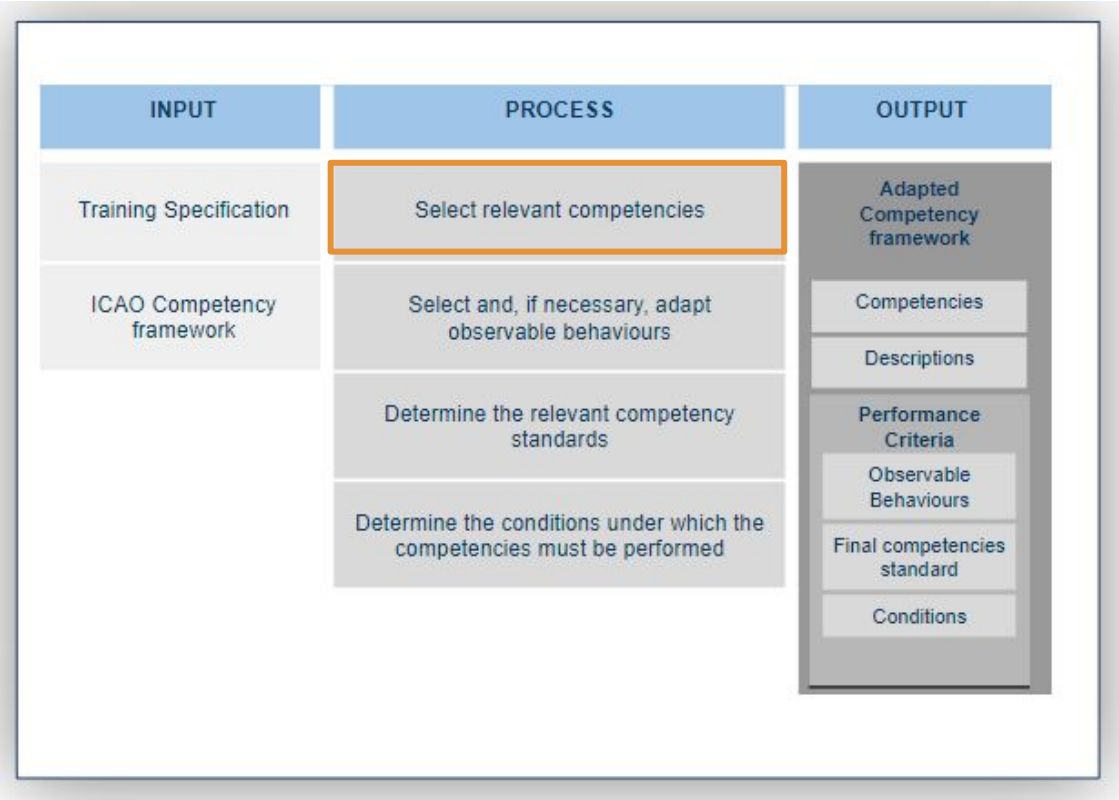
Example - Adapted Competency Model

PPL: SPO on Aircraft without AP



Application of knowledge	KNO
Application of procedures and compliance with regulations	PRO
Communication	COM
Aeroplane flight path management — automation	FPA
Aeroplane flight path management — manual control	FPM
Leadership & teamwork	LTW
Problem-solving — decision-making	PSD
Situation awareness and management of information	SAW
Workload management	WLM

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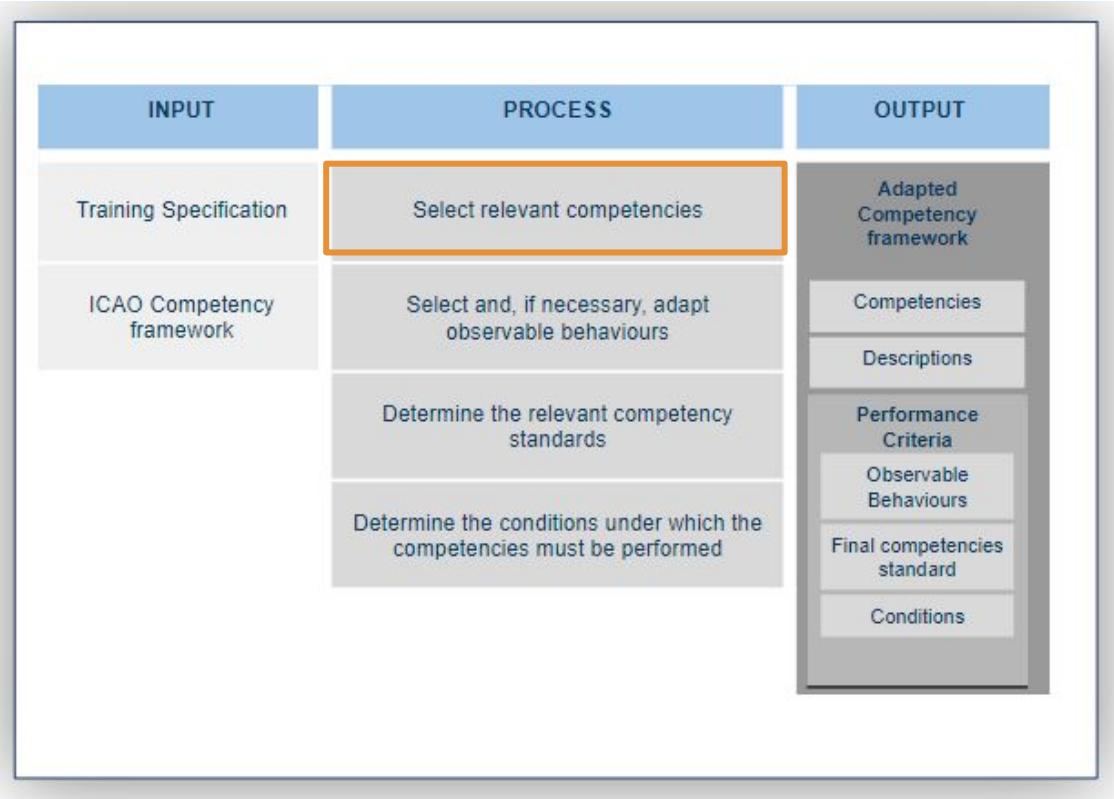
Example - Adapted Competency Model

PPL: SPO on Aircraft without AP



Application of knowledge	KNO
Application of procedures and compliance with regulations	PRO
Communication	COM
Aeroplane flight path management — manual control	FPM
Problem-solving — decision-making	PSD
Situation awareness and management of information	SAW
Workload management	WLM

LTW	Influences others to contribute to a shared purpose. Collaborates to accomplish the goals of the team

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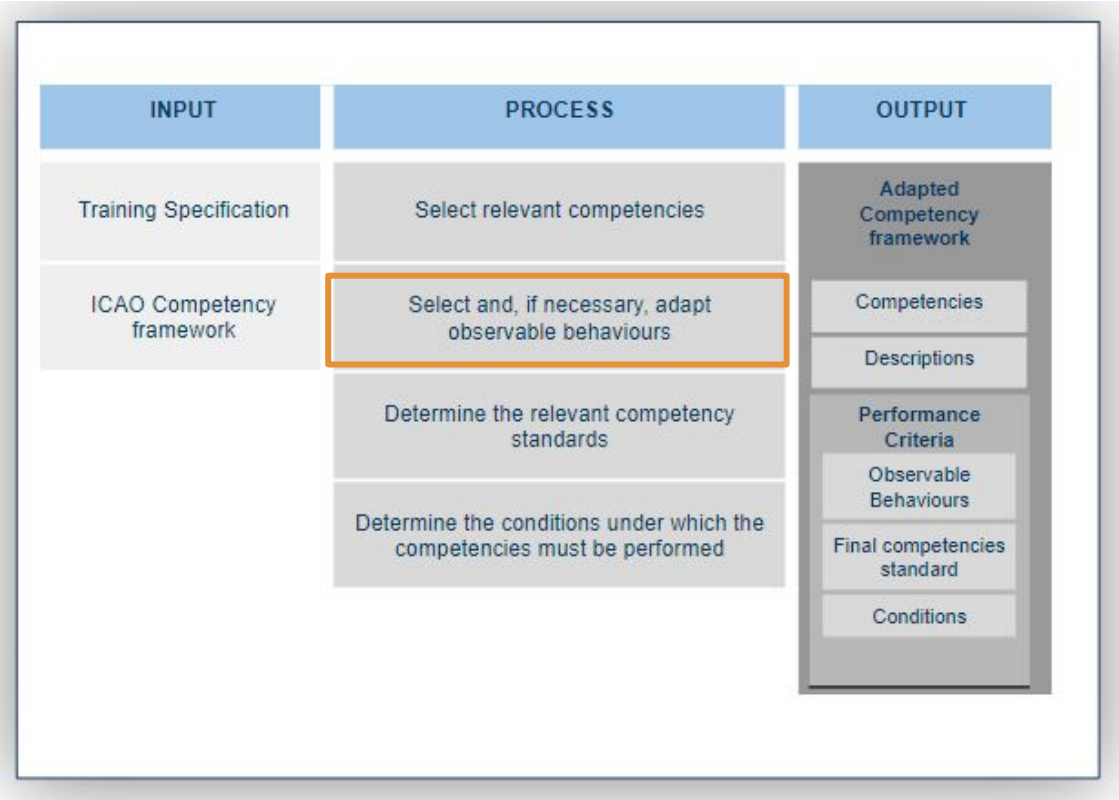
Example - Adapted Competency Model

PPL: SPO on Aircraft without AP



Workload management (WLM)	
Description:	Maintains available workload capacity by prioritising and distributing tasks using appropriate resources
OB 8.1	Exercises self-control in all situations
OB 8.2	Plans, prioritises and schedules appropriate tasks effectively
OB 8.3	Manages time efficiently when carrying out tasks
OB 8.6	Seeks and accepts assistance, when appropriate
OB 8.7	Monitors, reviews and cross-checks actions conscientiously
OB 8.8	Verifies that tasks are completed to the expected outcome
OB 8.9	Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks

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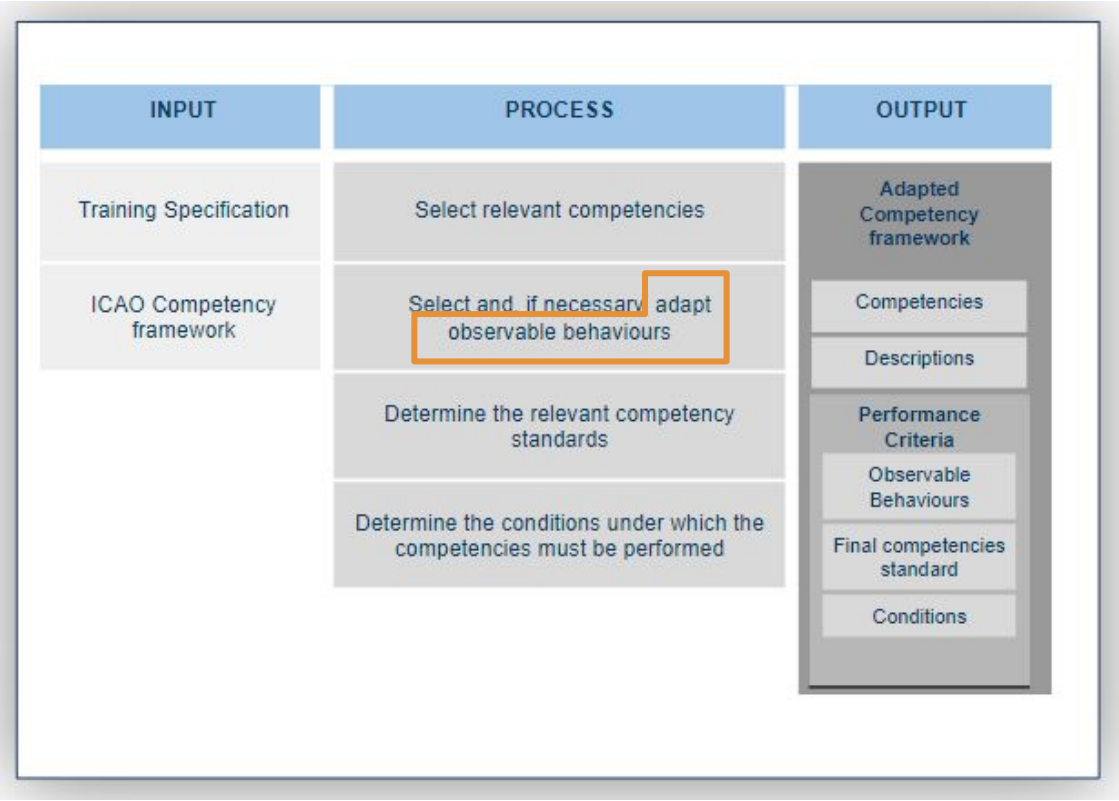
Example - Adapted Competency Model

PPL: SPO on Aircraft without AP



Application of procedures and compliance with regulations (PRO)	
Description:	Identifies and applies appropriate procedures in accordance with published operating instructions and applicable regulations
OB 1.1	Identifies where to find procedures and regulations
OB 1.2	Applies relevant operating instructions, procedures and techniques in a timely manner
OB 1.3	Follows SOPs unless a higher degree of safety dictates an appropriate deviation
OB 1.4	Operates aircraft systems and associated equipment correctly
OB 1.5	Monitors aircraft systems status
OB 1.6	Complies with applicable regulations
OB 1.7	Applies relevant procedural knowledge

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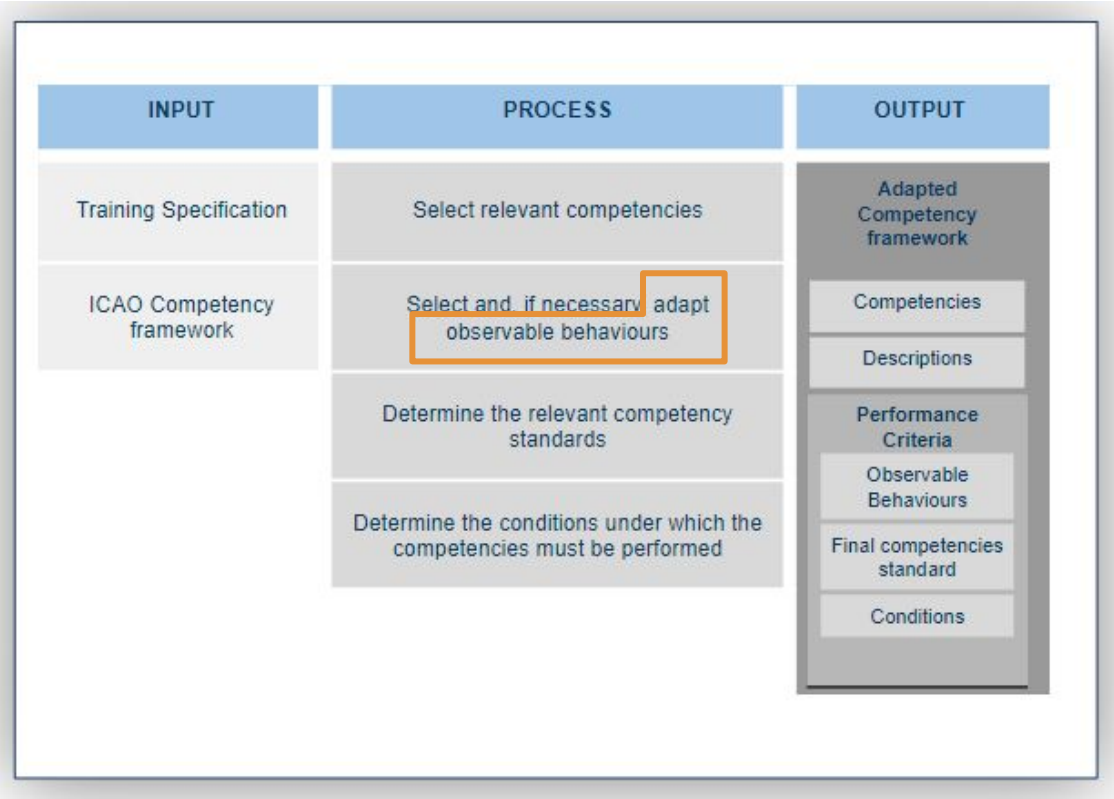
Example - Adapted Competency Model

PPL: SPO on Aircraft without AP



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OB 1.4	Operates aircraft systems and associated equipment correctly
OB 1.5	Monitors aircraft systems status
OB 1.6	Complies with applicable regulations
OB 1.7	Applies relevant procedural knowledge

OB 1.3	Follows SOPs unless a higher degree of safety dictates an appropriate deviation

Demonstrated when:

- Without safety issue, the pilot systematically follows SOPs,
  or
- With safety issues, the pilot may apply appropriate deviations from SOPs to avoid further reduction of safety margins.

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Example - Adapted Competency Model

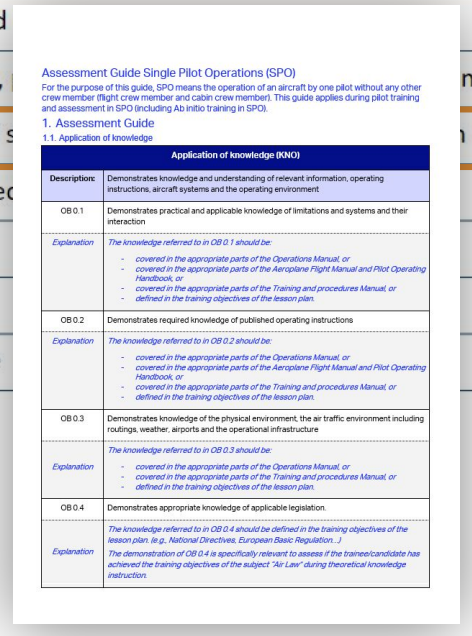
PPL: SPO on Aircraft without AP

INPUT	PROCESS	OUTPUT
Training Specification	Select relevant competencies	Adapted Competency framework
ICAO Competency framework	Select and, if necessary, adapt observable behaviours	Competencies
		Descriptions
	Determine the relevant competency standards	Performance Criteria
		Observable Behaviours
	Determine the conditions under which the competencies must be performed	Final competencies standard
		Conditions

Airbus Policy & IATA Recommendations:
Avoid OB adaptation to ensure consistent CBTA data analysis

Application of procedures and compliance with regulations (PRO)	
Description:	Identifies and applies appropriate procedures in accordance with published operating instructions and applicable regulations
OB 1.1	lures and
OB 1.2	ructions, manner
OB 1.3	egree of s
OB 1.4	associated
OB 1.5	s
OB 1.6	ations
OB 1.7	owledge


AIRBUS Assessment Guide


Assessment Guide Single Pilot Operations (SPO)

For the purpose of this guide, SPO means the operation of an aircraft by one pilot without any other crew member (flight crew member and cabin crew member). This guide applies during pilot training and assessment in SPO (including Ab initio training in SPO).

1. Assessment Guide

1.1. Application of knowledge

Application of knowledge (KNO)	
Description:	Demonstrates knowledge and understanding of relevant information, operating instructions, aircraft systems and the operating environment
OB 0.1	Demonstrates practical and applicable knowledge of limitations and systems and their interaction
Explanation	The knowledge referred to in OB 0.1 should be: - covered in the appropriate parts of the Operations Manual, or - covered in the appropriate parts of the Aeroplane Flight Manual and Pilot Operating Handbook, or - covered in the appropriate parts of the Training and procedures Manual, or - defined in the training objectives of the lesson plan.
OB 0.2	Demonstrates required knowledge of published operating instructions
Explanation	The knowledge referred to in OB 0.2 should be: - covered in the appropriate parts of the Operations Manual, or - covered in the appropriate parts of the Aeroplane Flight Manual and Pilot Operating Handbook, or - covered in the appropriate parts of the Training and procedures Manual, or - defined in the training objectives of the lesson plan.
OB 0.3	Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure
Explanation	The knowledge referred to in OB 0.3 should be: - covered in the appropriate parts of the Operations Manual, or - covered in the appropriate parts of the Training and procedures Manual, or - defined in the training objectives of the lesson plan.
OB 0.4	Demonstrates appropriate knowledge of applicable legislation.
Explanation	The knowledge referred to in OB 0.4 should be defined in the training objectives of the lesson plan. (e.g., National Directives, European Basic Regulation...) The demonstration of OB 0.4 is specifically relevant to assess if the trainee/candidate has achieved the training objectives of the subject "Air Law" during theoretical knowledge instruction.

IATA Assessment Guide
Refer to CBTA Guide

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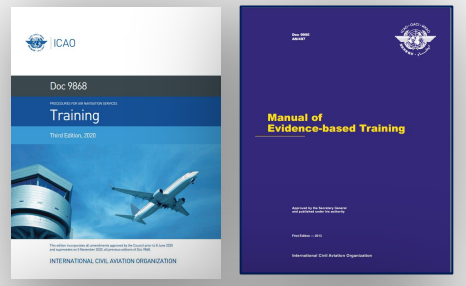
Example - Adapted Competency Model

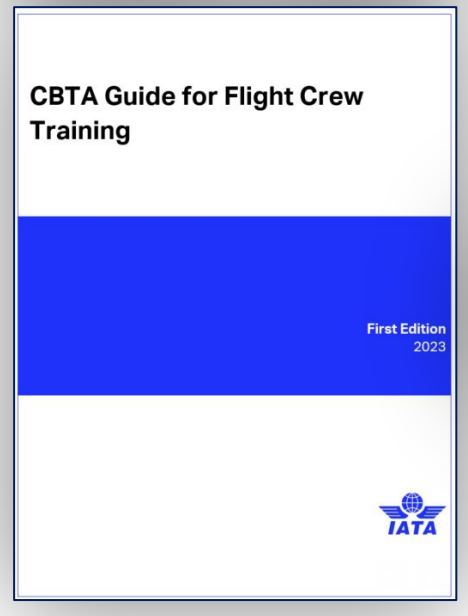
PPL: SPO on Aircraft without AP

INPUT	PROCESS	OUTPUT
Training Specification	Select relevant competencies	Adapted Competency framework
ICAO Competency framework	Select and, if necessary, adapt observable behaviours	Competencies
		Descriptions
	Determine the relevant competency standards	Performance Criteria
	Determine the conditions under which the competencies must be performed	Observable Behaviours
		Final competencies standard
		Conditions

Airbus Policy & IATA Recommendations:
Demonstration of an “ADEQUATE” Level of Performance

ICAO Doc 9868
Competency standard. A level of performance that is defined as acceptable when assessing whether or not competency has been achieved.





- Ineffectively
- Minimally acceptable
- **Adequately**
- Effectively
- Exemplary manner

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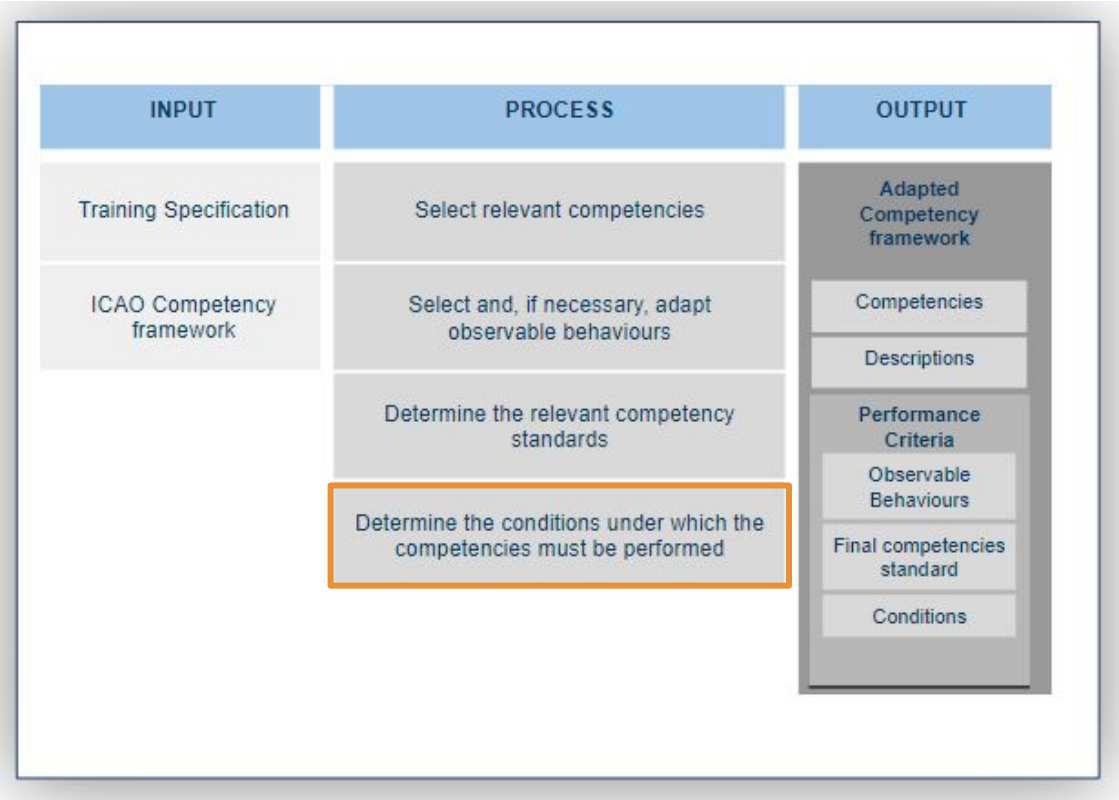
Example - Adapted Competency Model

PPL: SPO on Aircraft without AP



ICAO Doc 9868
Conditions. Anything that may qualify a specific environment in which performance will be demonstrated.

ICAO 9868 - Attachment C to Chapter 2
Paragraph 4.3.5.3
There are different types of conditions that may be considered for the final competency standard: conditions relating to context (nature and complexity of the operational and environmental context); conditions relating to tools and systems or equipment; and conditions relating to the level of support or assistance a trainee can expect from the instructor or assessor.

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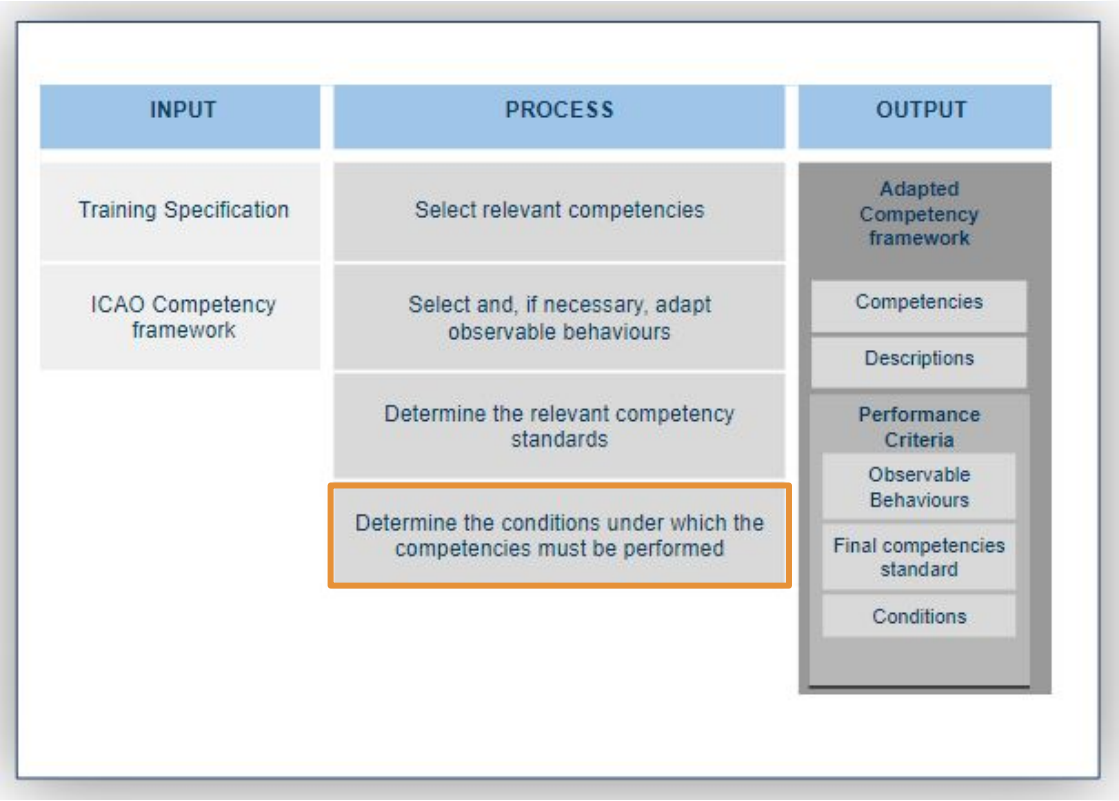
Example - Adapted Competency Model

PPL: SPO on Aircraft without AP



CONTEXT	OPERATIONALS	ENVIRONMENTAL
NATURE	Non-Commercial Operations - VFR Day	
COMPLEXITY		

EQUIPMENT	AIRCRAFT
LEVEL OF ASSISTANCE	WITHOUT ASSISTANCE

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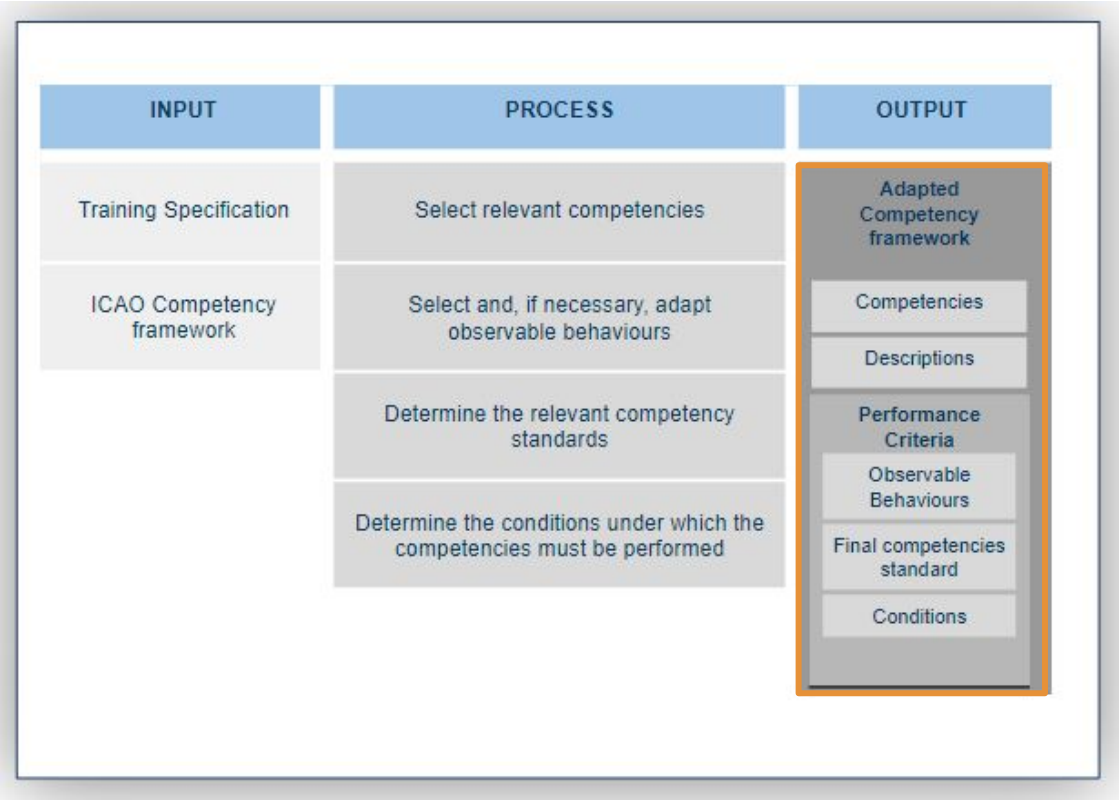
Example - Adapted Competency Model

PPL: SPO on Aircraft without AP



Adapted competency	*Description*	*Performance criteria*		
		Observable behaviour (OB)	*Competency assessment*	
Adapted competency 1	Description 1	OB 1	Final competency standard	Conditions
		OB 2		
		OB n		
Adapted competency 2	Description 2	OB 1		
		OB 2		
		OB n		
Adapted competency n	Description n	OB 1		
		OB 2		
		OB n		

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Adapted Competency - Example for WLM

Adapted Cptcy	Description	Performance Criteria			
		Observable Behaviours		Competency Assessment	
				Final Competency Standard	Conditions
WLM	Maintains available workload capacity by prioritising and distributing tasks using appropriate resources	OB 8.1	Exercises self-control in all situations	**Adequate**	**Context:** Non Commercial Operations - VFR - DAY **Equipment:** Aircraft **Level of Assistance:** Without assistance
		OB 8.2	Plans, prioritises and schedules appropriate tasks effectively		
		OB 8.3	Manages time efficiently when carrying out tasks		
		OB 8.6	Seeks and accepts assistance, when appropriate		
		OB 8.7	Monitors, reviews and cross-checks actions conscientiously		
		OB 8.8	Verifies that tasks are completed to the expected outcome		
		OB 8.9	Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks		

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Adapted Competency - Example for WLM

Adapted Cptcy	Description	Performance Criteria			
		Observable Behaviours		Competency Assessment	
				Final Competency Standard	Conditions
WLM	Maintai worklo prioritis distribu approp	OB 8.1	Exercises self-control in all situations	**Adequate**	**Context:** Non Commercial Operations - VFR - DAY **Equipment:** Aircraft **Level of Assistance:** Without assistance
			Plans, prioritises and schedules appropriate tasks		
			ously		
			ome		
			tions, ks		

Adapted competency	*Description*	*Performance criteria*		
		Observable behaviour (OB)	*Competency assessment*	
			Final competency standard	Conditions
Adapted competency 1	Description 1	OB 1 OB 2 OB n		
Adapted competency 2	Description 2	OB 1 OB 2 OB n		
Adapted competency n	Description n	OB 1 OB 2 OB n		

Adapted Competency Model - Example

Adapted Cptcy	Description	Performance Criteria			
		Observable Behaviours		Competency Assessment	
				Final Competency Standard	Conditions
XXX	……..	OB x.x	…….	**Adequate**	**Context:** Non Commercial Operations - VFR - DAY **Equipment:** Aircraft **Level of Assistance:** Without assistance
WLM	Maintains available workload capacity by prioritising and distributing tasks using appropriate resources	OB 8.1	Exercises self-control in all situations		
		OB 8.2	Plans, prioritises and schedules appropriate tasks effectively		
		OB 8.3	Manages time efficiently when carrying out tasks		
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		OB 8.9	Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks		
XXX	……..	OB x.x	…….		

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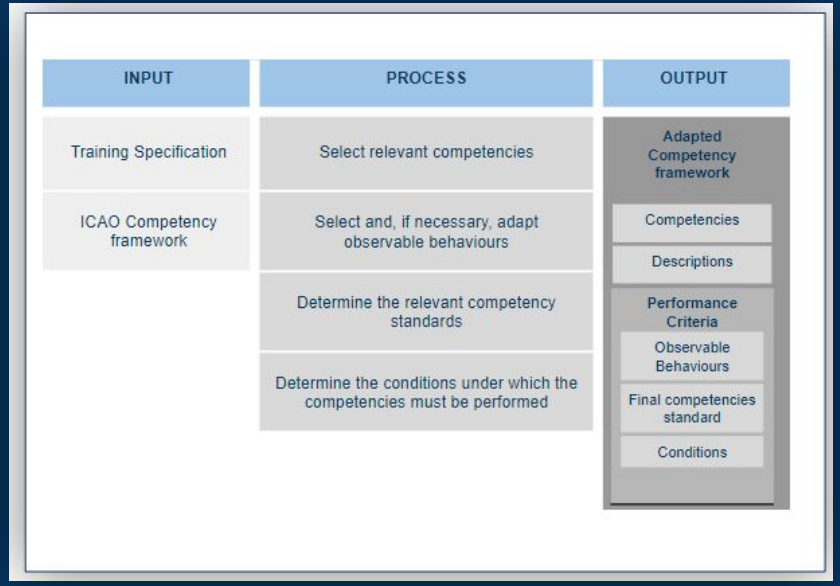
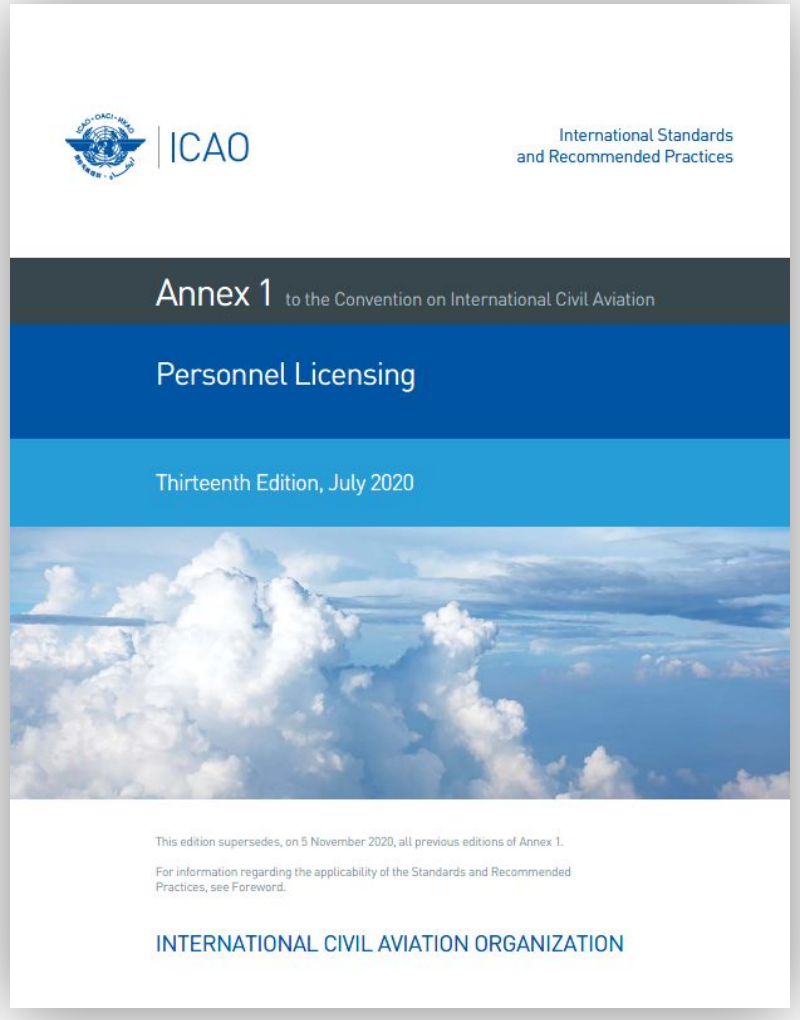
ADDIE Model

- **MPL - ADAPTED COMPETENCY MODEL**



Adapted Competency - Example for WLM



2.5 Multi-crew pilot licence (MPL) appropriate to the aeroplane category

Note.— The holder of a multi-crew pilot licence is authorized by 2.5.2.1 to act as co-pilot of an aeroplane required to be operated with a co-pilot. Such holder will be eligible to obtain an airline transport pilot licence appropriate to the aeroplane category, after fulfilling the requirements for that licence, to be restricted to multi-crew operations unless the requirements of 2.5.2.1 a), 2.5.2.2 and 2.5.2.3, as appropriate, are met (2.6.2.2 refers).

2.5.1.2 Competencies

The applicant shall satisfactorily demonstrate the competencies identified in an adapted competency model to perform as a co-pilot of a turbine-powered air transport aeroplane certificated for operation with a minimum crew of at least two pilots. The adapted competency model shall be approved by the Licensing Authority, using as a basis the ICAO aeroplane pilot competency framework contained in the Procedures for Air Navigation Services — Training (PANS-TRG, Doc 9868).

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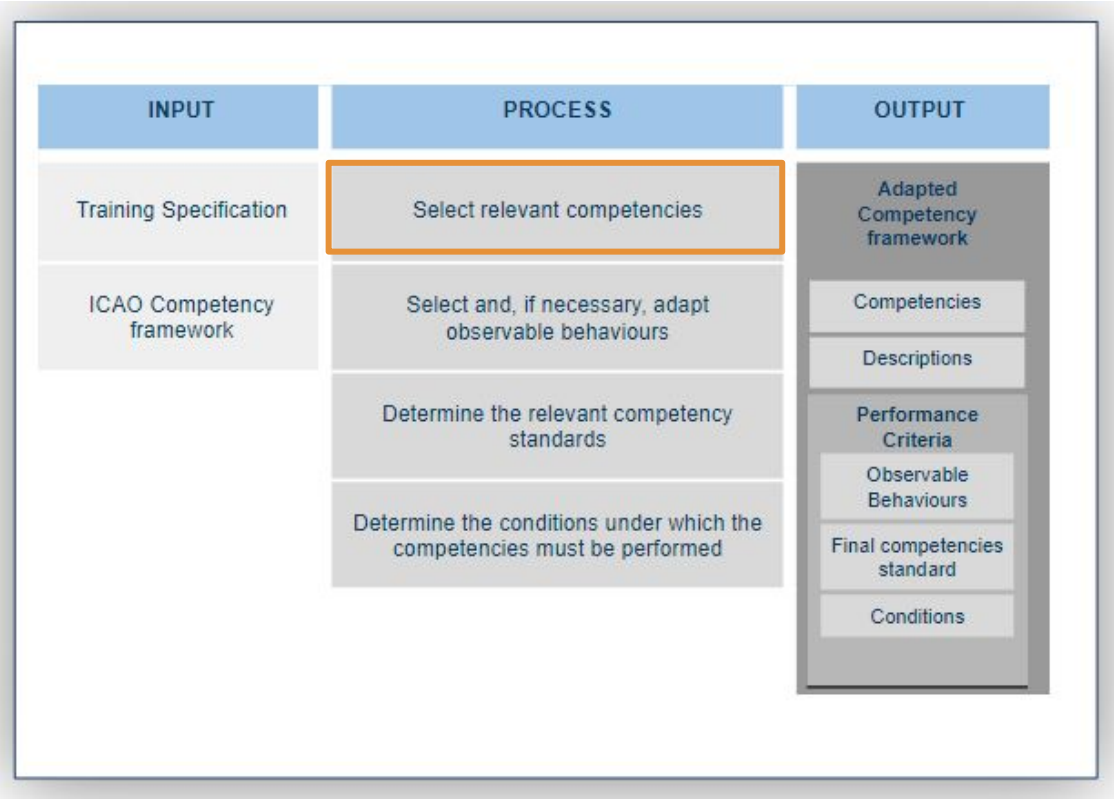
Example - Adapted Competency Model

MPL



Application of knowledge	KNO
Application of procedures and compliance with regulations	PRO
Communication	COM
Aeroplane flight path management — automation	FPA
Aeroplane flight path management — manual control	FPM
Leadership & teamwork	LTW
Problem-solving — decision-making	PSD
Situation awareness and management of information	SAW
Workload management	WLM

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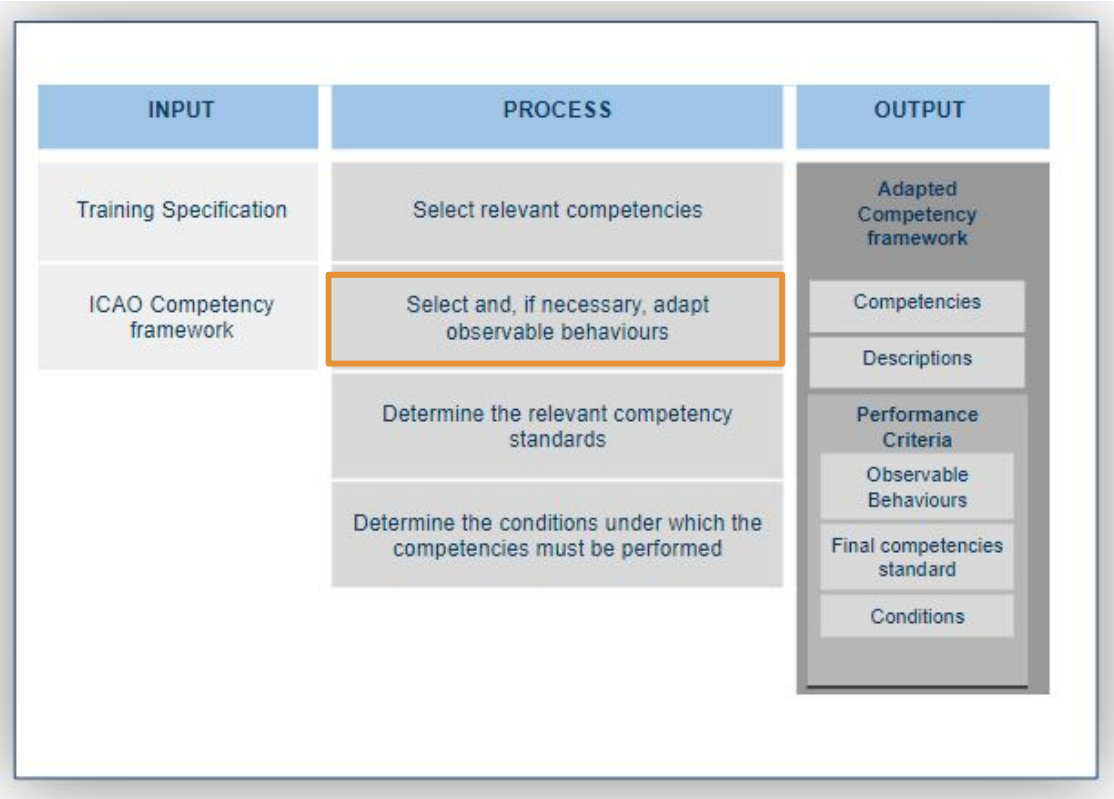
Example - Adapted Competency Model

MPL



Application of knowledge	KNO
Application of procedures and compliance with regulations	PRO
Communication	**COM**
Aeroplane flight path management — automation	FPA
Aeroplane flight path management — manual control	FPM
Leadership & teamwork	LTW
Problem-solving — decision-making	**PSD**
Situation awareness and management of information	SAW
Workload management	WLM

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MPL - Pilot Competencies

Communication (COM)	
Description:	Communicates through appropriate means in the operational environment, in both normal and non-normal situations
OB 2.1	Determines that the recipient is ready and able to receive information
OB 2.2	Selects appropriately what, when, how and with whom to communicate
OB 2.3	Conveys messages clearly, accurately and concisely
OB 2.4	Confirms that the recipient demonstrates understanding of important information
OB 2.5	Listens actively and demonstrates understanding when receiving information
OB 2.6	Asks relevant and effective questions
OB 2.7	Uses appropriate escalation in communication to resolve identified deviations
OB 2.8	Uses and interprets non-verbal communication in a manner appropriate to the organisational and social culture
OB 2.9	Adheres to standard radiotelephone phraseology and procedures
~~OB 2.10~~	~~Accurately reads, interprets, constructs and responds to datalink messages in English~~

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MPL - Pilot Competencies

Problem-solving — decision-making (PSD)	
Description:	Identifies precursors, mitigates problems, and makes decisions
OB 6.1	Identifies, assesses and manages threats and errors in a timely manner
OB 6.2	Seeks accurate and adequate information from appropriate sources
OB 6.3	Identifies and verifies what and why things have gone wrong, if appropriate
OB 6.4	Perseveres in working through problems whilst prioritising safety
OB 6.5	Identifies and considers appropriate options
OB 6.6	Applies appropriate and timely decision-making techniques
OB 6.7	Monitors, reviews and adapts decisions as required
~~OB 6.8~~	~~Adapts when faced with situations where no guidance or procedure exists~~
OB 6.9	Demonstrates resilience when encountering an unexpected event

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MPL - Adapted Competency Model

Adapted Cptcy	Description	Performance Criteria			
		Observable Behaviours		Competency Assessment	
				Final Competency Standard	Conditions
KNO	….	OB 0.1	….	**Adequate**	**Context:** CAT - MPA - IFR - F/O **Equipment:** FFS Level D **Level of Assistance:** Without assistance
		OB 0.2	…		
		OB 0.n	…		
PRO ..	…..	OB 1.1	…		
		…	…		
		OB 1.n	…		
…	….	OB X.1	…		
		OB ..	…		
		OB X.n	…		

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CBTA/EBT Workshop

Course Design Principles

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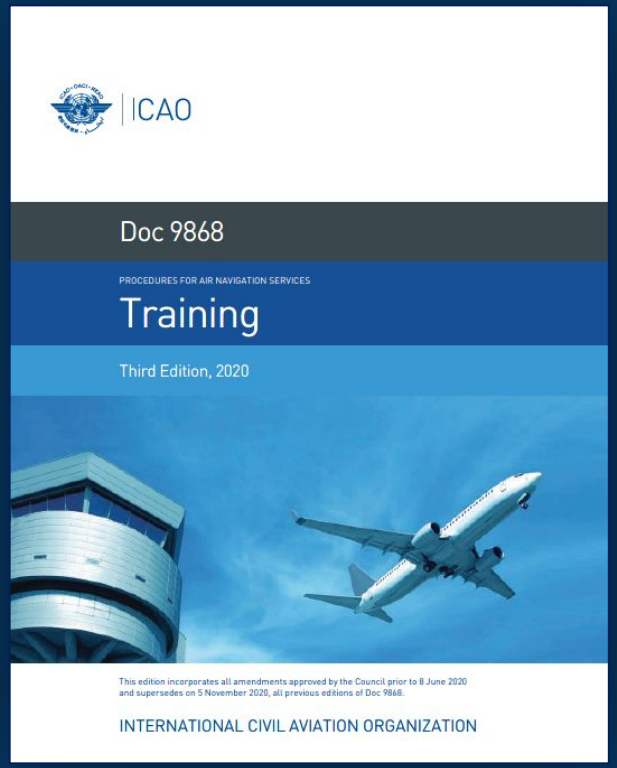
Principles

- **Competency Development**



ICAO Doc 9868 - PANS TRG

"A dimension of human performance that is used to reliably predict successful performance on the job.
A competency is manifested and observed through behaviours that mobilize the relevant knowledge, skills and attitudes to carry out activities or tasks under specified conditions."

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To carry out Tasks …

FLIGHT PHASE ⇒ TASKS ⇛ SUBTASKS
PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS
PERFORM TAKEOFF ⇒ Perform Takeoff roll ⇛ Applies takeoff thrust ⇛ Checks engine parameters …
PERFORM CLIMB
PERFORM CRUISE
PERFORM DESCENT
PERFORM APPROACH
PERFORM LANDING
PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS

… under specified Conditions

CONTEXT

Nature and complexity of the **operational and environmental** context

LEVEL OF ASSISTANCE

Assistance a trainee can expect from the instructor

TOOL - EQUIPMENT

e.g. FSTD
e.g. Aeroplane

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⇒ OB Mapping

FLIGHT PHASE ⇒ TASKS ⇒ SUBTASKS
PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS
PERFORM TAKEOFF ⇒ Perform Takeoff roll ⇒ **Applies takeoff thrust** ⇒ Checks engine parameters …
PERFORM CLIMB
PERFORM CRUISE
PERFORM DESCENT
PERFORM APPROACH
PERFORM LAND
PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS

200 + Sub Tasks

Acronyms	Pilot Competencies
KNO	Application of Knowledge
PRO	Application of Procedures and compliance with regulation
COM	Communication
FPA	Aero plane Flight Path Management, automation
FPM	Aero plane Flight Path Management, manual control
LTW	Leadership and Teamwork
PSD	Problem Solving and Decision Making
SAW	Situation awareness and management of information
WLM	Workload Management

73 OBs

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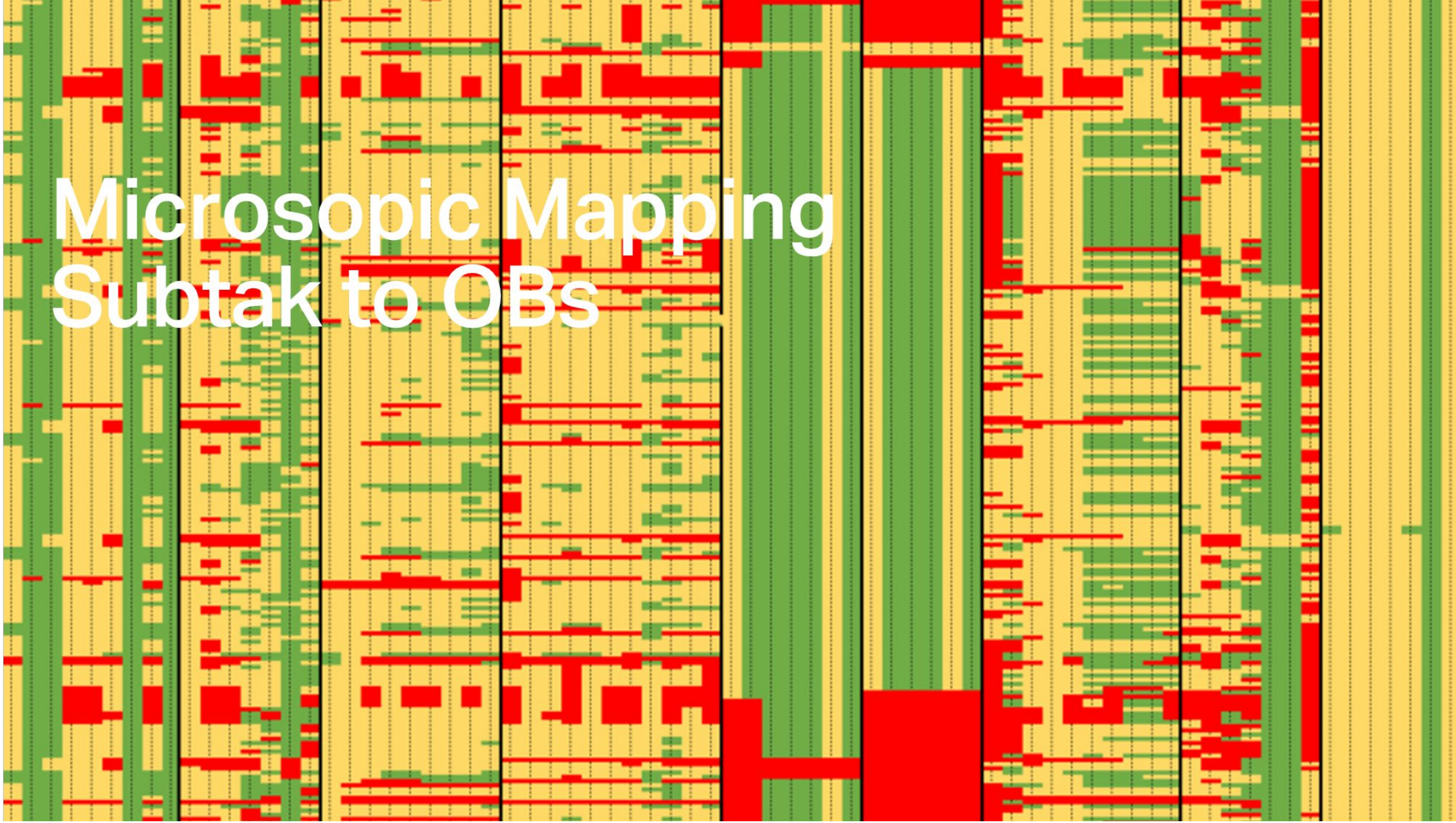
Mapping Subtask – OB: Method

			Monitors and assesses the state of the aeroplane and its systems	Monitors and assesses the aeroplane's energy state, and its anticipated flight path	Monitors and assesses the general environment as it may affect the operation	Validates the accuracy of information and checks for gross errors	Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected	Develops effective contingency plans based upon potential risks associated with threats and errors	Responds to indications of reduced situation awareness
Flight Phase	**Task**	**Subtask**	**SAW 7.1**	**SAW 7.2**	**SAW 7.3**	**SAW 7.4**	**SAW 7.5**	**SAW 7.6**	**SAW 7.7**
3. PERFORM TAKE-OFF	**3.1 Perform pre-take-off and pre-departure preparation**	**3.1.2 Checks correct runway selection**	**I**	**I**	**R**	**I**	**C**	**C**	**C**

I= Irrelevant, the OB is not supposed to be demonstrated

R= Relevant, the OB demonstration is required

C=Conditional, the OB demonstration depends on the context


Microsopic Mapping
Subtak to OBs

Mapping Subtask – OB: Method

Phase of flight (Task Subtasks)	KNO	PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM
2. PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS									
3. PERFORM TAKE-OFF									
4. PERFORM CLIMB									
5. PERFORM CRUISE									
6. PERFORM DESCENT									
7. PERFORM APPROACH									
8. PERFORM LANDING									
9. PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS									

I= Irrelevant, the OB is not supposed to be demonstrated

R= Relevant, the OB demonstration is required

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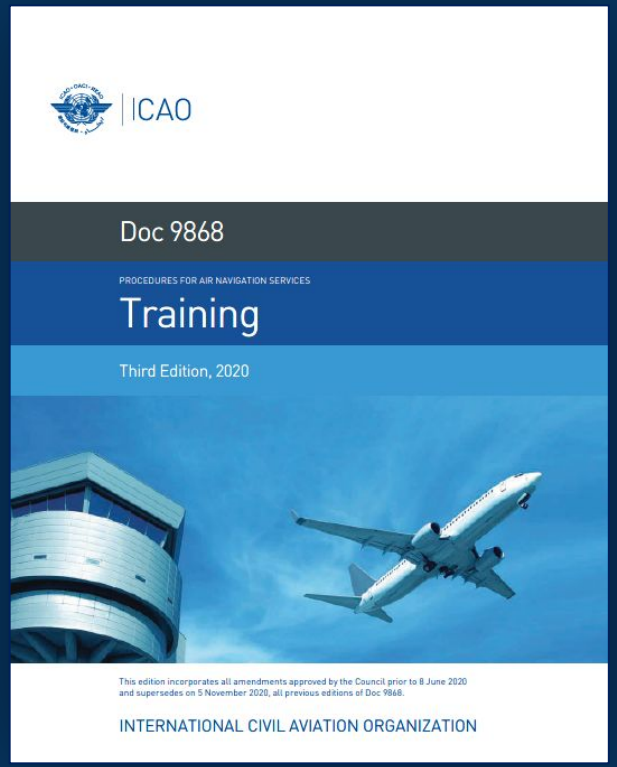
Principles

- **Context Complexity**



Mapping Threats-OB

Operational Threats	Environmental Threats
A - Airline Threats **A01 Aircraft Malfunction (see breakdown)** A01.01 Uncontained engine failure A01.02 Contained engine failure (incl overheat and prop fail) A01.03 Landing gear/ tires A01.04 Brakes A01.05 Flight Controls (see breakdown) A01.05.01 Primary flight controls A01.05.02 Secondary flight controls (flaps, spoilers) A01.06 Structural Failure A01.07 Fire/Smoke ... A02 MEL item A03 Operation pressure A04 Cabin events A05 Ground events A06 Dispatch/paperwork A07 Maintenance events A08 Dangerous goods A09 Manual/charts/checklists **B - Psychological/Physiological Threats** B04 – Crew Incapacitation	**E - Environmental Threats** **E01 Meteorology (see breakdown)** E01.01 Thunderstorm E01.02 Poor Visibility/IMC E01.03 Gusty wind/ windshear E01.04 Icing conditions E01.05 Hail E02 Lack of Visual Reference E03 Air Traffic Services **E04 Birds/foreign objects** E04.01 Birds **E05 Airport Facilities (see breakdown)** E05.01 Poor signage/lighting, faint markings, rwy/txy closures E05.02 Contaminated runways, taxiways, poor braking action **E07 Terrain/Obstacles** **E08 Traffic** E08.01 Aircraft E08.02 Vehicle

Acronyms	Pilot Competencies
KNO	Application of Knowledge
PRO	Application of Procedures and compliance with regulation
COM	Communication
FPA	Aero plane Flight Path Management, automation
FPM	Aero plane Flight Path Management, manual control
LTW	Leadership and Teamwork
PSD	Problem Solving and Decision Making
SAW	Situation awareness and management of information
WLM	Workload Management

40 Threats
[Aircraft malfunction=> clustering]

73 OBs

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Mapping Threats - OB

Phase of flight (Task Subtasks)	KNO	PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM
2. PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS									
3. PERFORM TAKE-OFF									
4. PERFORM CLIMB									
5. PERFORM CRUISE without threat									
PERFORM CRUISE with threat (E.g. CB)									
6. PERFORM DESCENT									
7. PERFORM APPROACH									
8. PERFORM LANDING									
9. PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS									

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Context Complexity Criteria - Operational & Environmental Context

Threats: Environmental

E01 Meteorology
E02 Lack of Visual Reference
E04 Birds/foreign objects
E05 Airport Facilities
E06 Navaids (Malfunction, unavailable)
E07 Terrain/Obstacles
E08 Traffic
……

CB - ISOL	CB - OCNL	CB - FRQ
Environmental Context **Low**	**Environmental Context** **Med**	**Environmental Context** **High**

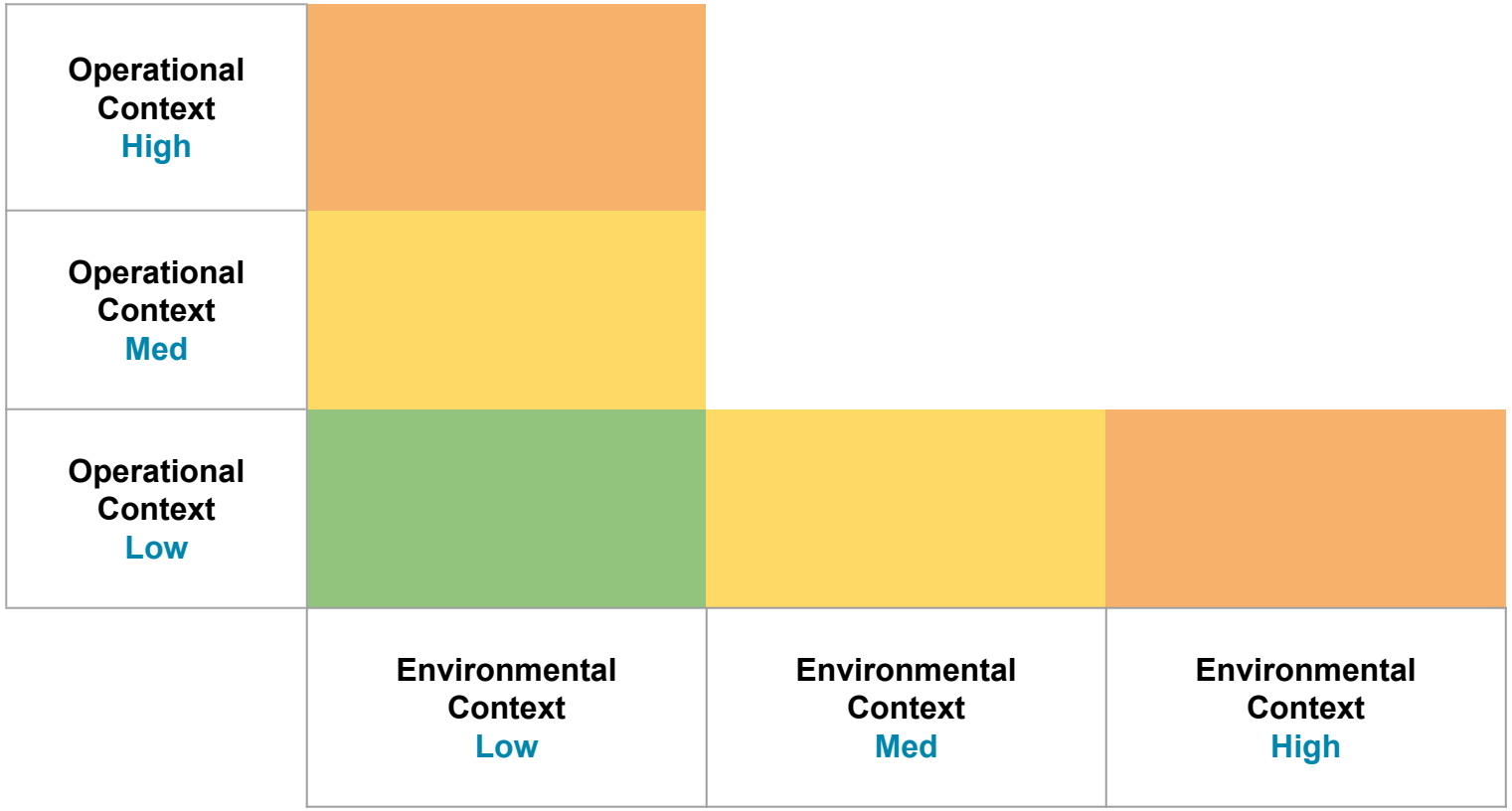
Context Complexity Criteria - Operational & Environmental Context

Operational Context **High**	Malfunction with a significant demand on the crew (FCTS Class 5)
Operational Context **Med**	Malfunction with a moderate demand on the crew (FCTS class 3 - 4)
Operational Context **Low**	Malfunction with few demand on the crew (FCTS Class 0-1-2)

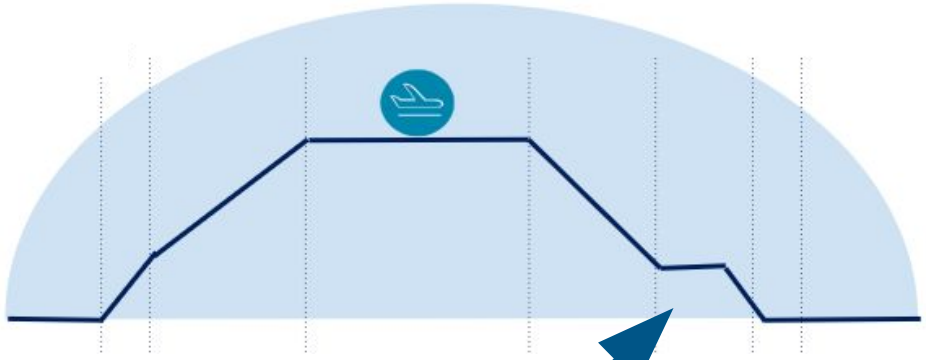
Threats: Operational

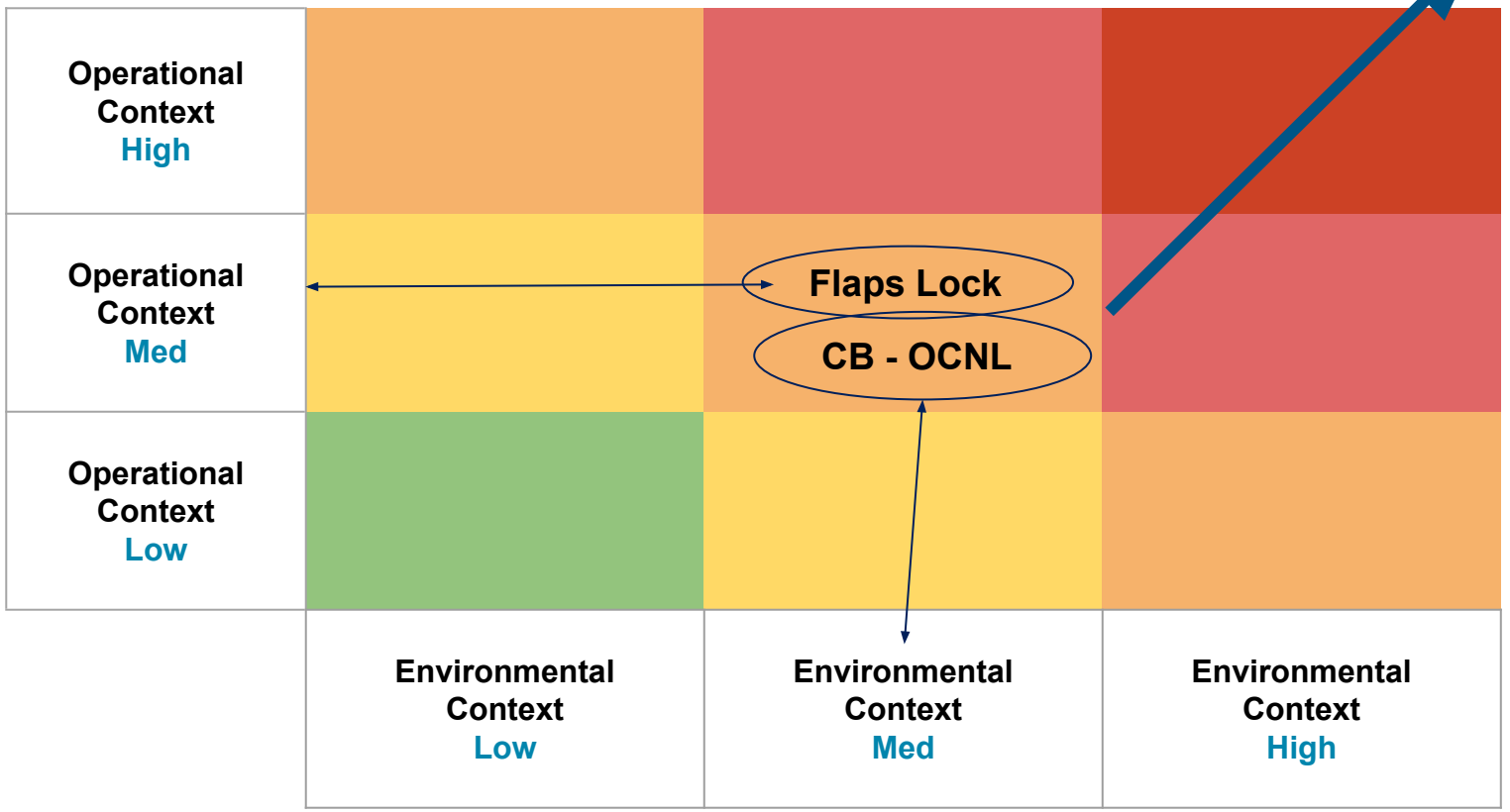
A01 Aircraft Malfunction
A02 MEL item
A03 Operation pressure
A04 Cabin events
A05 Ground events
A06 Dispatch/paperwork
A07 Maintenance events
A08 Dangerous goods
A09 Manual/charts/checklists
A99 Other

Context Complexity Criteria - Operational & Environmental Context



Context Complexity Criteria - Example



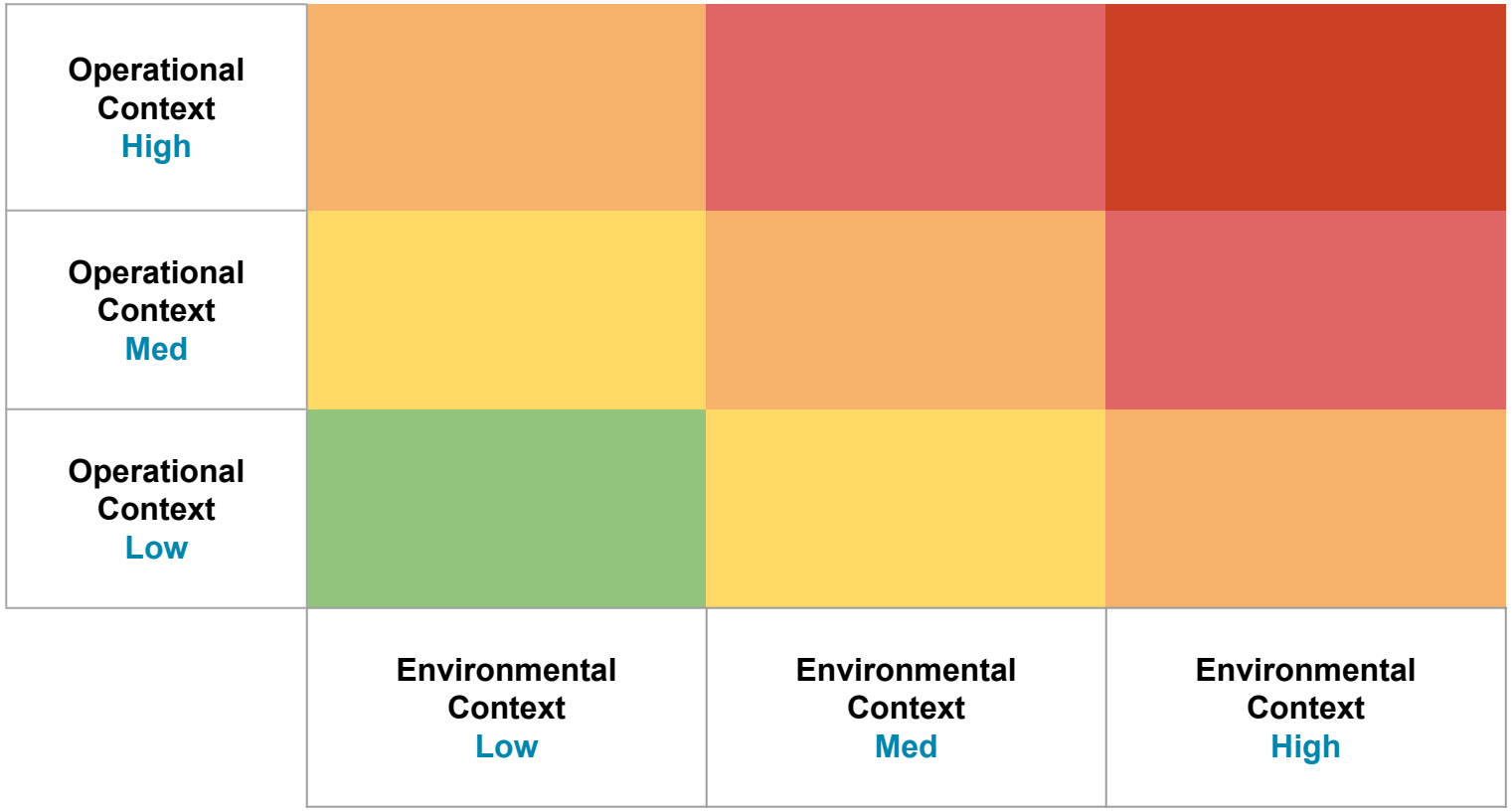


Challenged Competencies (SAW - PSD …)

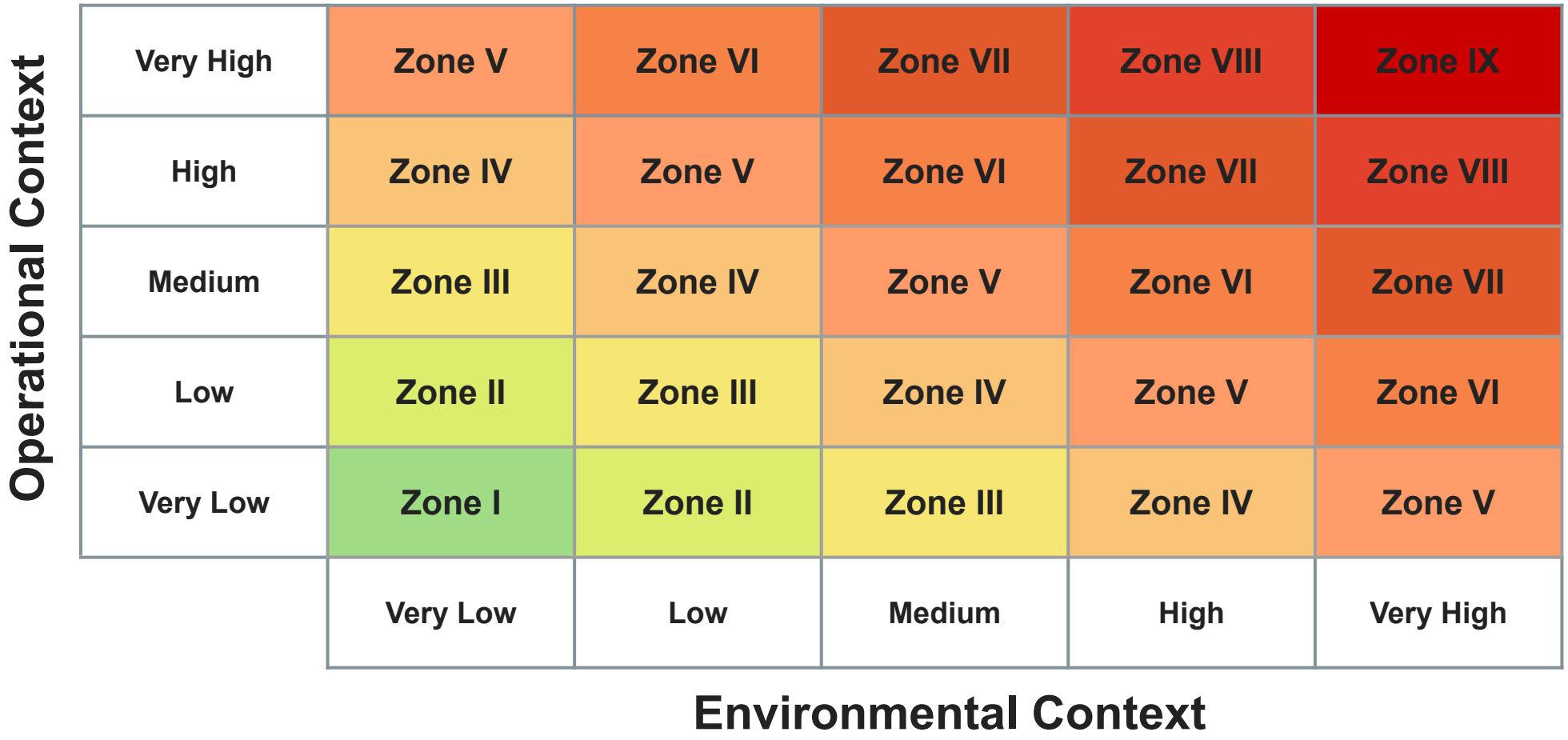
Requiring demonstration of pre-identified OBs

CBTA Type Rating - Context Complexity Limitations

Type Rating Course

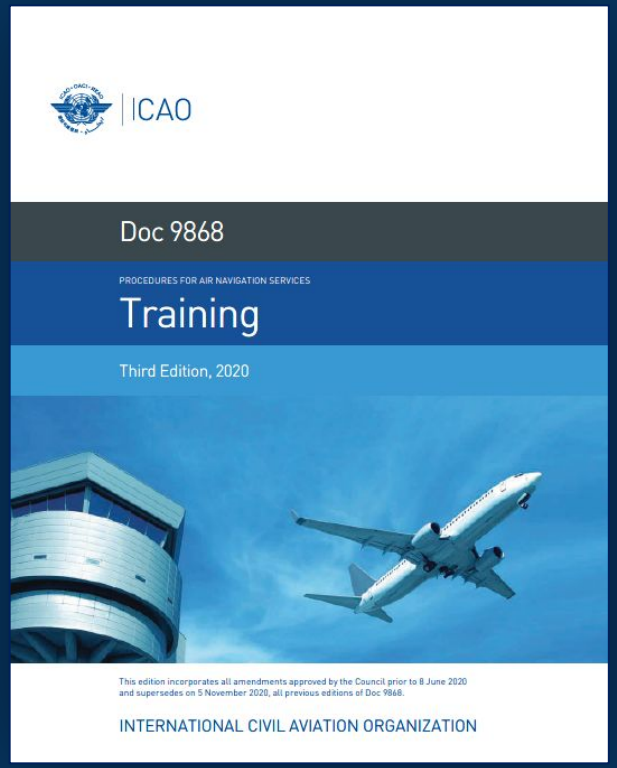


Zone of Complexity



Principles

- **Level of Assistance**



Teaching Method	Description
Show, Demonstrate	The instructor or the training media performs or directs the execution of a task, procedure, or manoeuver to the trainees. Questions are used to verify knowledge and check understanding. Trainees will demonstrate the acquisition of their competencies.
Tell, Explain, Remind	The instructor or the training media provides new information verbally to the trainees or reminds them on existing information. Questions are used to either establish current knowledge or to check understanding recall. Trainees will demonstrate the acquisition of their competencies
Facilitate	The instructor asks questions of the trainees in order to help them to acquire and develop competencies by themselves. Trainees will demonstrate the acquisition or development of their competencies.
Discover with Assistance	The instructor or training media provide trainees with objectives with conditions. Using their existing competencies, trainees develop appropriate solutions and means to achieve the objectives. The instructor intervenes only when necessary to ensure achievement of the objectives and to minimize inefficiency.
Discover without Assistance	The instructor or training media provide trainees with objectives and conditions. Using their existing competencies, trainees develop appropriate solutions and means to achieve the objectives without any instructor intervention. The instructor or media verify the outcomes.

Teaching Method	Description
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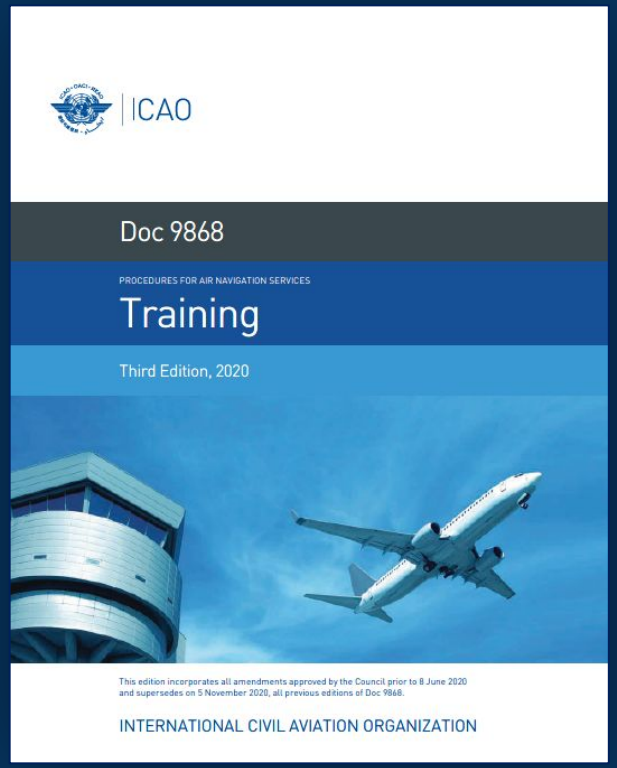
LEVEL OF ASSISTANCE

Assistance a trainee can expect from the instructor

Teaching Method	Description	Level of Assistance
Show, Demonstrate	The instructor or the training media performs or directs the execution of a task, procedure, or manoeuver to the trainees. Questions are used to verify knowledge and check understanding. Trainees will demonstrate the acquisition of their competencies.	**Very High**
Tell, Explain, Remind	The instructor or the training media provides new information verbally to the trainees or reminds them on existing information. Questions are used to either establish current knowledge or to check understanding recall. Trainees will demonstrate the acquisition of their competencies	**High**
Facilitate	The instructor asks questions of the trainees in order to help them to acquire and develop competencies by themselves. Trainees will demonstrate the acquisition or development of their competencies.	**Medium**
Discover with Assistance	The instructor or training media provide trainees with objectives with conditions. Using their existing competencies, trainees develop appropriate solutions and means to achieve the objectives. The instructor intervenes only when necessary to ensure achievement of the objectives and to minimize inefficiency.	**Low**
Discover without Assistance	The instructor or training media provide trainees with objectives and conditions. Using their existing competencies, trainees develop appropriate solutions and means to achieve the objectives without any instructor intervention. The instructor or media verify the outcomes.	**Very Low**

Principles

- Tool & Equipment



CBTA/EBT Workshop

Training Plan and Assessment Plan

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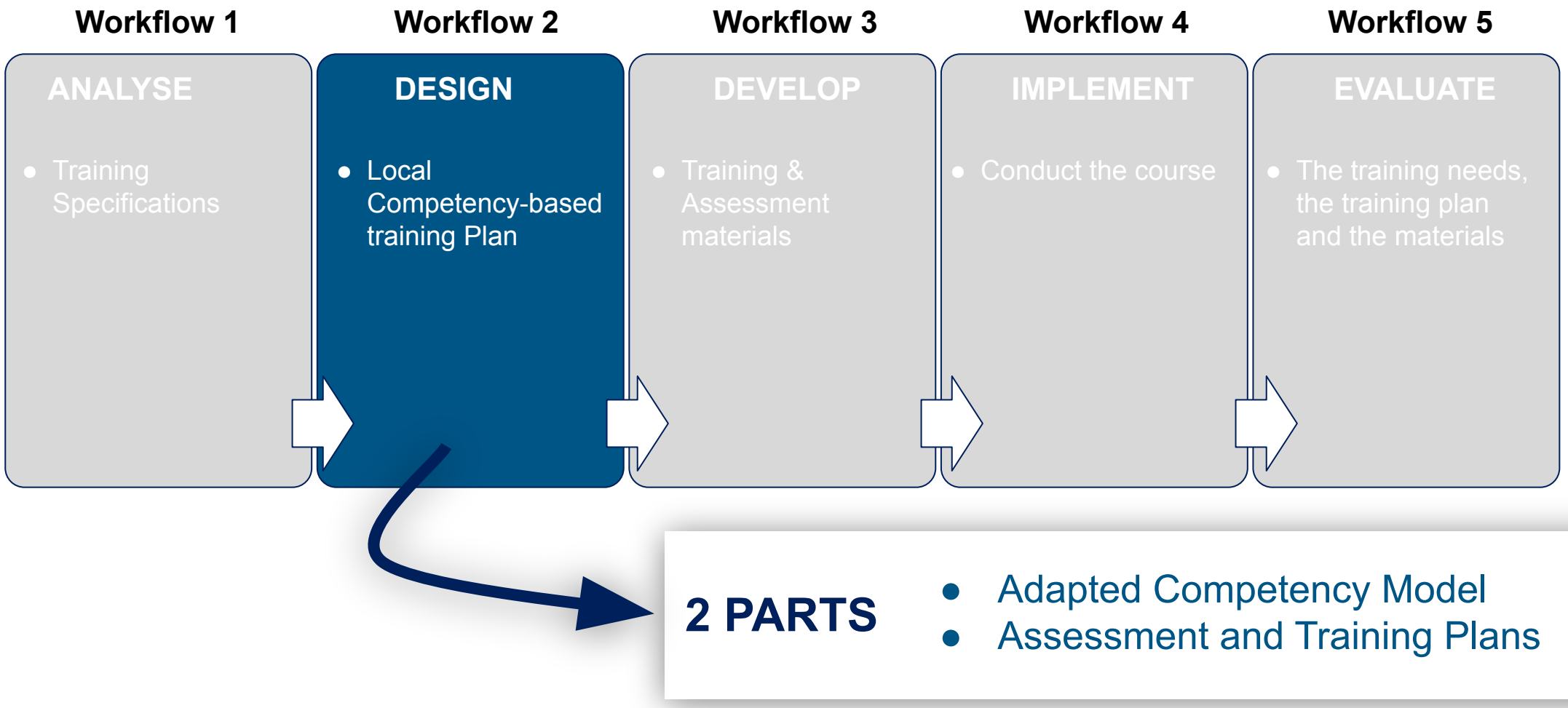
Workflow 1
Workflow 2
Workflow 3
Workflow 4
Workflow 5
ANALYSE
Training Specifications
DESIGN
Local Competency-based training Plan
DEVELOP
Training & Assessment materials
IMPLEMENT
Conduct the course
EVALUATE
The training needs, the training plan and the materials
2 PARTS
Adapted Competency Model
Assessment and Training Plans

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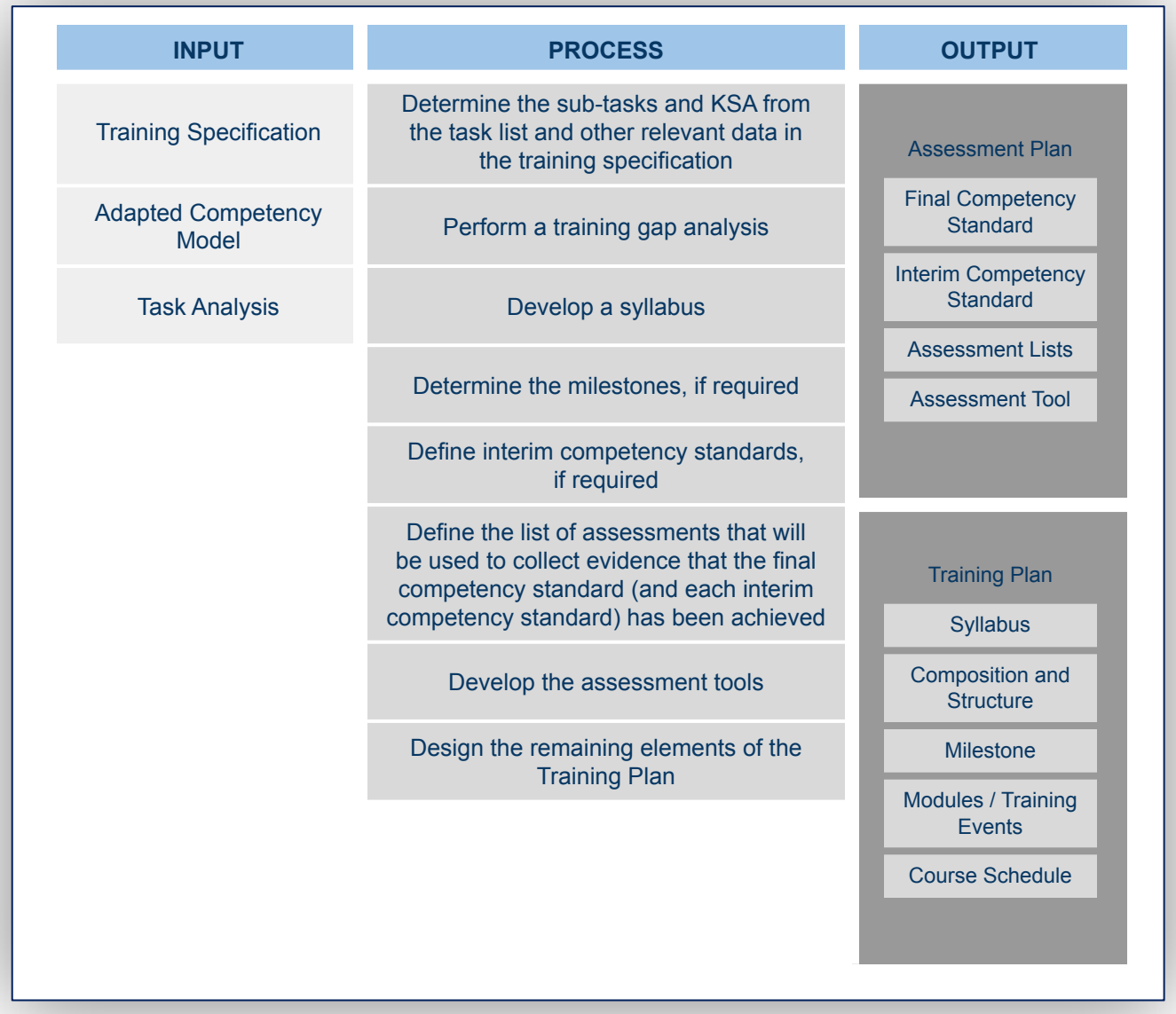
ADDIE MODEL - Workflow 2 - Part 2



Design the assessment and training plans

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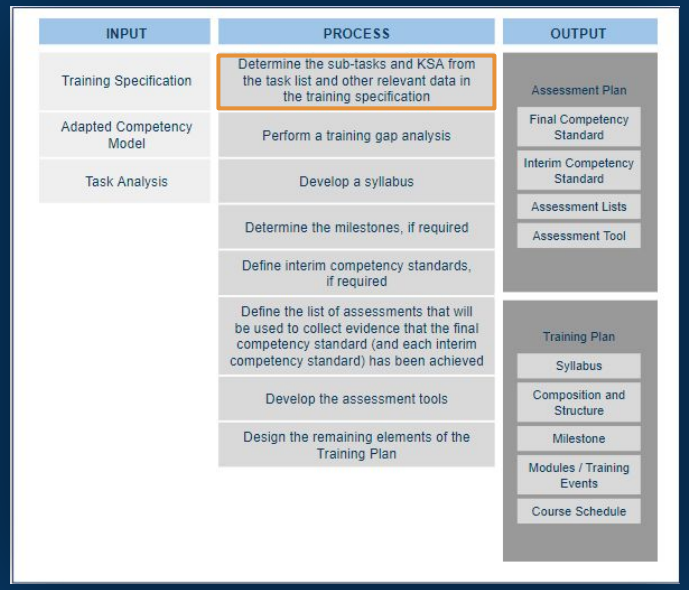
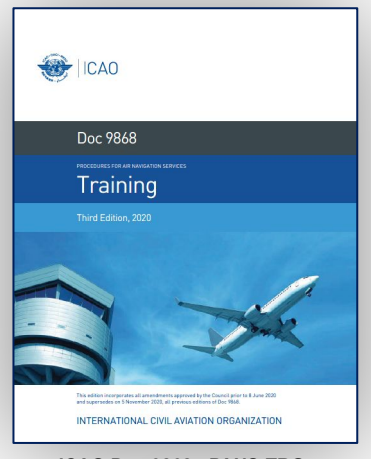
ADDIE Model

Determine the sub-tasks and KSA from the task list and other relevant data in the training specification



CBTA Instructional System Design (ISD)



ICAO Doc 9868 - PANS-TRG

INPUT	PROCESS	OUTPUT
Training Specification	Determine the sub-tasks and KSA from the task list and other relevant data in the training specification	Assessment Plan Final Competency Standard Interim Competency Standard Assessment Lists Assessment Tool
Adapted Competency Model	Perform a training gap analysis	
Task Analysis	Develop a syllabus	
	Determine the milestones, if required	
	Define interim competency standards, if required	
	Define the list of assessments that will be used to collect evidence that the final competency standard (and each interim competency standard) has been achieved	Training Plan Syllabus Composition and Structure Milestone Modules / Training Events Course Schedule
	Develop the assessment tools	
	Design the remaining elements of the Training Plan	

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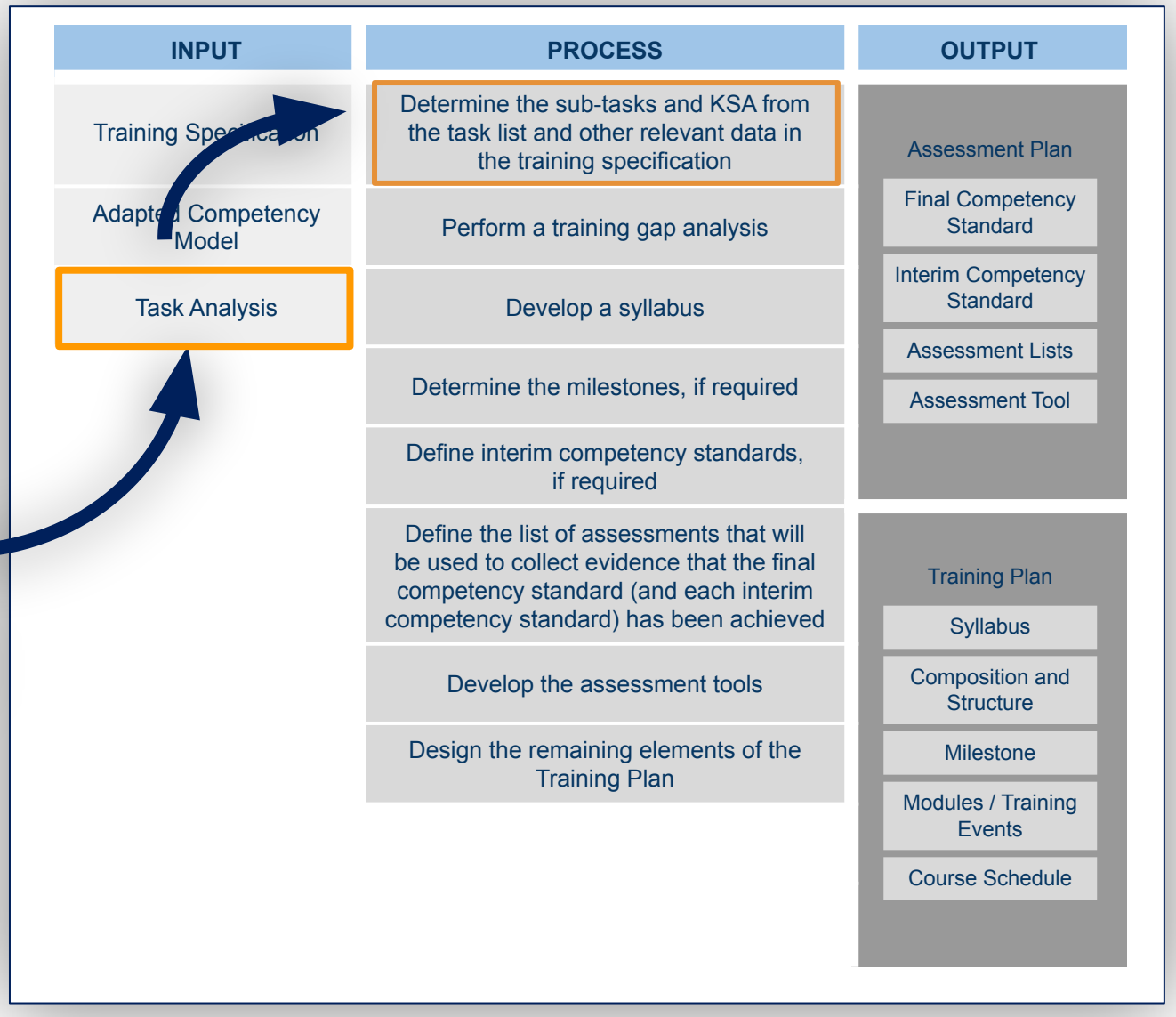
CBTA Instructional System Design (ISD)

ICAO Doc 9868 - PANS-TRG

FLIGHT PHASE
⇒ **TASKS**
⇛ **SUBTASKS**

- **PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS**
- **PERFORM TAKEOFF**
  - ⇒ Perform Takeoff roll
    - ⇛ **Applies takeoff thrust**
    - ⇛ Checks engine parameters
    - ...
- **PERFORM CLIMB**
- **PERFORM CRUISE**
- **PERFORM DESCENT**
- **PERFORM APPROACH**
- **PERFORM LANDING**
- **PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS**



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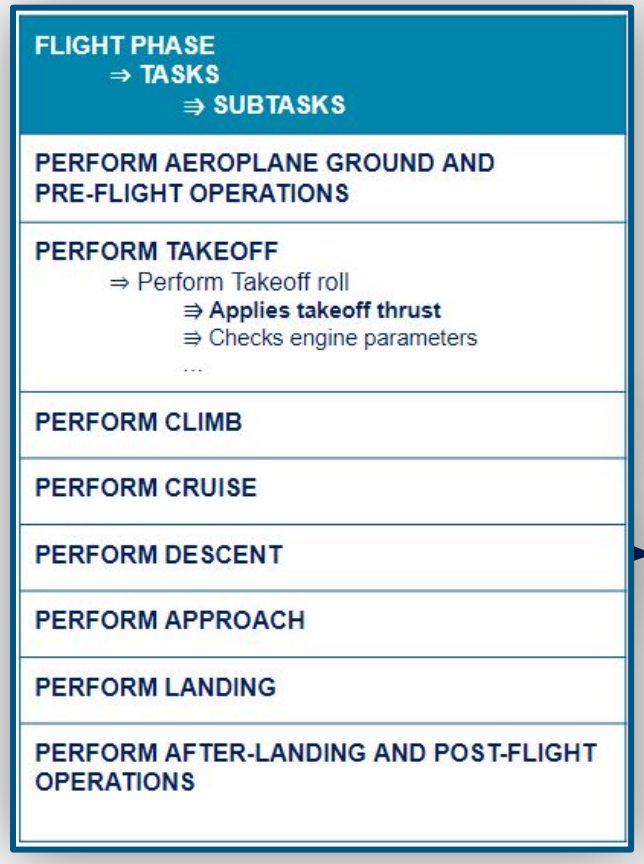
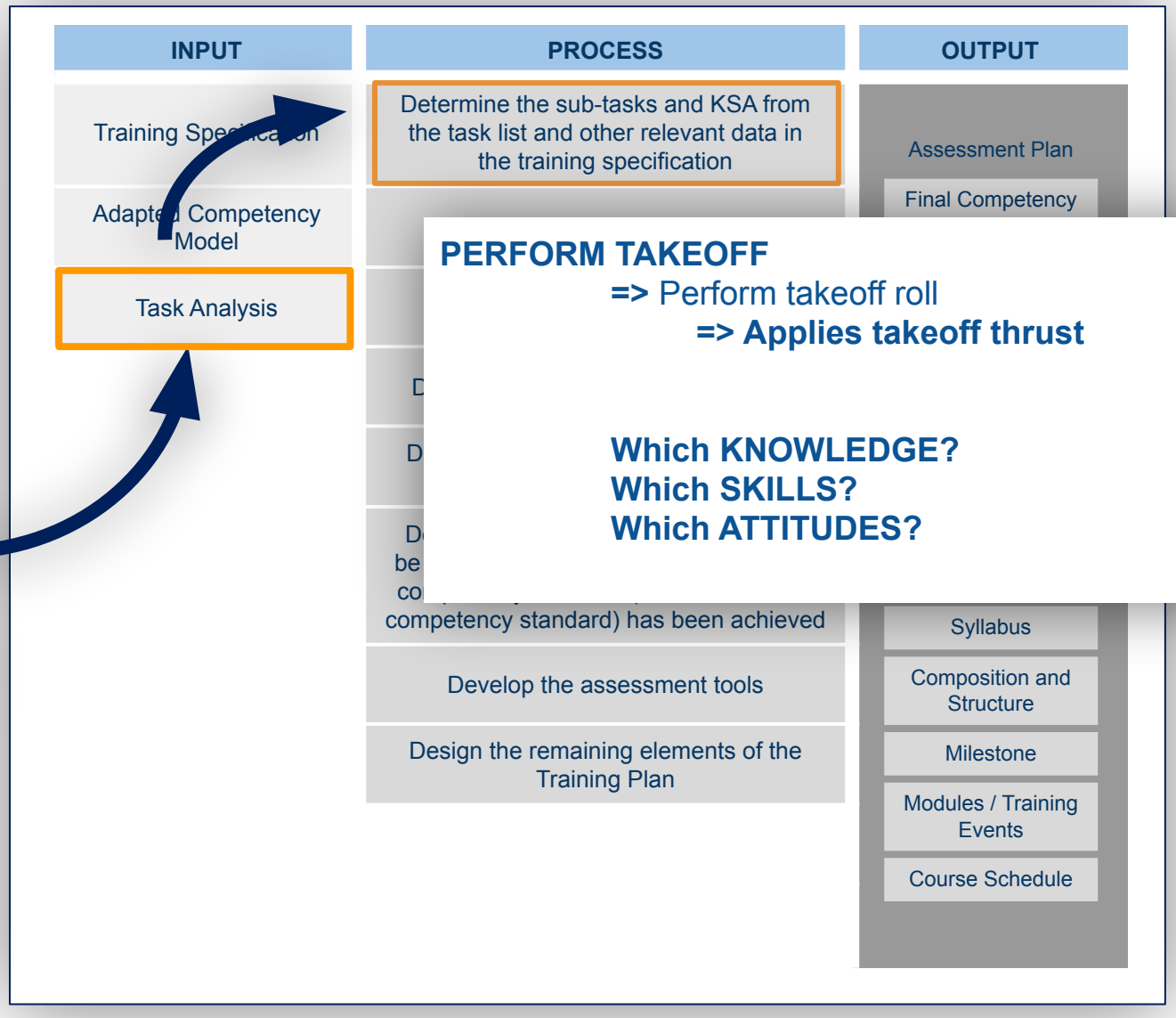
CBTA Instructional System Design (ISD)





PERFORM TAKEOFF
=> Perform takeoff roll
=> Applies takeoff thrust

Which KNOWLEDGE?
Which SKILLS?
Which ATTITUDES?

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CBTA Instructional System Design (ISD)

FLIGHT PHASE ⇒ TASKS ⇛ SUBTASKS
PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS
PERFORM TAKEOFF ⇒ Perform Takeoff roll ⇛ **Applies takeoff thrust** ⇛ Checks engine parameters ...
PERFORM CLIMB
PERFORM CRUISE
PERFORM DESCENT
PERFORM APPROACH
PERFORM LANDING
PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS

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INPUT	PROCESS	OUTPUT
Training Specification	Determine the sub-tasks and KSA from the task list and other relevant data in the training specification	Assessment Plan
Adapted Competency Model	Perform a training gap analysis	Final Competency Standard
Task Analysis	Develop a syllabus	Interim Competency Standard
	Determine the milestones, if required	Assessment Lists
	Define interim competency standards, if required	Assessment Tool
	Define the list of assessments that will be used to collect evidence that the final competency standard (and each interim competency standard) has been achieved	Training Plan
	Develop the assessment tools	Syllabus
	Design the remaining elements of the Training Plan	Composition and Structure
		Milestone
		Modules / Training Events
		Course Schedule

Subtasks from Flight Phase

Subtask ⇳ KSA ⇳ OB

Competency-Based

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Determine the Subtasks and KSA from Task List

⇒ OB Mapping

FLIGHT PHASE ⇒ TASKS ⇛ SUBTASKS
PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS
PERFORM TAKEOFF ⇒ Perform Takeoff roll ⇛ **Applies takeoff thrust** ⇛ Checks engine parameters …
PERFORM CLIMB
PERFORM CRUISE
PERFORM DESCENT
PERFORM APPROACH
PERFORM LAND
PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS

200 + Sub Tasks

Acronyms	Pilot Competencies
KNO	Application of Knowledge
PRO	Application of Procedures and compliance with regulation
COM	Communication
FPA	Aero plane Flight Path Management, automation
FPM	Aero plane Flight Path Management, manual control
LTW	Leadership and Teamwork
PSD	Problem Solving and Decision Making
SAW	Situation awareness and management of information
WLM	Workload Management

73 OBs

AIRBUS

Mapping Subtask – OB: Method

			Monitors and assesses the state of the aeroplane and its systems	Monitors and assesses the aeroplane's energy state, and its anticipated flight path	Monitors and assesses the general environment as it may affect the operation	Validates the accuracy of information and checks for gross errors	Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected	Develops effective contingency plans based upon potential risks associated with threats and errors	Responds to indications of reduced situation awareness
Flight Phase	**Task**	**Subtask**	**SAW 7.1**	**SAW 7.2**	**SAW 7.3**	**SAW 7.4**	**SAW 7.5**	**SAW 7.6**	**SAW 7.7**
3. PERFORM TAKE-OFF	**3.1 Perform pre-take-off and pre-departure preparation**	**3.1.2 Checks correct runway selection**	**I**	**I**	**R**	**I**	**C**	**C**	**C**

I= Irrelevant, the OB is not supposed to be demonstrated

R= Relevant, the OB demonstration is required

C=Conditional, the OB demonstration depends on the context

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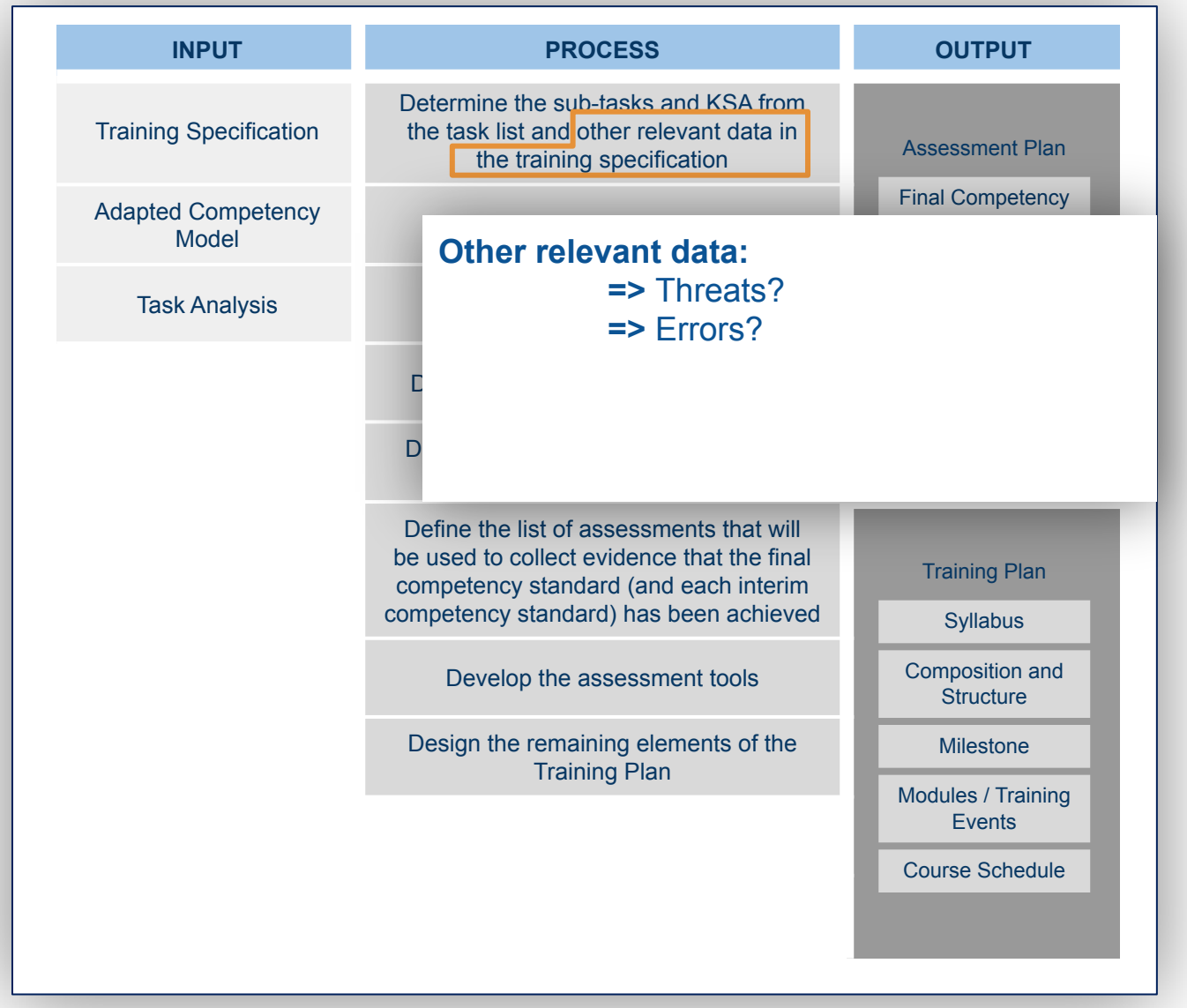
CBTA Instructional System Design (ISD)



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Determine the relevant Threats, and relevant Errors

⇒ OB Mapping

IATA Safety Taxonomy (threats & Errors)

Operational Threats	Environmental Threats
hreats **t Malfunction (see breakdown)** ontained engine failure tained engine failure (incl overheat and prop ding gear/ tires es t Controls (see breakdown) rimary flight controls econdary flight controls (flaps, spoilers) ctural Failure Smoke A02 MEL item A03 Operation pressure A04 Cabin events A05 Ground events A06 Dispatch/paperwork A07 Maintenance events A08 Dangerous goods A09 Manual/charts/checklists **B - Psychological/Physiological Threats** B04 – Crew Incapacitation	**E - Environmental Threats** **E01 Meteorology (see breakdown)** E01.01 Thunderstorm E01.02 Poor Visibility/IMC E01.03 Gusty wind/ windshear E01.04 Icing conditions E01.05 Hail E02 Lack of Visual Reference E03 Air Traffic Services **E04 Birds/foreign objects** E04.01 Birds **E05 Airport Facilities (see breakdown)** E05.01 Poor signage/lighting, faint markings, rwy/txy closures E05.02 Contaminated runways, taxiways, poor braking action **E07 Terrain/Obstacles** **E08 Traffic** E08.01 Aircraft E08.02 Vehicle

Acronyms	Pilot Competencies
KNO	Application of Knowledge
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COM	Communication
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SAW	Situation awareness and management of information
WLM	Workload Management

73 OBs

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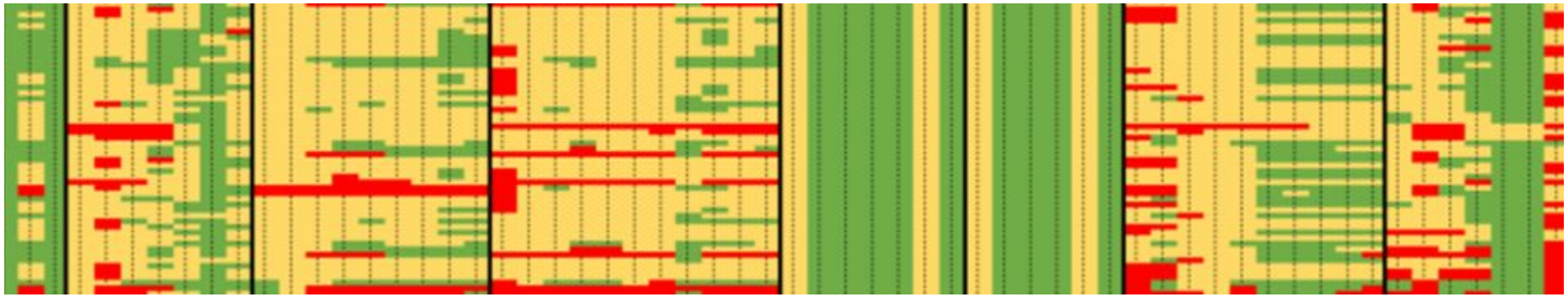
CBTA Instructional System Design (ISD)

Library of Threats & Errors

Category	SubCategory	Threat / Error	Level of Demand	2. PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS	3. PERFORM TAKE-OFF	7. PERFORM APPROACH	8. PERFORM LANDING
E - Environmental Threats	E01 Meteorology	E01.03 Wind	Low	No	crosswind less than 20 kts or tailwind	-	crosswind less than 20 kts or tailwind
E - Environmental Threats	E01 Meteorology	E01.03 Wind	Med	No	crosswind betweeen 20kts and 2/3 of maximum crosswind	Tailwind less than 10 kts	crosswind betweeen 20kts and 2/3 of maximum crosswind
E - Environmental Threats	E01 Meteorology	E01.03 Wind	High	No	crosswind above 2/3 of maximum crosswind and below or equal to the limitation	tailwind at or above 10 kts (within limitation)	crosswind above 2/3 of maximum crosswind and below or equal to the limitation
E - Environmental Threats	E01 Meteorology	E01.03 Wind	Very High	No	Above the limitation	Tailwind above limitation	Above the limitation

OB mapping vs Threats and Errors



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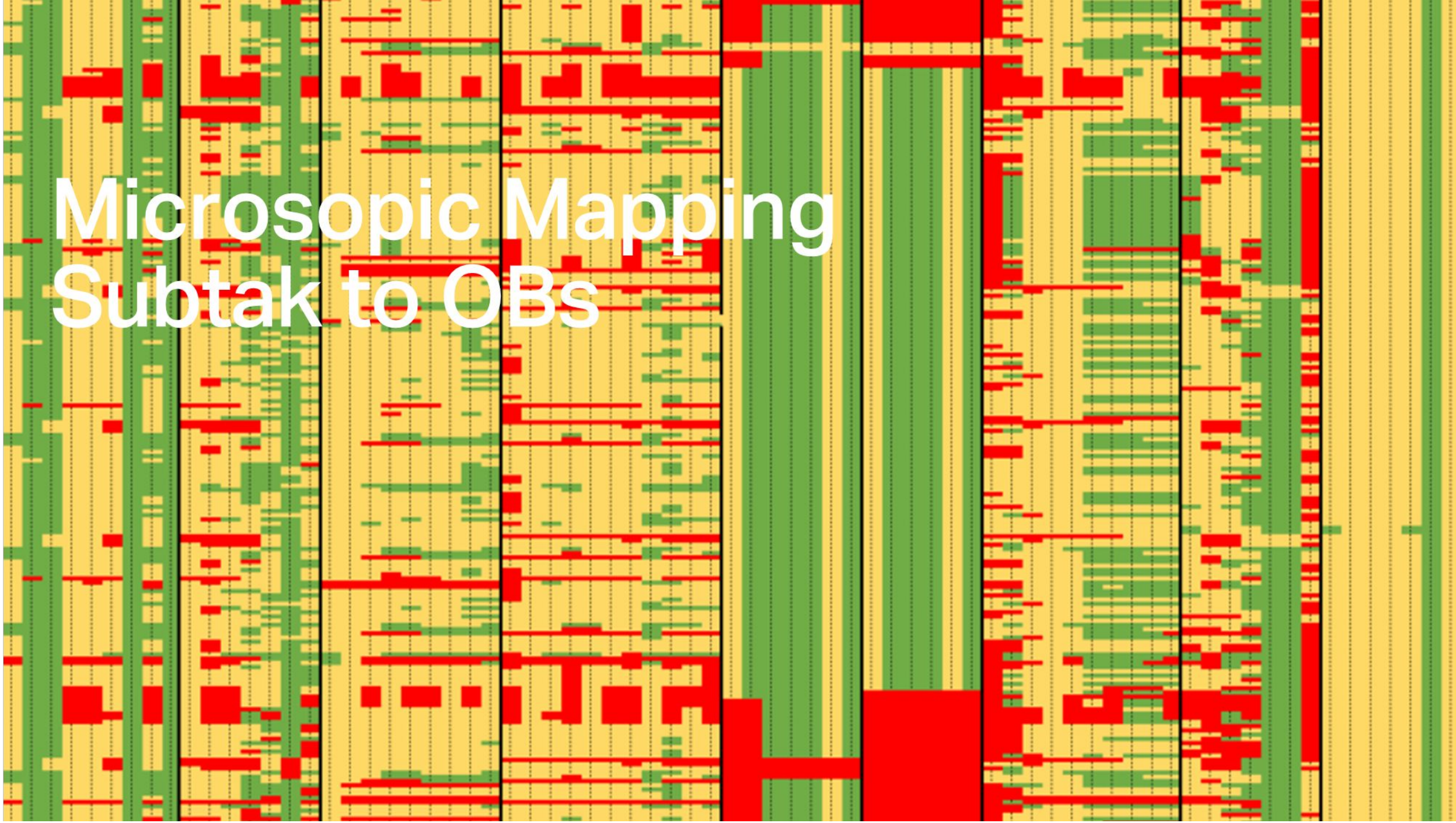
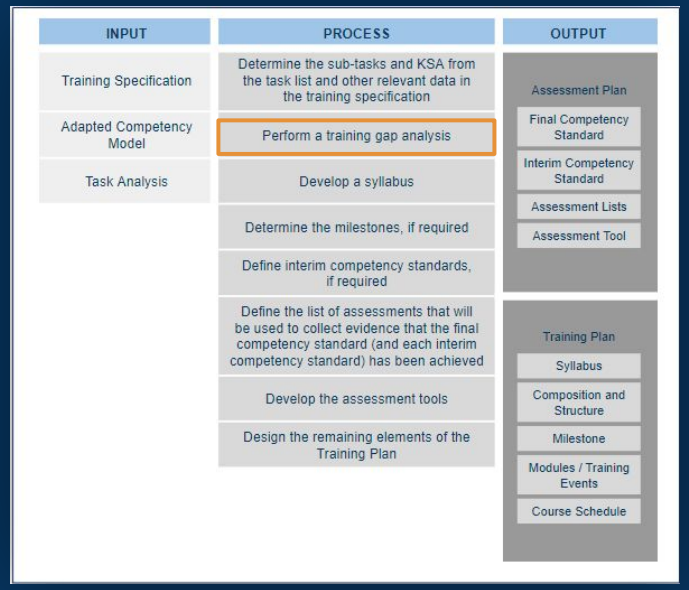
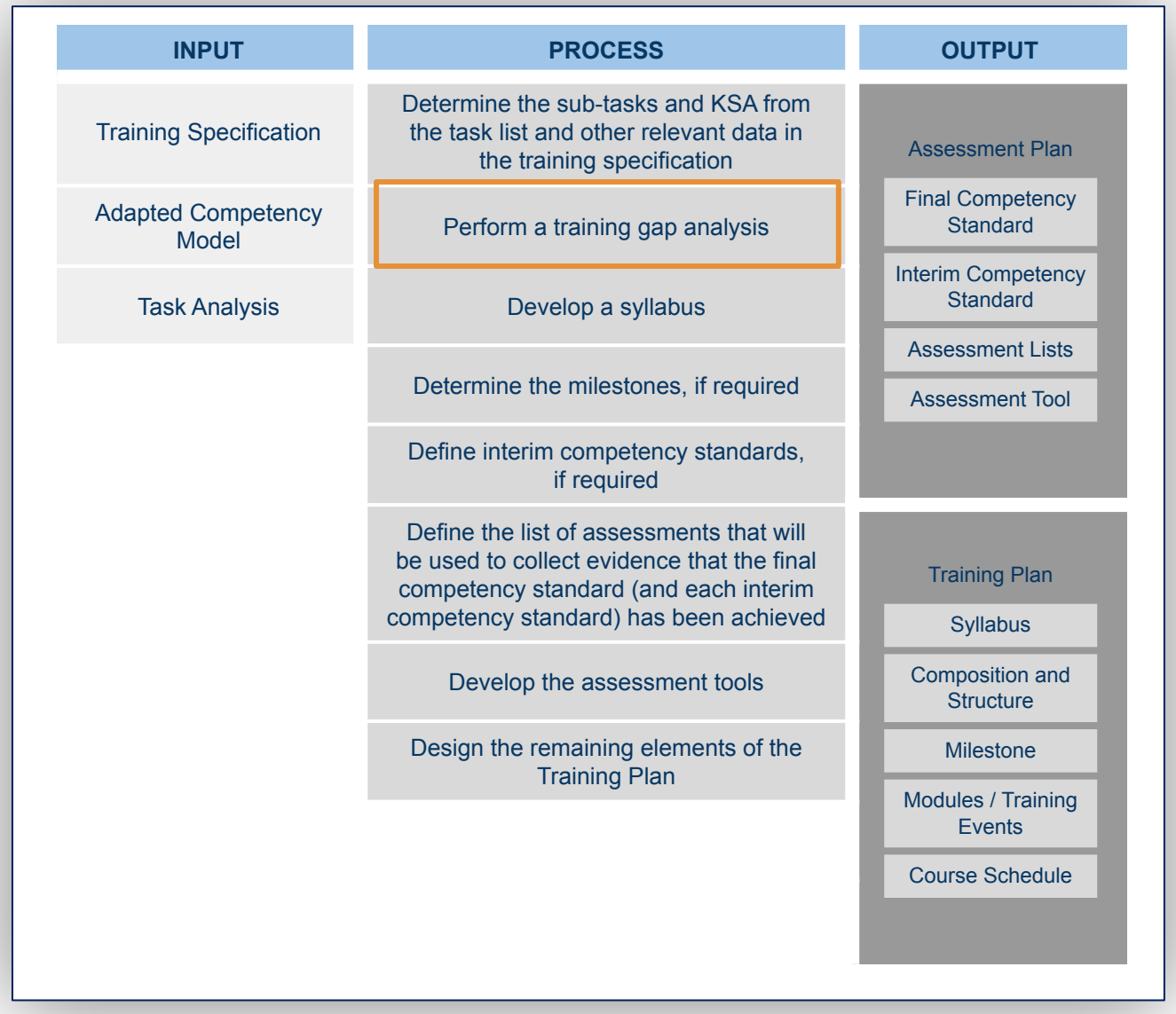

Microsopic Mapping
Subtak to OBs

ADDIE Model

Perform a training gap analysis




INPUT
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Develop the assessment tools
Design the remaining elements of the Training Plan
Assessment Plan
Final Competency Standard
Interim Competency Standard
Assessment Lists
Assessment Tool
Training Plan
Syllabus
Composition and Structure
Milestone
Modules / Training Events
Course Schedule

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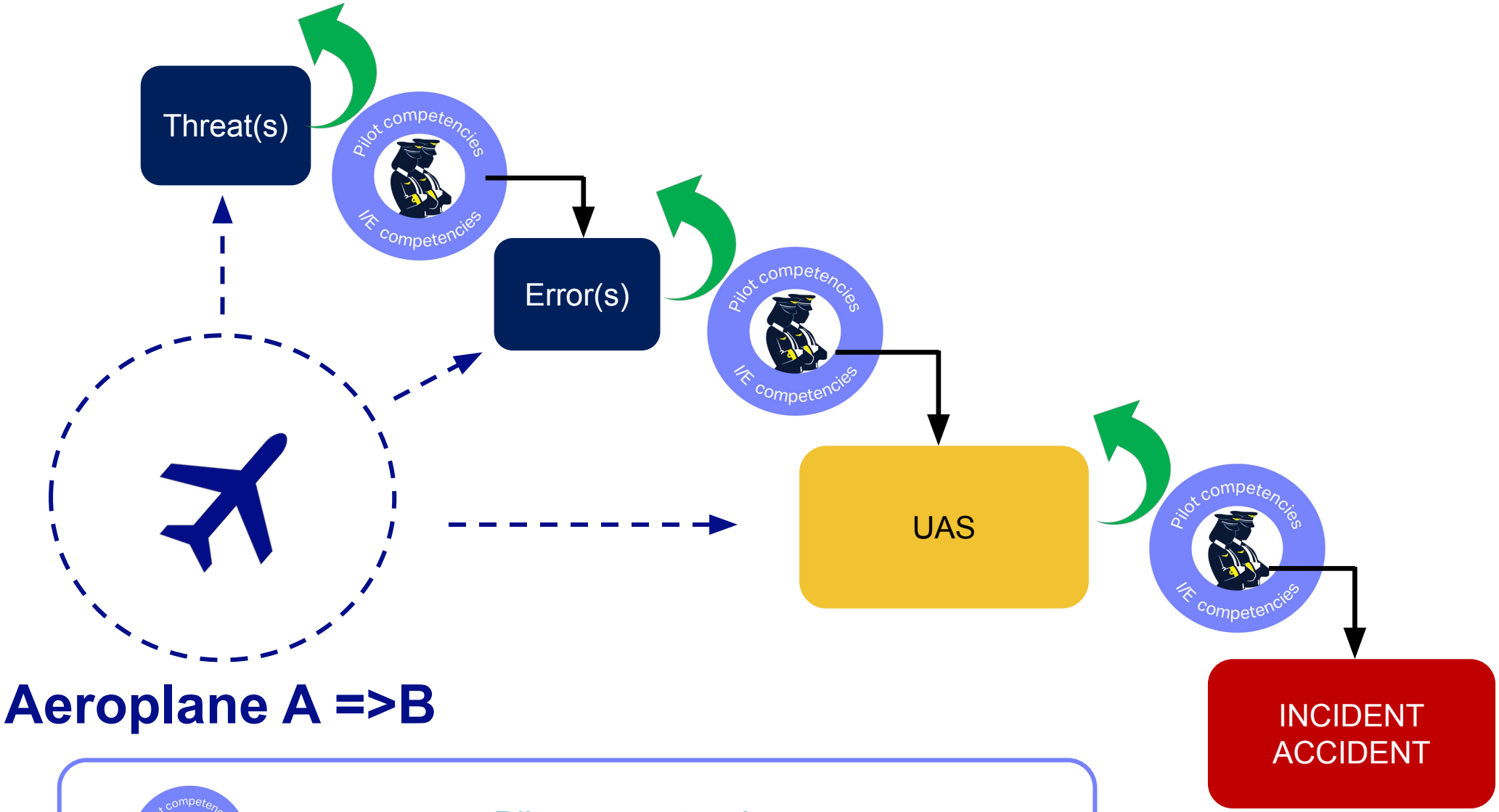
TEM Model for Training, Licensing and Operations



Pilot competencies are
the individual and team counter measures

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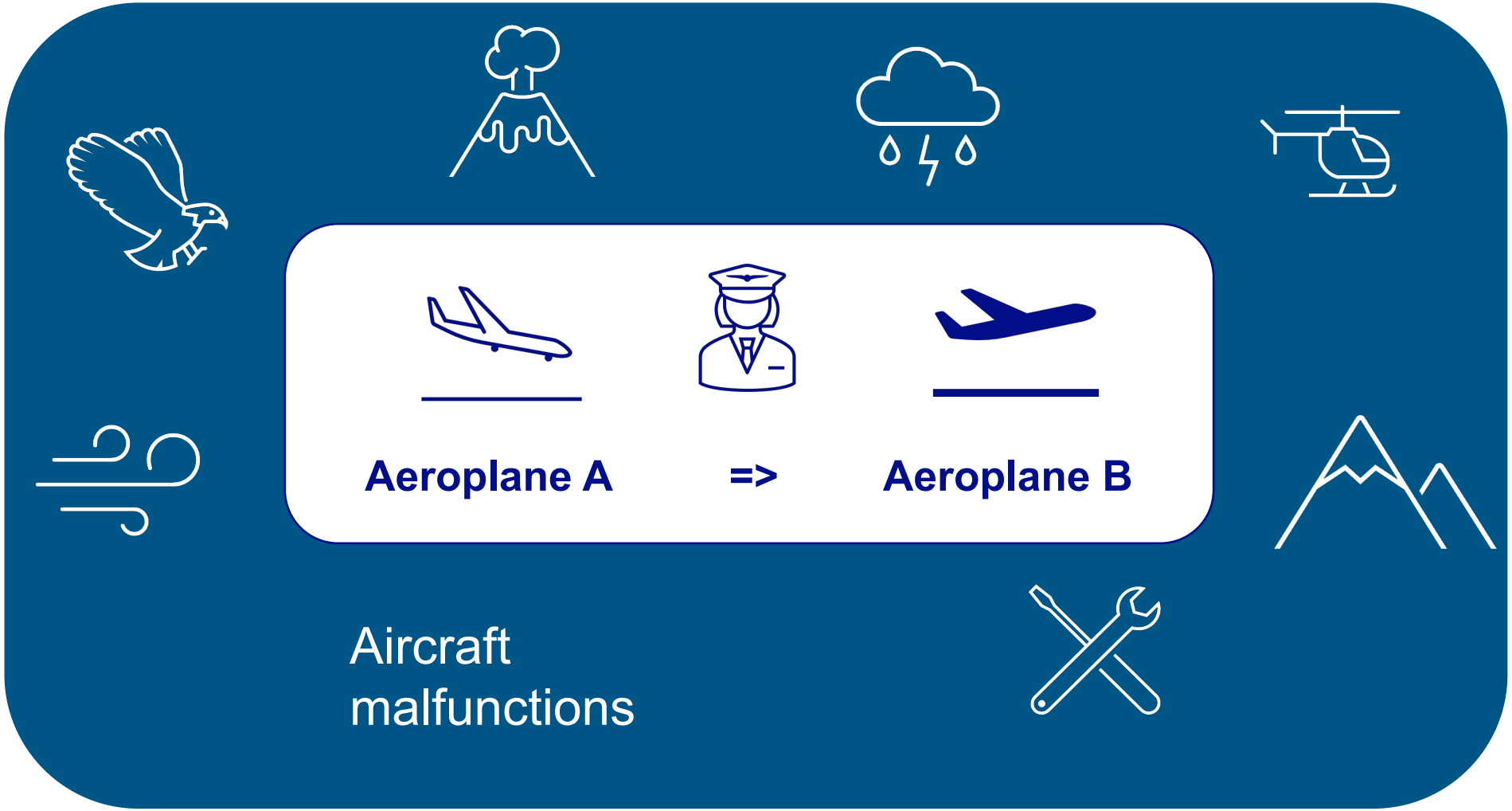
E.G. TYPE RATING COURSE - New Threats?



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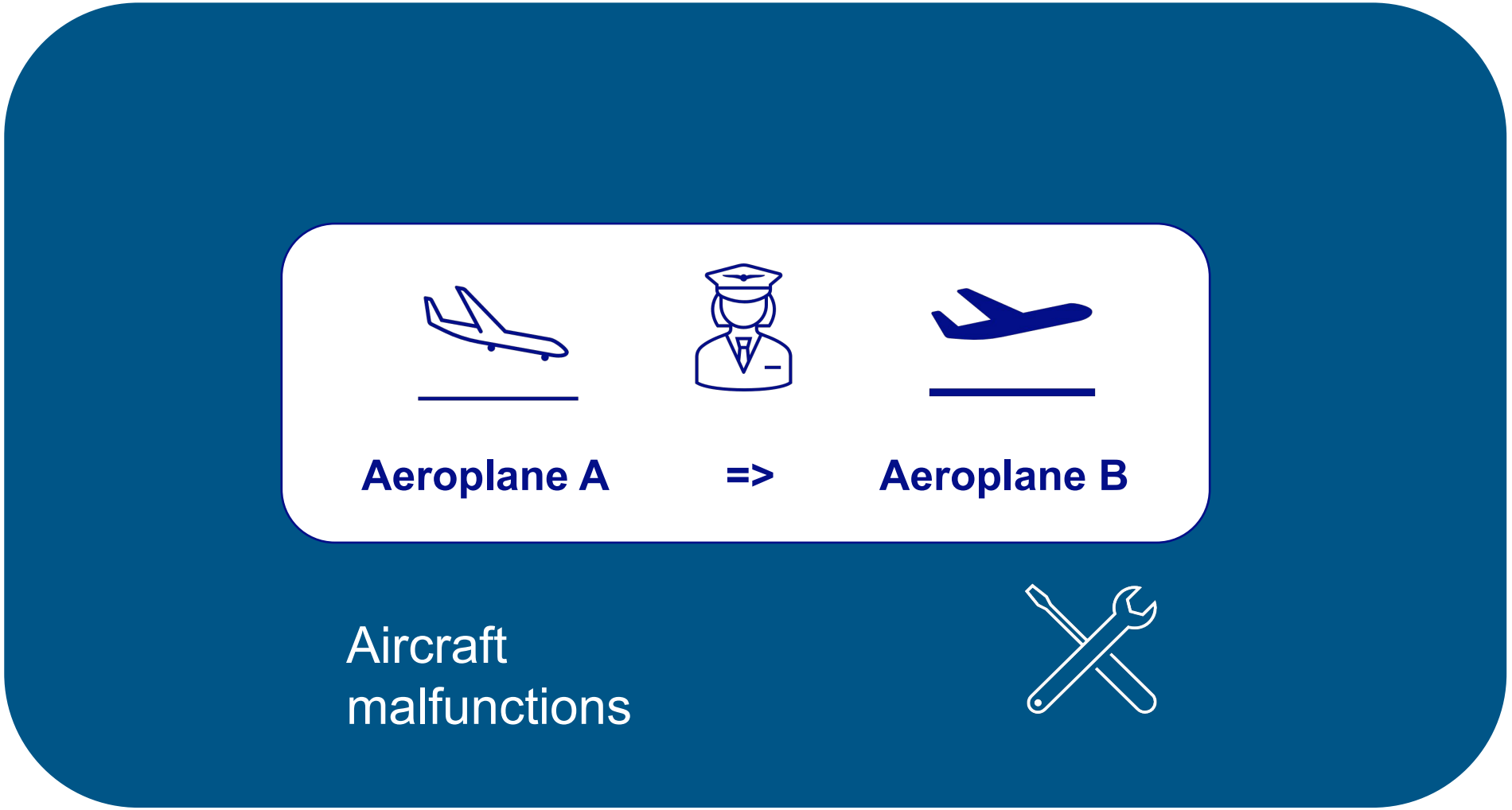
E.G. TYPE RATING COURSE - New Threats?



E.G. TYPE RATING COURSE - Potential Common Errors?

Procedural

Check list

handling

Aeroplane A => Aeroplane B

“Call out”

Automation

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E.G. Type rating (T.R) special emphasis

	KNO	PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM
Type Rating (TA) or (TA-SE)									

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TRAINING GAP ANALYSIS - Special Emphasis

Method: Review each single Observable Behavior to determine if it is critical for the trainee to demonstrate regularly the observable Behavior in order to carry out the activity safely and efficiently.

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E.G. TYPE RATING - Flight Path Management - Automation (FPA)

Description

Controls the flight path through automation

Observable Behaviors

OB 3.1 Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions

OB 3.2 Monitors and detects deviations from the intended flight path and takes appropriate action

OB 3.3 Manages the flight path to achieve optimum operational performance

OB 3.4 Maintains the intended flight path during flight using automation whilst managing other tasks and distractions

OB 3.5 Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload

OB 3.6 Effectively monitors automation, including engagement and automatic mode transitions

E.G. TYPE RATING - Flight Path Management - Automation (FPA)

Description

Controls the flight path through automation

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OB 3.1 Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions

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OB 3.4 Maintains the intended flight path during flight using automation whilst managing other tasks and distractions

OB 3.5 Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload

OB 3.6 Effectively monitors automation, including engagement and automatic mode transitions

E.G. TYPE RATING - Communication (COM)

Description

Communicates through appropriate means in the operational environment, in both normal and non-normal situations.

Observable Behaviors

OB 2.1 Determines that the recipient is ready and able to receive information.
OB 2.2 Selects appropriately what, when, how and with whom to communicate.
OB 2.3 Conveys messages clearly, accurately and concisely.
OB 2.4 Confirms that the recipient demonstrates understanding of important information.
OB 2.5 Listens actively and demonstrates understanding when receiving information.
OB 2.6 Asks relevant and effective questions.
OB 2.7 Uses appropriate escalation in communication to resolve identified deviations.
OB 2.9 Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture.
OB 2.9 Adheres to standard radiotelephone phraseology and procedures.
OB 2.10 Accurately reads, interprets, constructs and responds to datalink messages in English.

E.G. Type rating (T.R) Special Emphasis

	KNO	PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM
Type Rating (TA) or (TA-SE)	**TA-SE**	**TA-SE**	**TA**	**TA-SE**	**TA-SE**	**TA**	**TA**	**TA**	**TA**

TA: Trained and Assessed
TA-SE: Trained and Assessed with a special emphasis

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E.G. PPL Special Emphasis

	KNO	PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM
Type Rating (TA) or (TA-SE)	**TA-SE**	**TA-SE**	**TA-SE**	**N/A**	**TA-SE**	**N/A**	**TA-SE**	**TA-SE**	**TA-SE**

TA: Trained and Assessed
TA-SE: Trained and Assessed with a special emphasis

AB-INITIO

=>

Aeroplane

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E.G. MPL Special Emphasis

	KNO	PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM
Type Rating (TA) or (TA-SE)	**TA-SE**	**TA-SE**	**TA-SE**	**TA-SE**	**TA-SE**	**TA-SE**	**TA-SE**	**TA-SE**	**TA-SE**

TA: Trained and Assessed
TA-SE: Trained and Assessed with a special emphasis

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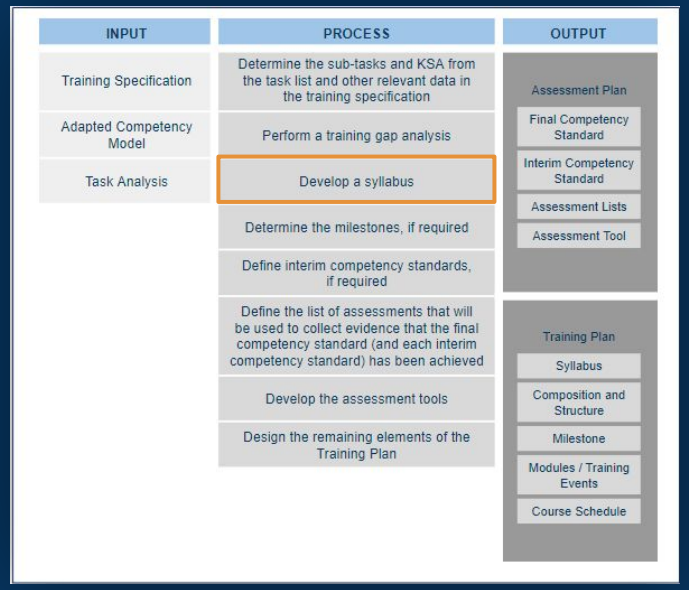
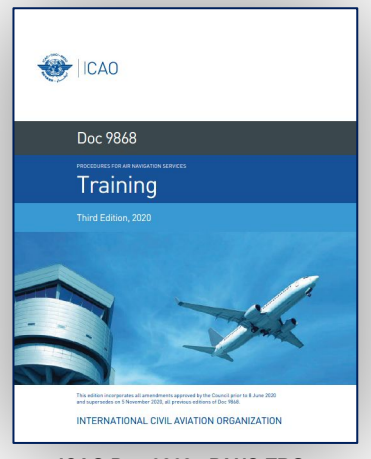
ADDIE Model

Develop a syllabus



Syllabus



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Attachment C to Chapter 2 - Paragraph 4.6.4 Develop syllabus
The syllabus is the list of tasks/sub-tasks and KSA that have been formulated into training objectives and structured in such a way that it will be possible to gauge the scale of the training and, in the next step, whether it will be necessary to introduce milestones or not. The syllabus is an element of the training plan.

Training objective. A clear statement that is comprised of three parts, i.e. the desired performance or what the trainee is expected to be able to do at the end of training (or at the end of particular stages of training), the performance standard that must be attained to confirm the trainee's level of competence, and the conditions under which the trainee will demonstrate competence.

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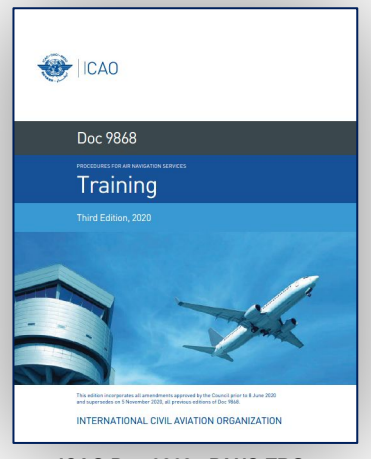
Syllabus



ICAO Doc 9868 - PANS-TRG

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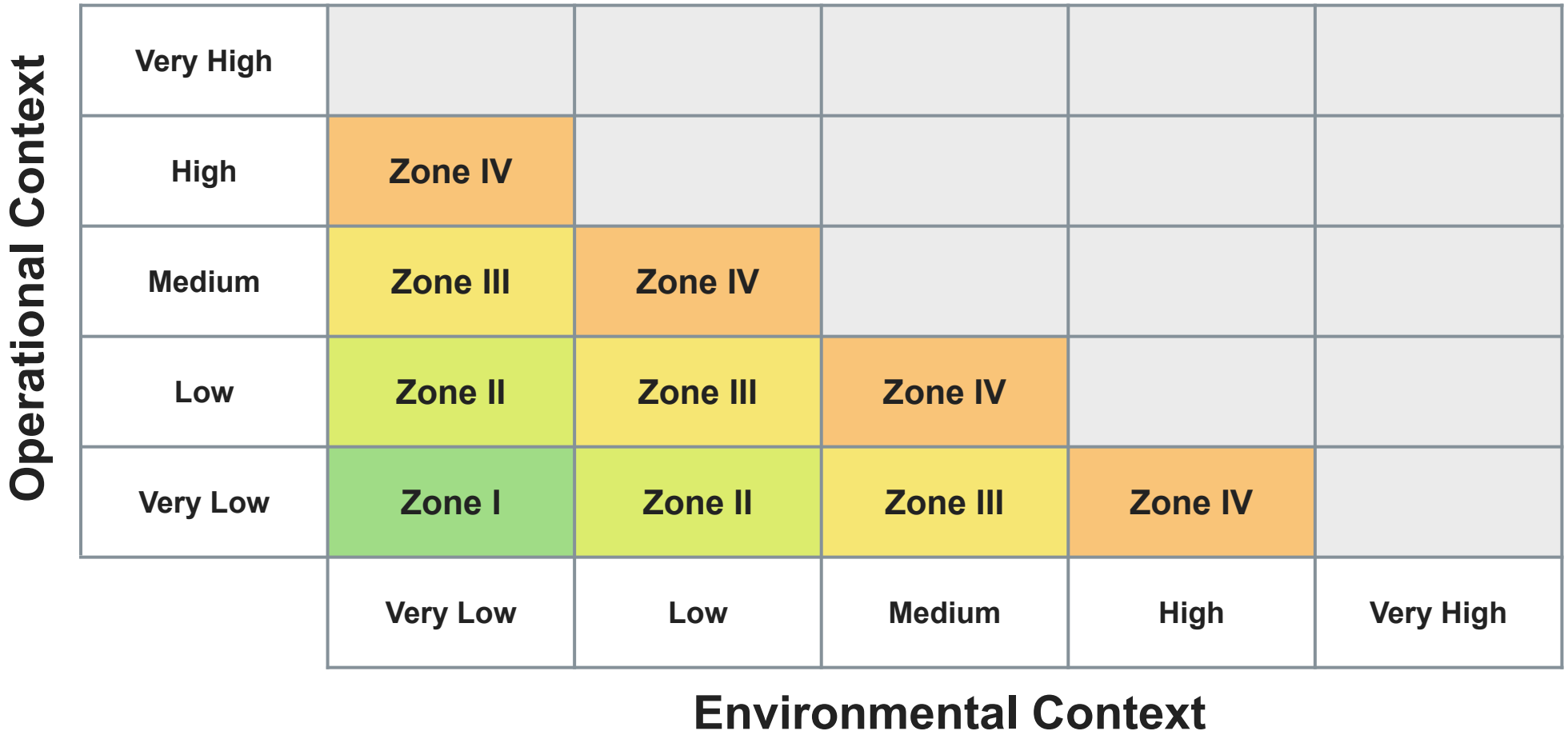
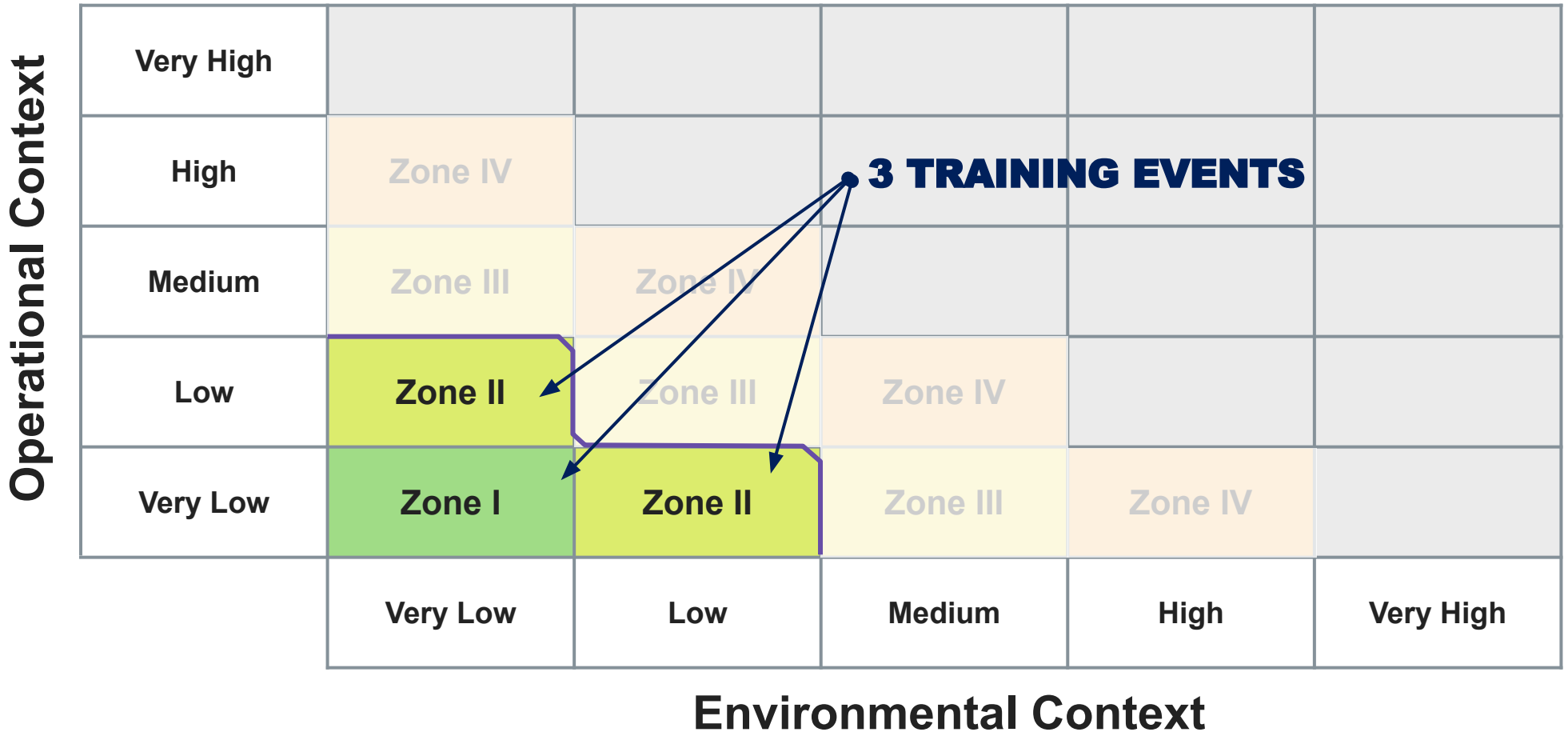
Zone of Complexity

Operational Context	Environmental Context: Very Low	Low	Medium	High	Very High
Very High	Zone V	Zone VI	Zone VII	Zone VIII	Zone IX
High	Zone IV	Zone V	Zone VI	Zone VII	Zone VIII
Medium	Zone III	Zone IV	Zone V	Zone VI	Zone VII
Low	Zone II	Zone III	Zone IV	Zone V	Zone VI
Very Low	Zone I	Zone II	Zone III	Zone IV	Zone V

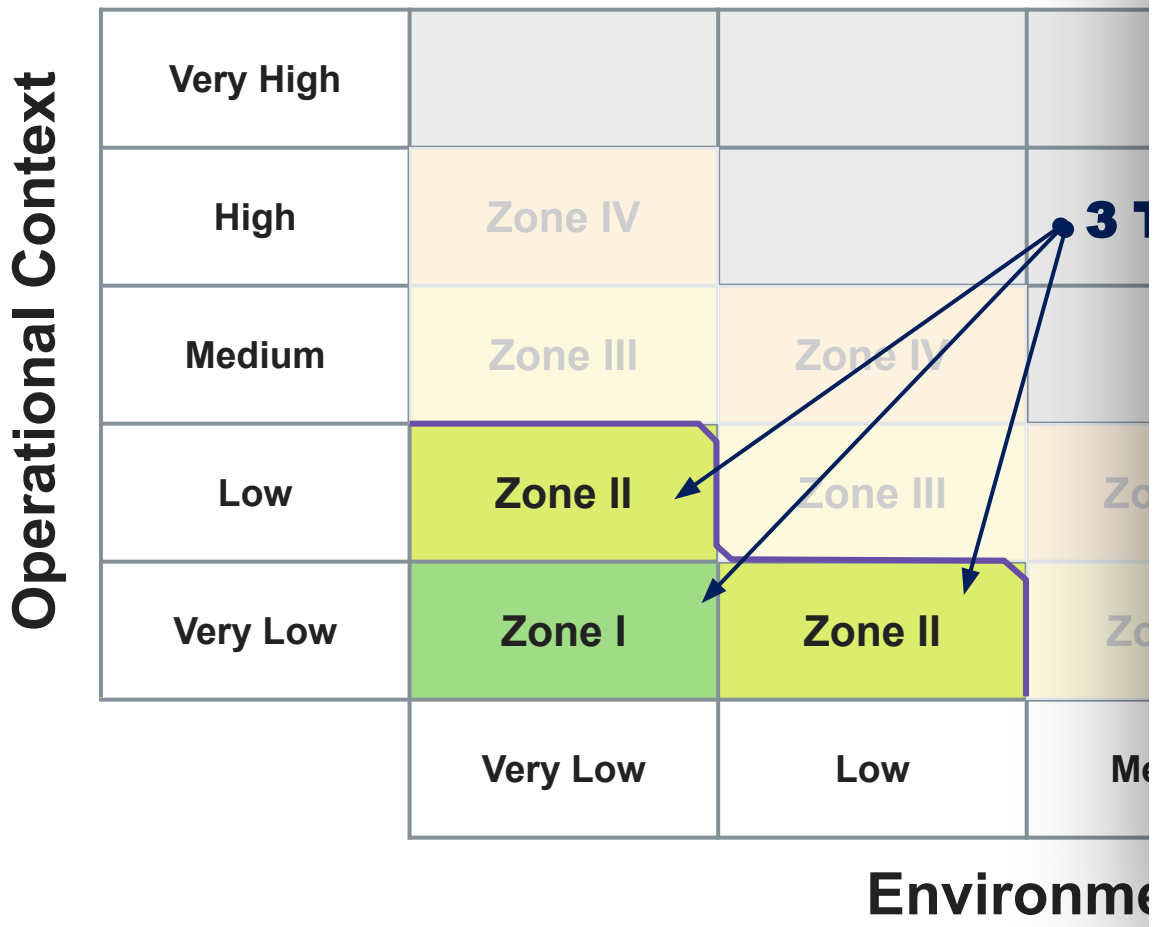
Type Rating - Zone of Complexity



Type Rating - Training Event



Type Rating - Training Event



b) *Competency checklist.* A competency checklist details the competencies and performance criteria and is used to record achievements during each formative and summative assessment. The assessment plan details how many assessments should be completed for each milestone.

c) *Competency assessment form.* The competency assessment form is used to summarize the results of all the assessments that have been undertaken by a trainee and then decide whether the trainee has achieved either an interim competency standard or the final competency standard. The number and method(s) of assessment are described in the assessment plan. The competency assessment form must correlate with the assessment plan.

4.6.8 Design the training plan

The training plan is made up of the following elements:

a) *Composition and structure.* This is a high-level description of what will be trained (composition) and how the various elements of training relate to each other (structure). If the course covers only one type of training (e.g. aerodrome rating), the composition is simple. When a course is composed of more than one type of training (e.g. one course covering basic + aerodrome rating + approach surveillance rating), it will need to be explained how these types of training will relate to each other in terms of structure and sequence.

b) *Syllabus.* The syllabus is the list of training objectives that will need to be covered by the end of the course. The training objectives are derived from the tasks/sub-tasks and associated KSA identified in 4.6.2 and the training gap analysis as described in 4.6.3.

A syllabus does not prescribe the order or sequence of learning; it simply lists the training objectives. To facilitate the process of assigning training objectives to the various milestones, modules and training events, it is useful to structure a syllabus into logical groups of subjects.

c) *Milestones.* If it has been determined that milestones are necessary to structure the course, the assessment plan will already have defined the interim competency standards associated with each milestone and the final competency standard that needs to be achieved by the end of the last milestone. Training objectives from the syllabus are assigned to each milestone.

d) *Modules, training events and sequence.* Depending on the number, type and complexity of the training objectives, it may be helpful to further subdivide the training into modules (within an entire course or within all or some milestones, if milestones are required). This is illustrated in Figure I-2-C-8.

Whichever substructure is determined as appropriate (course, milestones or modules), training events are developed to support the sub-structure. Training events are the smallest units of learning and include classroom-based lessons, simulator exercises, web-based training exercises, case studies, etc. Training events contain the following information:

1) which objectives are grouped and taught together;

2) the number of periods needed to teach each group of objectives;

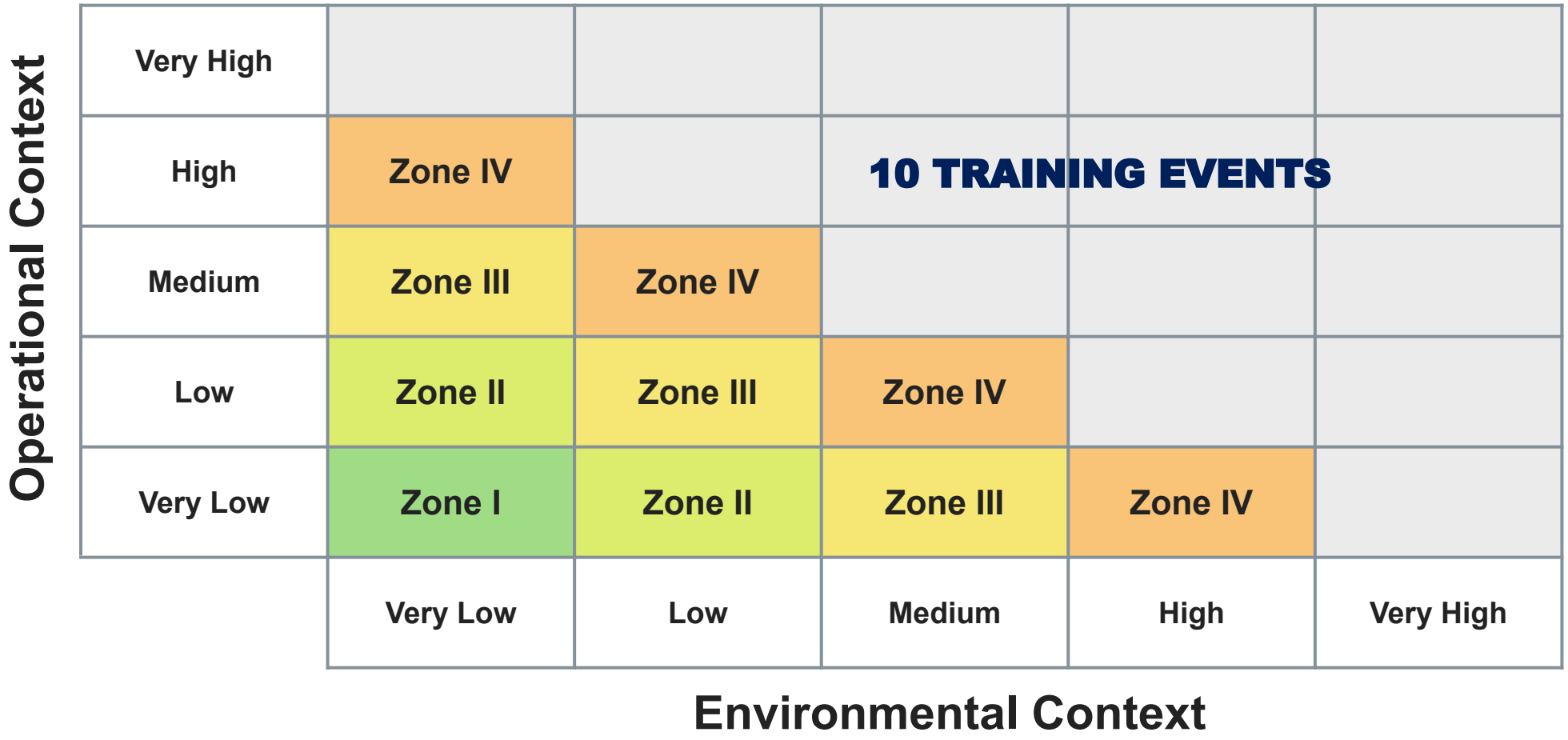
3) which method(s) should be used (lessons, case studies, individual simulation, briefing, self-study, etc.);

4) which media are used (e.g. simulators, visual aids or textbook);

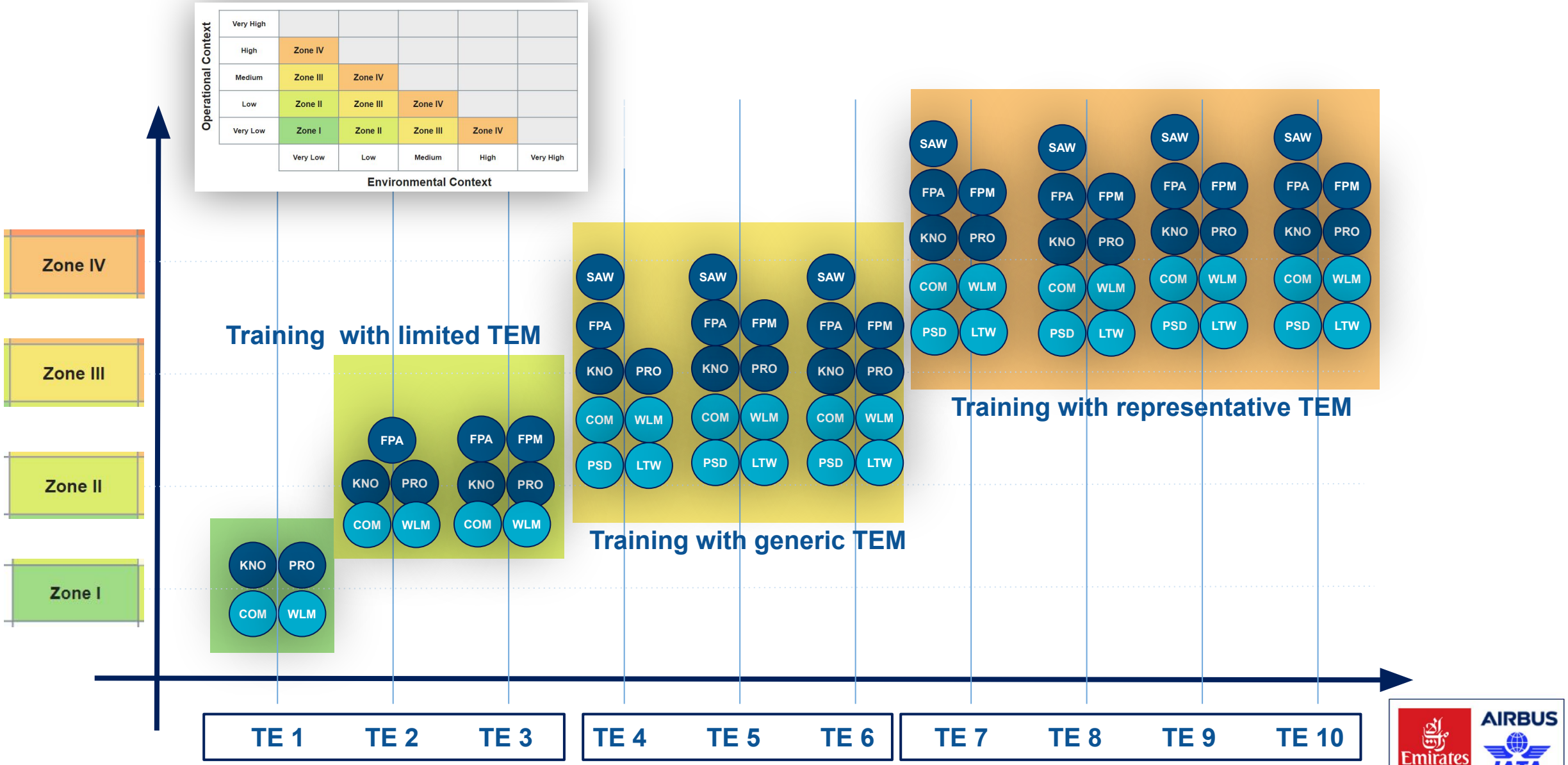
5) the learning rate (i.e. self-paced, time-restricted or real-time); and

6) whether the training is delivered to individuals or in groups.

Type Rating - Training Events

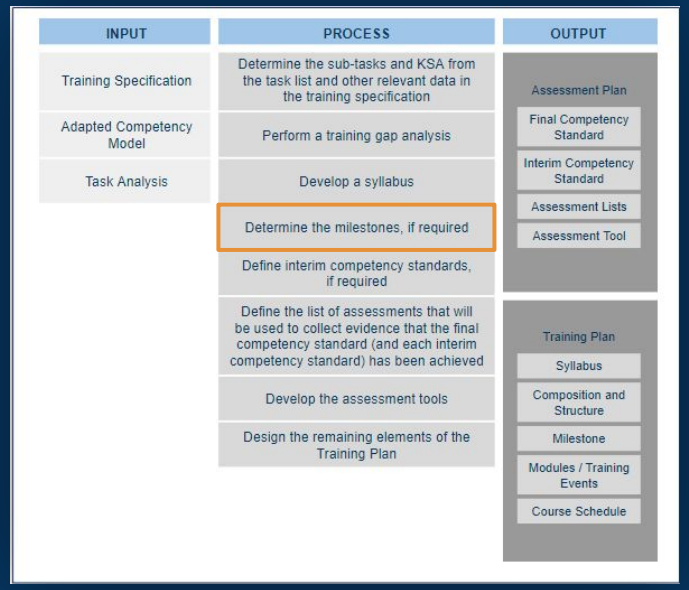


Syllabus - Example CBTA Type Rating Course

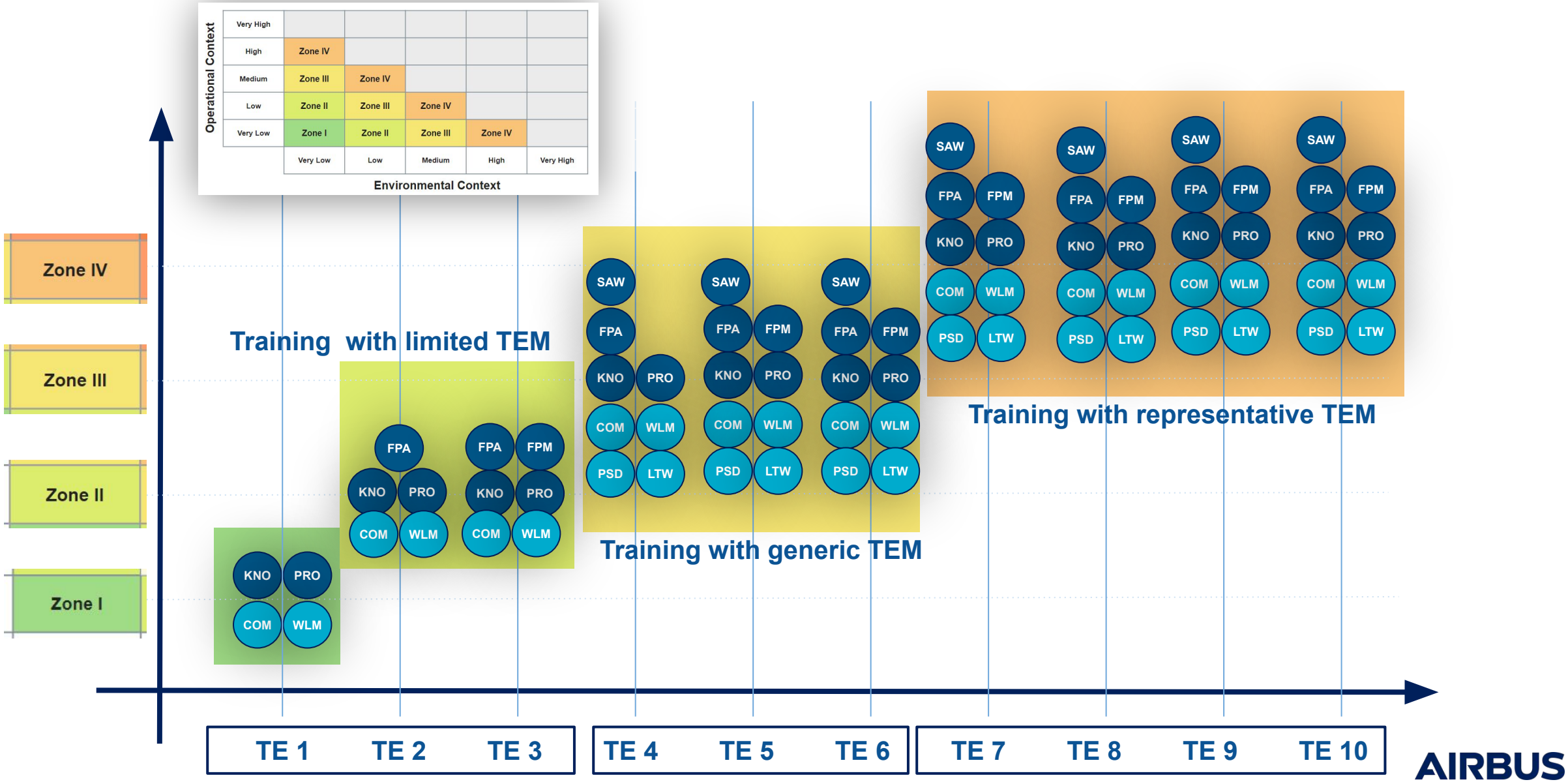


ADDIE Model

Determine the milestones, if required



Syllabus - Example CBTA Type Rating Course



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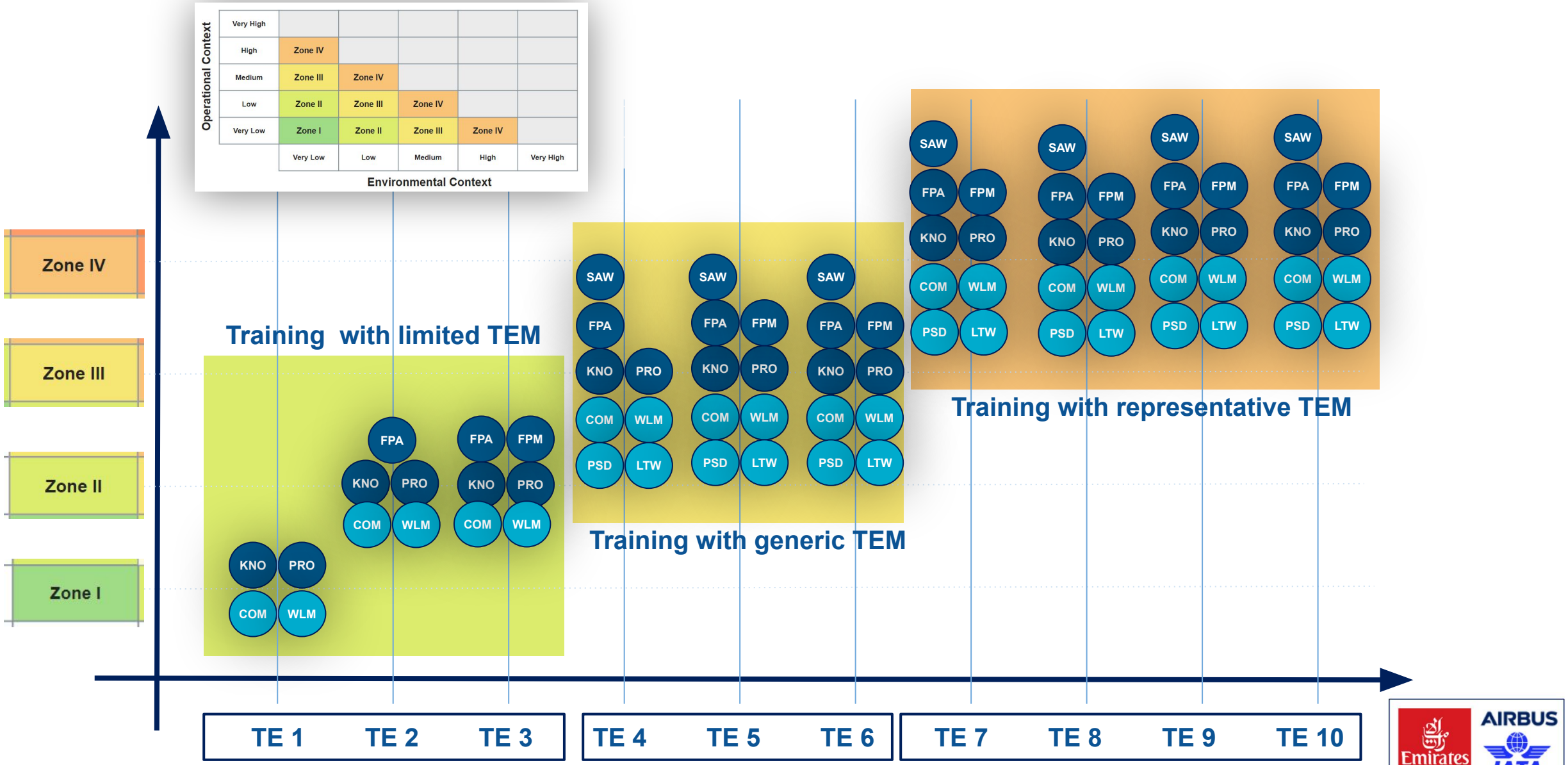
Syllabus - Example CBTA Type Rating Course



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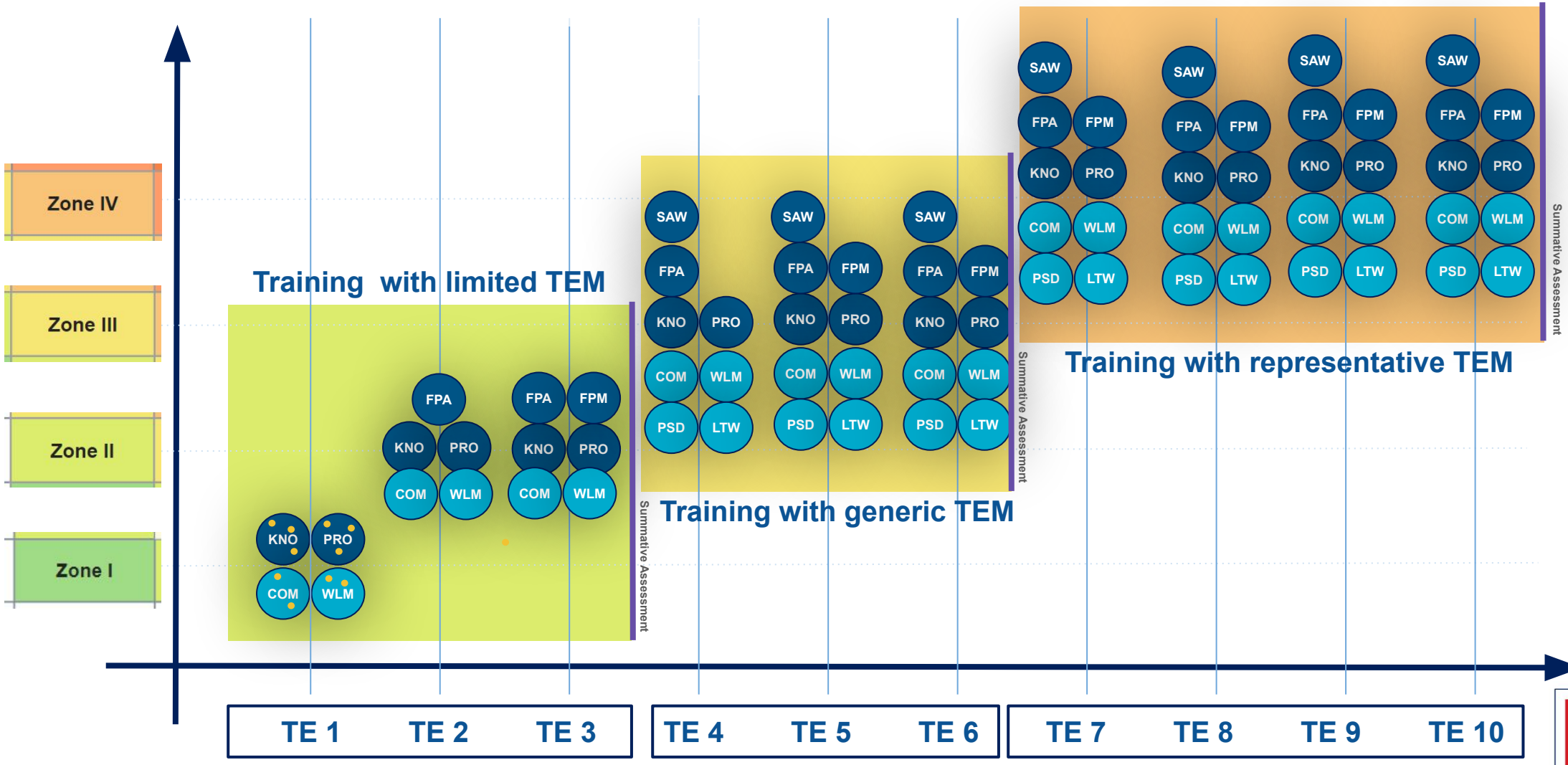


Syllabus - Example CBTA Type Rating Course

MILESTONE 1

		MODULE TR EXAMINATION						RESULT
		TE 1.1	TE 1.2	TE 1.3	TE 1.4	TE 1.5	TE 1.6	
Competency Development	Train & Assess							-
	Train & Assess with Special Emphasis	KNO	KNO	KNO PRO	KNO PRO	KNO PRO	KNO PRO	KNO PRO
	Critical OBs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Minimum Level of Performance		80%	80%	80%	N/A	N/A	N/A	PASS
Conditions	Function	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Training Platform	EL/ DL	EL	CR	CR	FMS T	VPT	N/A
	Maximum Level of Complexity	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Operational Context	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Environmental Context	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Expected Level of Instructor support	Low	N/A	Medium	Medium	Low	Low	N/A

MILESTONE 2

		MODULE FORMATIVE ASSESSMENT/ TE			SUMMATIVE ASSESSMENT
		TE 2.1	TE 2.2	TE 2.3	
Competency Development	Train & Assess	COM WLM	COM WLM	COM WLM	COM WLM
	Train & Assess with Special Emphasis	KNO PRO	FPA KNO PRO	FPM FPA KNO PRO	FPM FPA KNO PRO
	Critical OBs	[illegible]	[illegible]	[illegible]	[illegible]
Minimum Level of Performance		Adequate			COMPETENT
Conditions	Function	PF/PM	PF/PM	PF/PM	PF/PM
	Training Platform	APT+	APT+	FFS	FFS
	Maximum Level of Complexity	ZONE I	ZONE II	ZONE II	ZONE II
	Operational Context	Very Low	Low	Very Low	Low
	Environmental Context	Very Low	Very Low	Low	Low
	Expected Level of Instructor support	Low	Medium	Medium	None

MILESTONE 3

		MODULE FORMATIVE ASSESSMENT/ TE			SUMMATIVE ASSESSMENT
		TE 3.1	TE 3.2	TE 3.3	
Competency Development	Train & Assess	LTW PSD COM WLM	LTW PSD COM WLM	LTW PSD COM WLM	LTW PSD COM WLM
	Train & Assess with Special Emphasis	SAW FPA KNO PRO	SAW FPA KNO PRO	SAW FPA KNO PRO	SAW FPA KNO PRO
	Critical OBs	[illegible]	[illegible]	[illegible]	[illegible]
Minimum Level of Performance		Adequate			COMPETENT
Conditions	Function	PF/PM	PF/PM	PF/PM	PF/PM
	Training Platform	APT+	APT+	APT+	APT+
	Maximum Level of Complexity	ZONE III	ZONE III	ZONE III	ZONE III
	Operational Context	Very Low	Low	Medium	Very Low to Medium
	Environmental Context	Medium	Low	Very Low	Medium to Very Low
	Expected Level of Instructor support	Low	Low	Low	None

MILESTONE 4

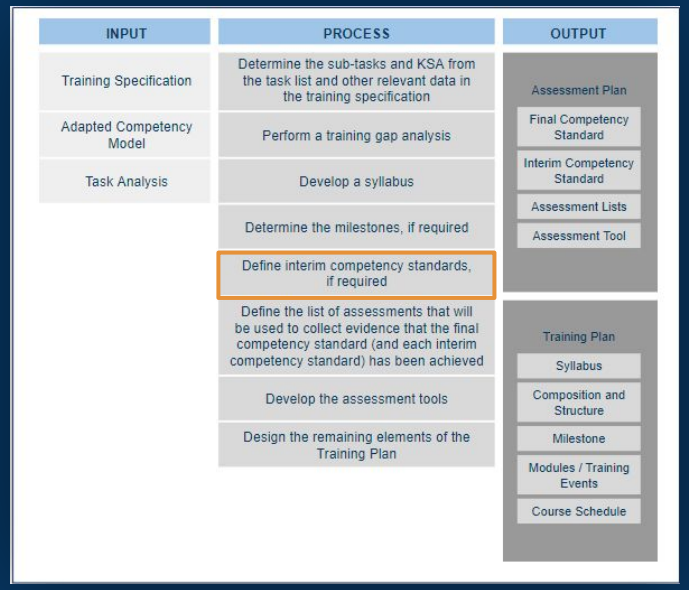
		MODULE FORMATIVE ASSESSMENT/ TE					SUMMATIVE ASSESSMENT
		TE 4.1	TE 4.2	TE 4.3	TE 4.4	TE 4.5	
Competency Development	Train & Assess	LTW PSD COM WLM	LTW PSD COM WLM	LTW PSD COM WLM	LTW PSD COM WLM	LTW PSD COM WLM	LTW PSD COM WLM
	Train & Assess with Special Emphasis	SAW FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO
	Critical OBs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Minimum Level of Performance		Adequate					COMPETENT
Conditions	Function	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM
	Training Platform	APT+	FFS	FFS	FFS	FFS	FFS
	Maximum Level of Complexity	ZONE IV	ZONE IV	ZONE IV	ZONE IV	ZONE IV	ZONE IV
	Operational Context	High	High	Very Low	Low	Medium	Very Low to High
	Environmental Context	Very Low	Very Low	High	Medium	Low	High to Very Low
	Expected Level of Instructor support	Medium	High to Medium	Medium	Low	Low	None

LICENSING EVALUATION

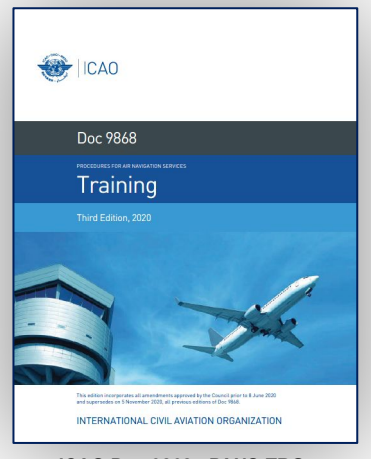
		FORMAL SUMMATIVE ASSESSMENT
Competency Development	Train & Assess / Train & Assess with Special Emphasis	KNO PRO COM FPA FPM LTW PSD SAW WLM
Minimum Level of Performance		COMPETENT
Conditions	Function	PF/PM
	Training Platform	FFS
	Maximum Level of Complexity	ZONE IV
	Operational Context	Low to Medium
	Environmental Context	Medium to Low
	Expected Level of Instructor support	None

ADDIE Model

Interim Competency Standard



Interim Competency Standard



ICAO Doc 9868 - PANS-TRG

Attachment C to Chapter 2 - Paragraph 4.4.1.4.3

An interim competency standard is achieved when all the required assessments (including any examinations or other methods of assessment) for that milestone have been successfully achieved. Making significant modifications to the conditions of an adapted competency model to create an interim competency standard occurs more typically for training that will take place in a simulated environment. In a simulated environment it is possible to modify conditions such as operational complexity. During OJT there are fewer opportunities to modify the conditions. The most typical condition to modify during OJT is the level of support that is provided by the instructor.

Attachment C to Chapter 2 - Paragraph 4.4.1.4.4

Refresher and recurrent training are based on the assumption that trainees have already achieved competence and so it is unlikely that there would be a need to create interim competency standard(s).

Interim Competency Standard

		MILESTONE 1							MILESTONE 2				MILESTONE 3				MILESTONE 4						LICENSING EVALUATION
		MODULE TR						RESULT	MODULE			SUMMATIVE ASSESSMENT	MODULE			SUMMATIVE ASSESSMENT	MODULE					SUMMATIVE ASSESSMENT	FORMAL SUMMATIVE ASSESSMENT
		EXAMINATION							FORMATIVE ASSESSMENT/ TE				FORMATIVE ASSESSMENT/ TE				FORMATIVE ASSESSMENT/ TE						
		TE 1.1	TE 1.2	TE 1.3	TE 1.4	TE 1.5	TE 1.6		TE 2.1	TE 2.2	TE 2.3		TE 3.1	TE 3.2	TE 3.3		TE 4.1	TE 4.2	TE 4.3	TE 4.4	TE 4.5		
Competency Development	Train & Assess							-	COM WLM	COM WLM	COM WLM	COM WLM	LTW P&D COM WLM	LTW P&D COM WLM	LTW P&D COM WLM	LTW P&D COM WLM	LTW P&D COM WLM	LTW P&D COM WLM	LTW P&D COM WLM	LTW P&D COM WLM	LTW P&D COM WLM	LTW P&D COM WLM	KNO PRO COM FPA FPM LTW P&D SAW WLM
	Train & Assess with Special Emphasis	KNO	KNO	KNO PRO	KNO PRO	KNO PRO	KNO PRO	KNO PRO	KNO PRO	FPA KNO PRO	FPM FPA KNO PRO	FPM FPA KNO PRO	SAW FPA KNO PRO	SAW FPA KNO PRO	SAW FPA KNO PRO	SAW FPA KNO PRO	SAW FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO	
	Critical OBs																						
Minimum Level of Performance		80%	80%	80%	N/A	N/A	N/A	PASS	Adequate			COMPETENT	Adequate			COMPETENT	Adequate					COMPETENT	COMPETENT
Conditions	Function	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM
	Training Platform	EL/ DL	EL	CR	CR	FMS T	VPT	N/A	APT+	APT+	FFS	FFS	APT+	APT+	APT+	APT+	APT+	FFS	FFS	FFS	FFS	FFS	FFS
	Maximum Level of Complexity	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ZONE I	ZONE II	ZONE II	ZONE II	ZONE III	ZONE III	ZONE III	ZONE III	ZONE IV	ZONE IV	ZONE IV	ZONE IV	ZONE IV	ZONE IV	ZONE IV
	Operational Context	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Very Low	Low	Very Low	Low	Very Low	Low	Medium	Very Low to Medium	High	High	Very Low	Low	Medium	Very Low to High	Low to Medium
	Environmental Context	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Very Low	Very Low	Low	Low	Medium	Low	Very Low	Medium to Very Low	Very Low	Very Low	High	Medium	Low	High to Very Low	Medium to Low
	Expected Level of Instructor support	Low	N/A	Medium	Medium	Low	Low	N/A	Low	Medium	Medium	None	Low	Low	Low	None	Medium	High to Medium	Medium	Low	Low	None	None

Interim Competency Standard - Example for PRO

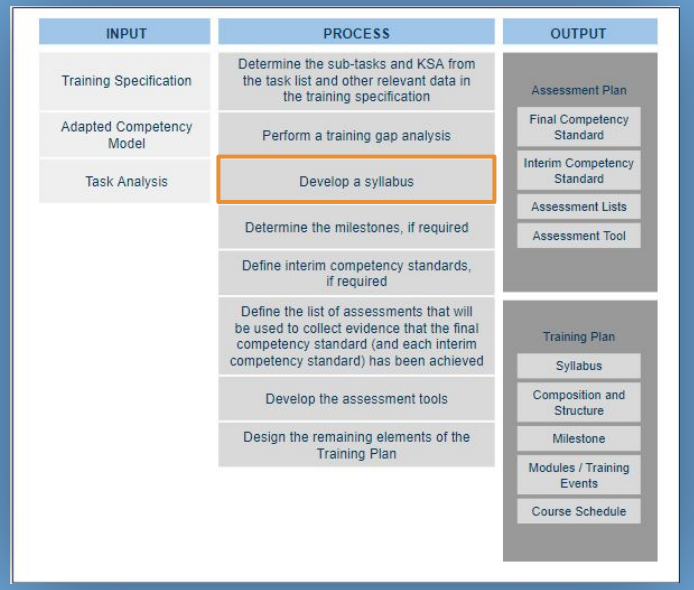
Interim Cptcy Standard	Description	Performance Criteria			
		Observable Behaviours		Competency Assessment	
				Competency Standard	Conditions
PRO	Identifies and applies appropriate procedures in accordance with published operating instructions and applicable regulations	OB 1.1	Identifies where to find procedures and regulations	**Adequate**	**Context:** OPS: Very Low ENV: Very Low **Equipment:** APT+ **Level of Assistance:** Medium (Facilitation)
		OB 1.2	Applies relevant operating instructions, procedures and techniques in a timely manner		
		OB 1.3	Follows SOPs unless a higher degree of safety dictates an appropriate deviation		
		OB 1.4	Operates aircraft systems and associated equipment correctly		
		OB 1.7	Applies relevant procedural knowledge		

Workflow 2

Example: MPL

MPL Example

Develop a syllabus



MPL training scheme
*Training including PF and PM**

Adapted Competency Model	*Phase of training*	*Training items*	*Flight and simulated flight training media — Minimum level requirement*		*Ground training media*
	Advanced Type rating training within an airline-oriented environment	— TEM and CRM — Landing training — All weather scenarios — LOFT — Abnormal procedures — Normal procedures — Upset prevention and recovery***	Aeroplane: Turbine Multi-engine Multi-crew certified	12 take-offs and landings as PF**	• E-learning • Part-task trainer • Classroom
			FSTD: Type VII	PF/PM	
	Intermediate Application of multi-crew operations in a high-performance, multi-engine turbine aeroplane	— TEM and CRM — LOFT — Abnormal procedures — Normal procedures — Multi-crew — Instrument flight	FSTD: Type VI	PF/PM	
	Basic Introduction of multi-crew operations and instrument flight	— TEM and CRM — PF/PM complement — IFR cross-country — Upset prevention and recovery*** — Night flight**** — Instrument flight	Aeroplane: single or multi-engine	PF/PM	
			FSTD: Types IV or V		
	Core flying skills Specific basic single pilot training	— TEM and CRM — VFR cross-country — Upset prevention and recovery*** — Solo flight — Night flight**** — Basic instrument flight — Principles of flight — Cockpit procedures	Aeroplane: single engine (or multi-engine as appropriate)	PF	
			FSTD: Types I or III – Type II may be used for certain basic instrument flight training tasks		

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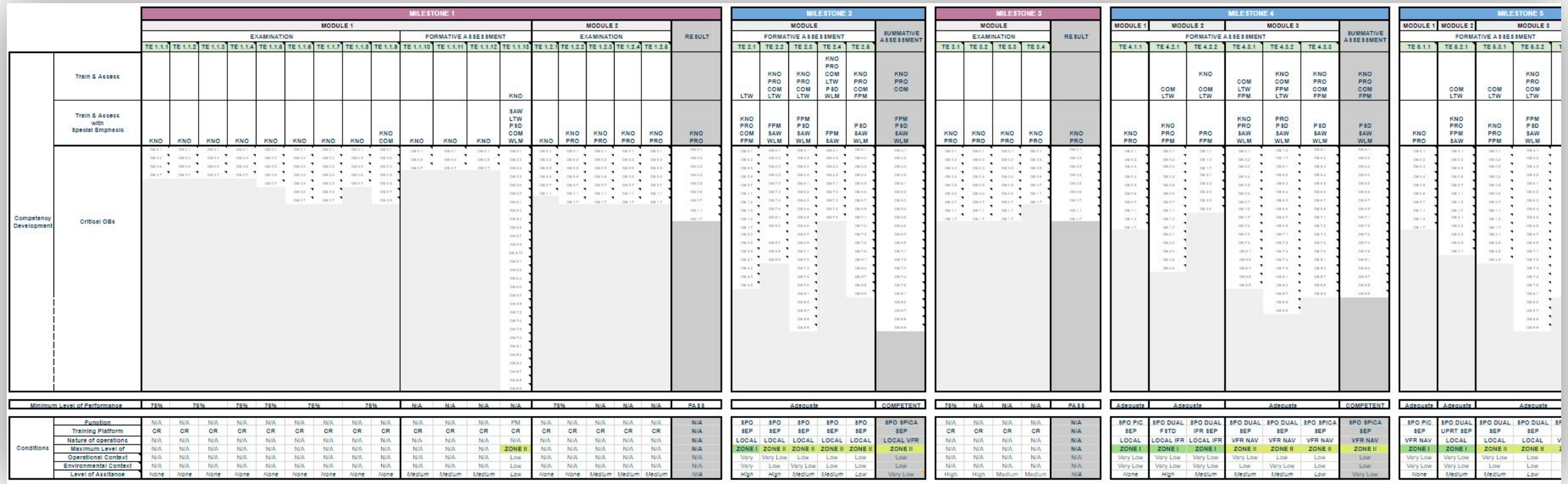
MPL - Core Flying Skills



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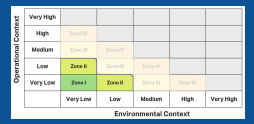
MPL - Competency Ramp-Up

Core Phase

SE A/C - FSTD type I or III

5 milestones:
- Local solo
- Specialized TRG
- X country solo
- Consolidation

Cy framework SPO
Context complexity

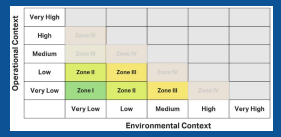


Basic Phase

ME A/C - FSTD type IV or V

3 milestones:
- Basic IR & MCC
- X country in MPO
- Consolidation

Cy framework MPO
Context complexity

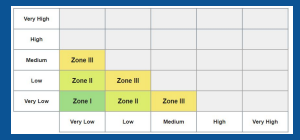


Intermediate Phase

FSTD type VI

3 milestones:
- High Performance
- Abnormal procedures

Cy framework MPO
Context complexity

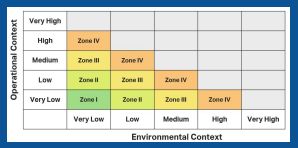


Advanced Phase

FSS

2 milestones:
- SOPs
- Abnormal procedures
- LOFT

Cy framework MPO
Context complexity



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CBTA/EBT Workshop

Course development

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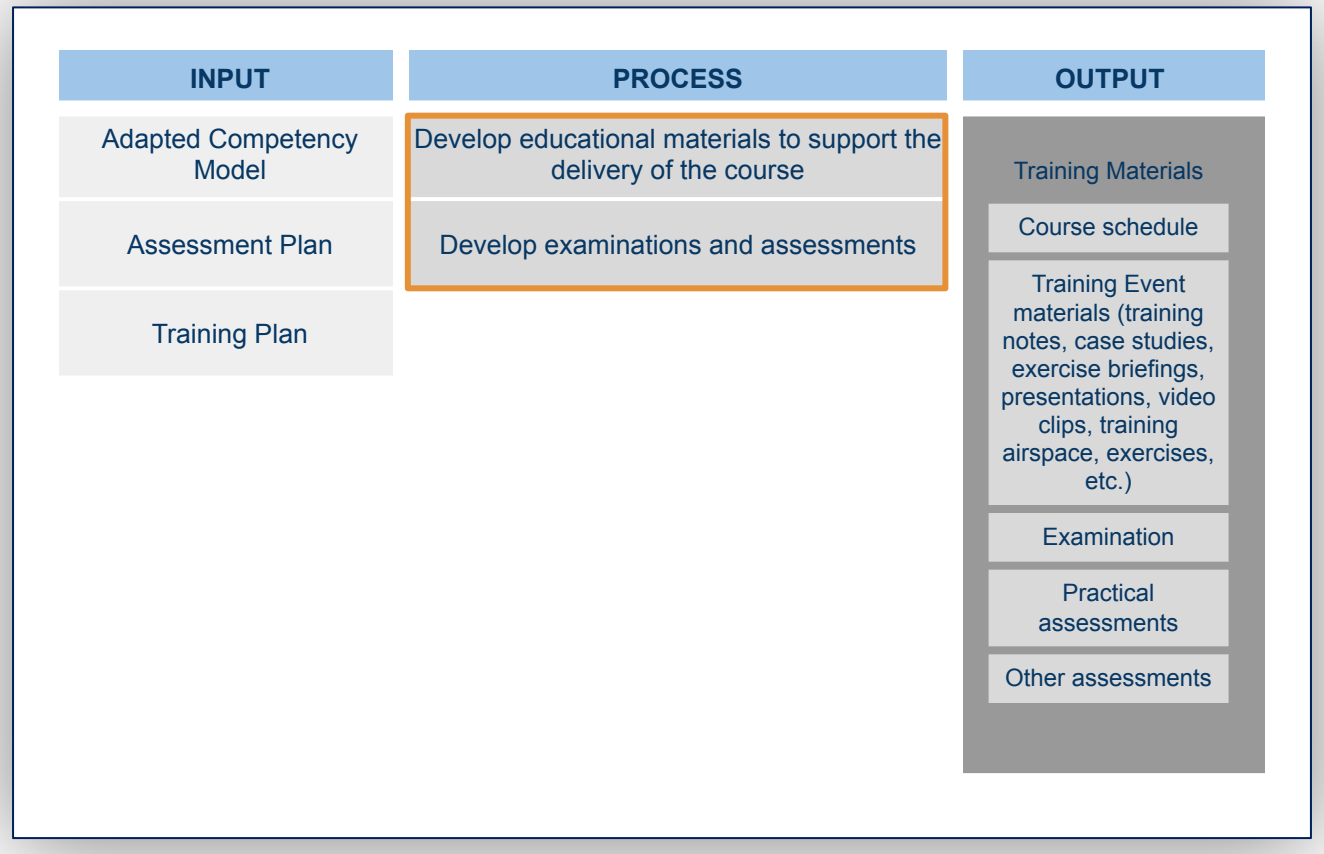
ADDIE MODEL - Workflow 3



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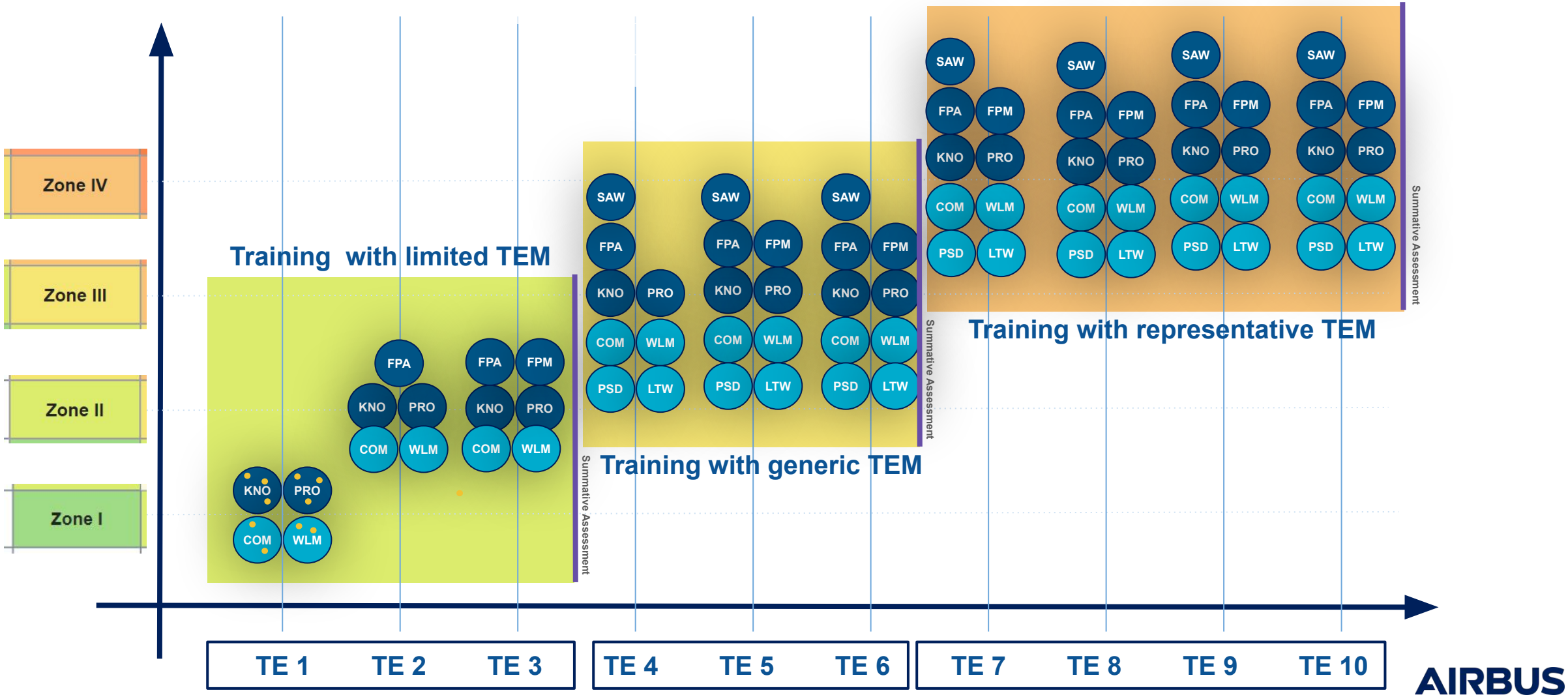
Syllabus - Example CBTA Type Rating Course



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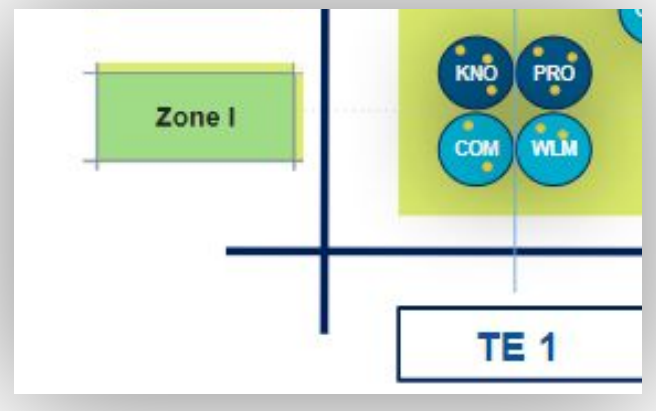

TE1 - Training Objective:

At the end of TE1, the trainee should demonstrate an adequate level of performance for KNO - PRO - COM - WLM under the following conditions:

- CAT - IFR without operational and Environmental threats
- FTD Level 1
- with Medium (Facilitation) level of assistance from instructor

Expertise:
1 session of 04h00

Critical OBs

KNO

- OB 0.1 Demonstrates practical and applicable knowledge of limitations and systems and their interaction
- OB 0.2 Demonstrates required knowledge of published operating instructions
- OB 0.6 Demonstrates a positive interest in acquiring knowledge
- OB 0.7 Is able to apply knowledge effectively

PRO

- OB 1.1 Identifies where to find procedures and regulations
- OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner
- OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation
- OB 1.4 Operates aircraft systems and associated equipment correctly
- OB 1.7 Applies relevant procedural knowledge

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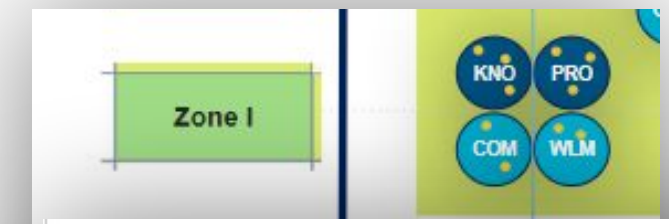
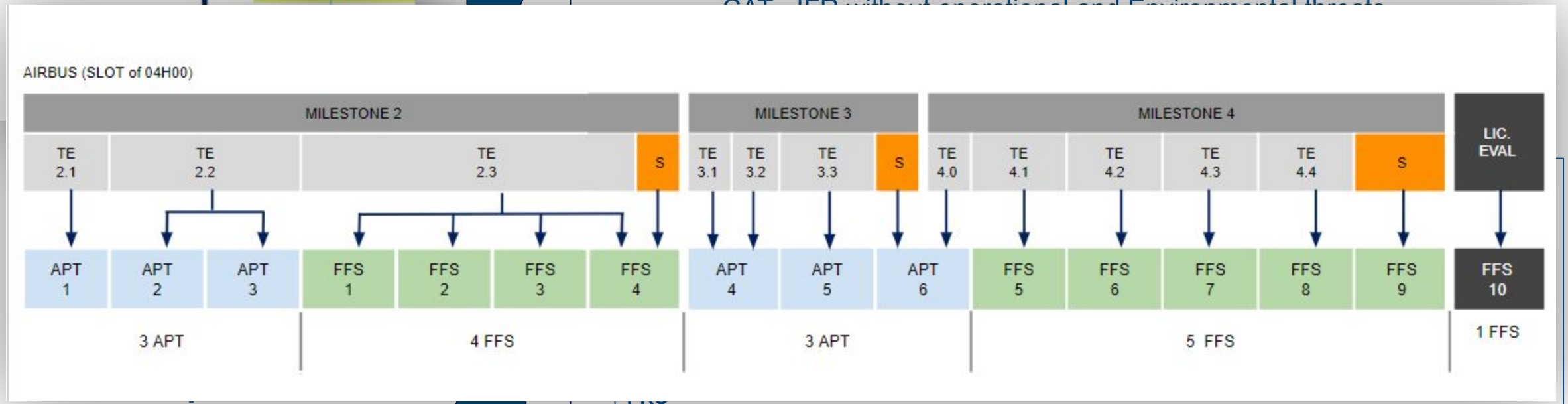
Example - Type Rating Course



1 session of 04h00

TE1 - Training Objective:

At the end of TE1, the trainee should demonstrate an adequate level of performance for KNO - PRO - COM - WLM under the following conditions:



- OB 1.1 Identifies where to find procedures and regulations
- OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner
- OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation
- OB 1.4 Operates aircraft systems and associated equipment correctly
- OB 1.7 Applies relevant procedural knowledge

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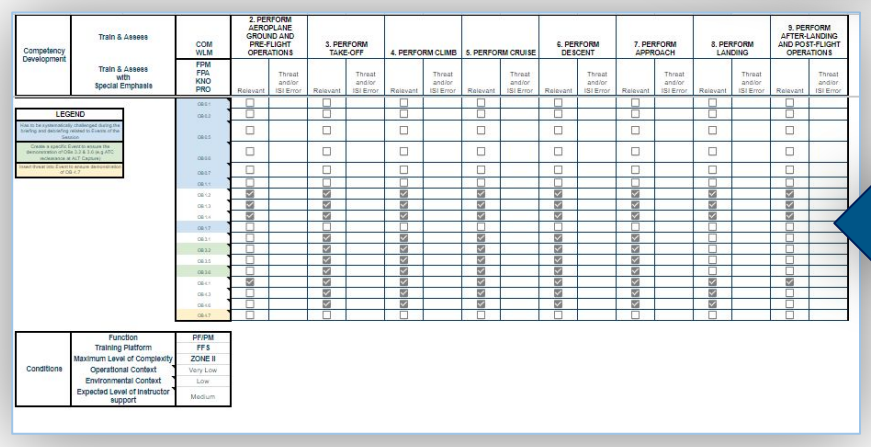
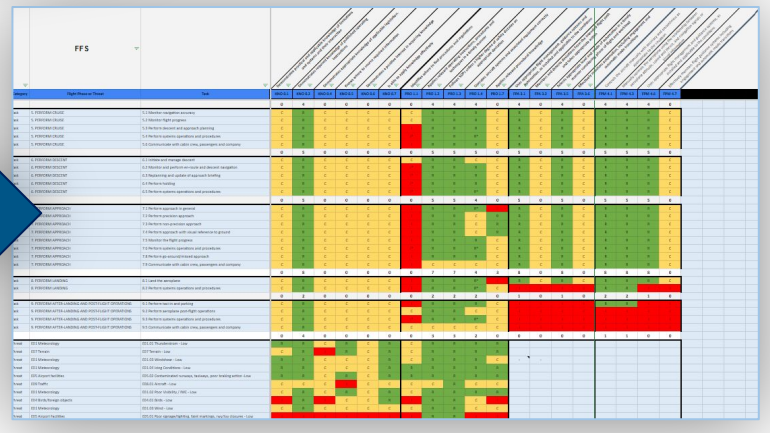
Development

TRAINING PLAN & ASSESSMENT PLAN DATA

CBTA - TRAINING PLAN & ASSESSMENT PLAN

		MILESTONE 1												MILESTONE 2				MILESTONE 3				MILESTONE 4					LICENSING EVALUATION
		MODULE TR						MODULE OCC					RESULT	MODULE			SUMMATIVE ASSESSMENT	MODULE			SUMMATIVE ASSESSMENT	MODULE				SUMMATIVE ASSESSMENT	FORMAL SUMMATIVE ASSESSMENT
		EXAMINATION												FORMATIVE ASSESSMENT/ TE				FORMATIVE ASSESSMENT/ TE				FORMATIVE ASSESSMENT/ TE					
		TE 1.1	TE 1.2	TE 1.3	TE 1.4	TE 1.5	TE 1.6	TE 1.7	TE 1.8	TE 1.9	TE 1.10	TE 1.11		TE 2.1	TE 2.2	TE 2.3		TE 3.1	TE 3.2	TE 3.3		TE 4.1	TE 4.2	TE 4.3	TE 4.4		
Competency Development	Train & Assess													COM WLM	COM WLM	COM WLM	COM WLM	LTW P SD COM WLM	LTW P SD COM WLM	LTW P SD COM WLM	LTW P SD COM WLM	LTW P SD COM WLM	LTW P SD COM WLM	LTW P SD COM WLM	LTW P SD COM WLM	LTW P SD COM WLM	KNO PRO COM FPA FPM LTW P SD SAW WLM
	Train & Assess with Special Emphasis	KNO	KNO	KNO PRO	KNO PRO	KNO PRO	KNO PRO	KNO	KNO	KNO	KNO PRO	KNO	KNO PRO	KNO PRO	FPA KNO PRO	FPM FPA KNO PRO	FPM FPA KNO PRO	SAW FPA KNO PRO	SAW FPA KNO PRO	SAW FPA KNO PRO	SAW FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO	SAW FPM FPA KNO PRO	
Minimum Level of Performance		80%	80%	80%	N/A	N/A	N/A	80%	N/A	80%	N/A	N/A	PASS	Effective (TBC)			COMPETENT	Adequate			COMPETENT	Adequate				COMPETENT	COMPETENT
Conditions	Function	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM	PF/PM
	Training Platform	EL/ DL	EL	CR	CR	FMS T	VPT	CBT	CR	CR	CR	CR	N/A	APT+	APT+	FFS	FFS	APT+	APT+	APT+	APT+	FFS	FFS	FFS	FFS	FFS	FFS
	Maximum Level of Complexity	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ZONE I	ZONE II	ZONE II	ZONE II	ZONE III	ZONE III	ZONE III	ZONE III	ZONE IV	ZONE IV	ZONE IV	ZONE IV	ZONE IV	ZONE IV
	Operational Context	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Very Low	Low	Very Low	Low	Medium	Low	Very Low	Very Low to Medium	High	Very Low	Low	Medium	Very Low to High	Low to Medium
	Environmental Context	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Very Low	Very Low	Low	Low	Very Low	Low	Medium	Medium to Very Low	Very Low	High	Medium	Low	High to Very Low	Medium to Low
	Expected Level of Instructor support	Low	N/A	Medium	Medium	Low	Low	N/A	Medium	Medium	Medium	Medium	N/A	Low	Medium	Medium	None	Medium	Low	Low	None	Medium	Medium	Low	Low	None	None





TRAINING EVENT - OB MAPPING

Level of Performance & Conditions

- Competency with Special Emphasis & Critical OBs
- Relevant Flight Phases
- Training Device (Simulation capability)
- Level of Instructor Support

Critical OBs mapping

- Tasks
- Threats and/or Errors
- Specialized Training Elements
  (e.g. Steep turn, Upset, FBW protections ….)

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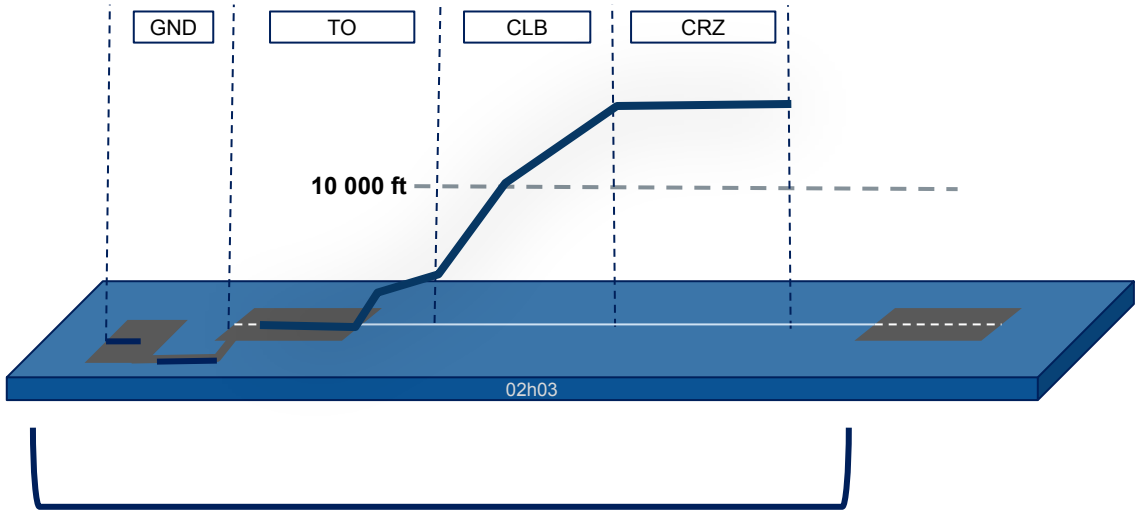
M2 - APT 1 DRAFT 01

KNO PRO COM WLM

T1



Ops. Context: Very Low

Env. Context: Very Low

PRO

OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner

OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation

OB 1.4 Operates aircraft systems and associated equipment correctly

WLM

OB 8.7 Monitors, reviews and cross-checks actions conscientiously

OB 8.8 Verifies that tasks are completed to the expected outcome

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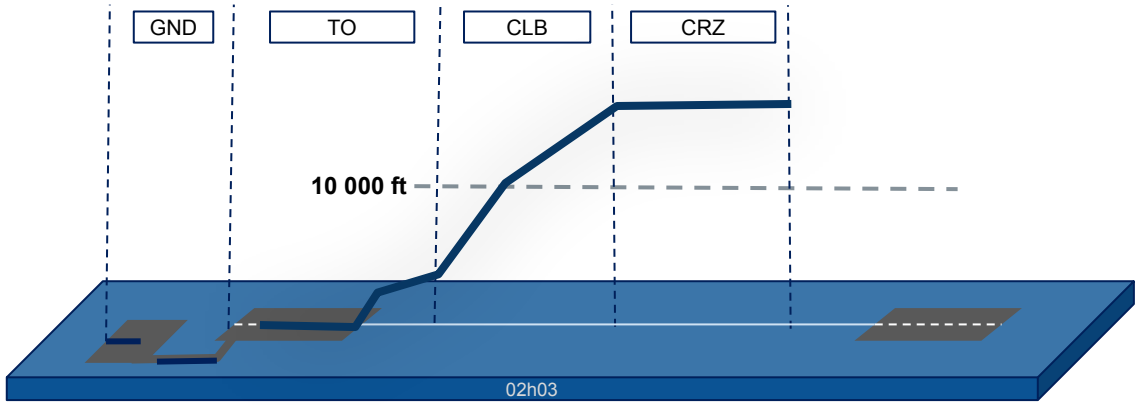
M2 - APT 1 DRAFT 01

KNO PRO COM WLM

T1

02h03

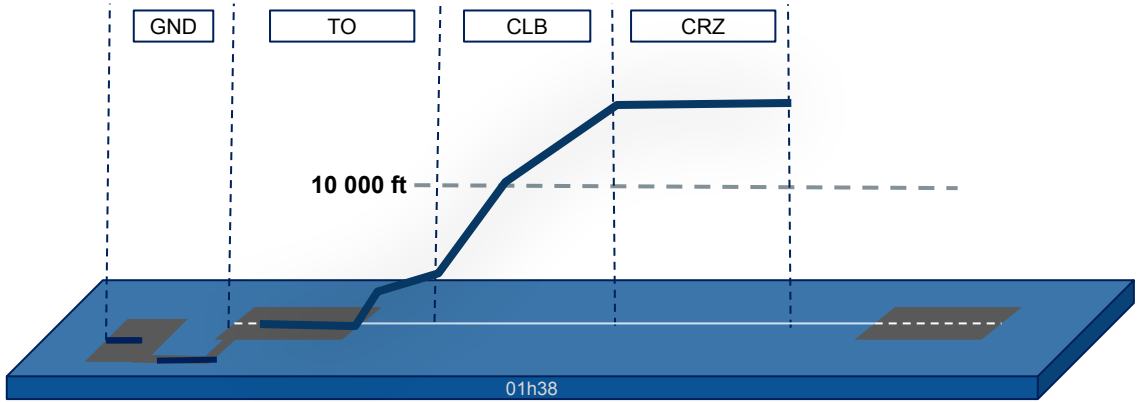


Ops. Context: Very Low

Env. Context: Very Low

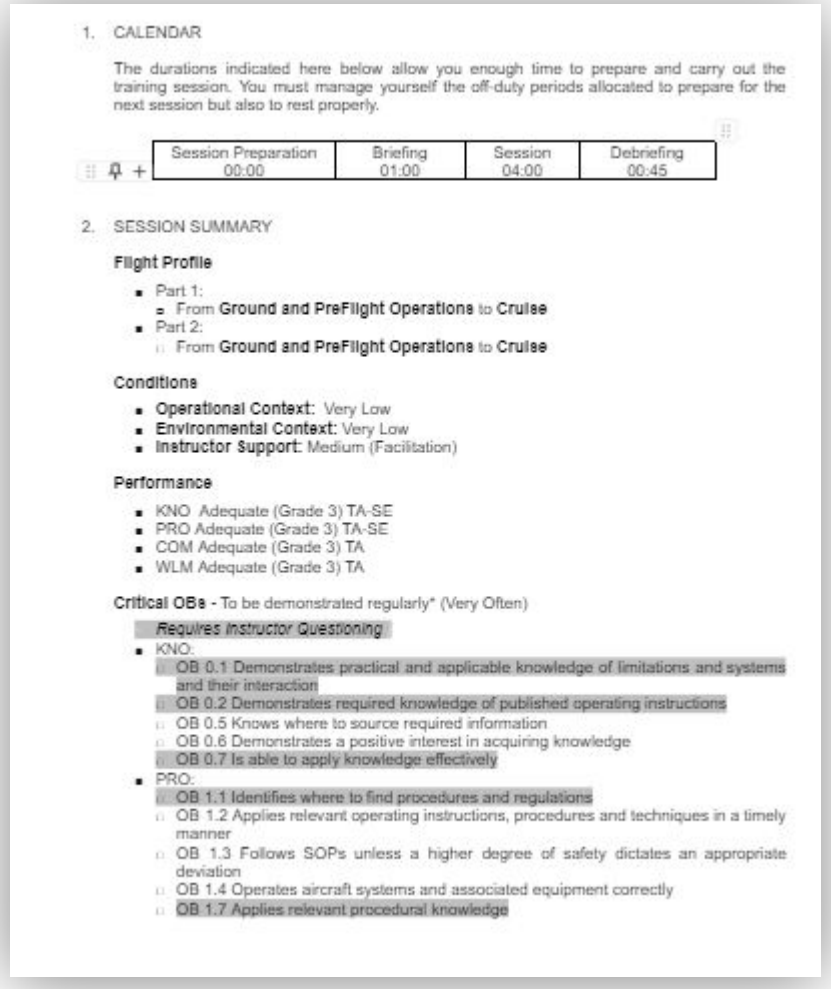
T2

01h38



Ops. Context: Very Low

Env. Context: Very Low



1. CALENDAR

The durations indicated here below allow you enough time to prepare and carry out the training session. You must manage yourself the off-duty periods allocated to prepare for the next session but also to rest properly.

Session Preparation	Briefing	Session	Debriefing
00:00	01:00	04:00	00:45

2. SESSION SUMMARY

Flight Profile

- Part 1:
  - From **Ground and PreFlight Operations** to **Cruise**
- Part 2:
  - From **Ground and PreFlight Operations** to **Cruise**

Conditions

- **Operational Context:** Very Low
- **Environmental Context:** Very Low
- **Instructor Support:** Medium (Facilitation)

Performance

- KNO Adequate (Grade 3) TA-SE
- PRO Adequate (Grade 3) TA-SE
- COM Adequate (Grade 3) TA
- WLM Adequate (Grade 3) TA

Critical OBs - To be demonstrated regularly* (Very Often)

Requires Instructor Questioning

- KNO:
  - OB 0.1 Demonstrates practical and applicable knowledge of limitations and systems and their interaction
  - OB 0.2 Demonstrates required knowledge of published operating instructions
  - OB 0.5 Knows where to source required information
  - OB 0.6 Demonstrates a positive interest in acquiring knowledge
  - OB 0.7 Is able to apply knowledge effectively
- PRO:
  - OB 1.1 Identifies where to find procedures and regulations
  - OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner
  - OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation
  - OB 1.4 Operates aircraft systems and associated equipment correctly
  - OB 1.7 Applies relevant procedural knowledge

Example of Lesson Plan

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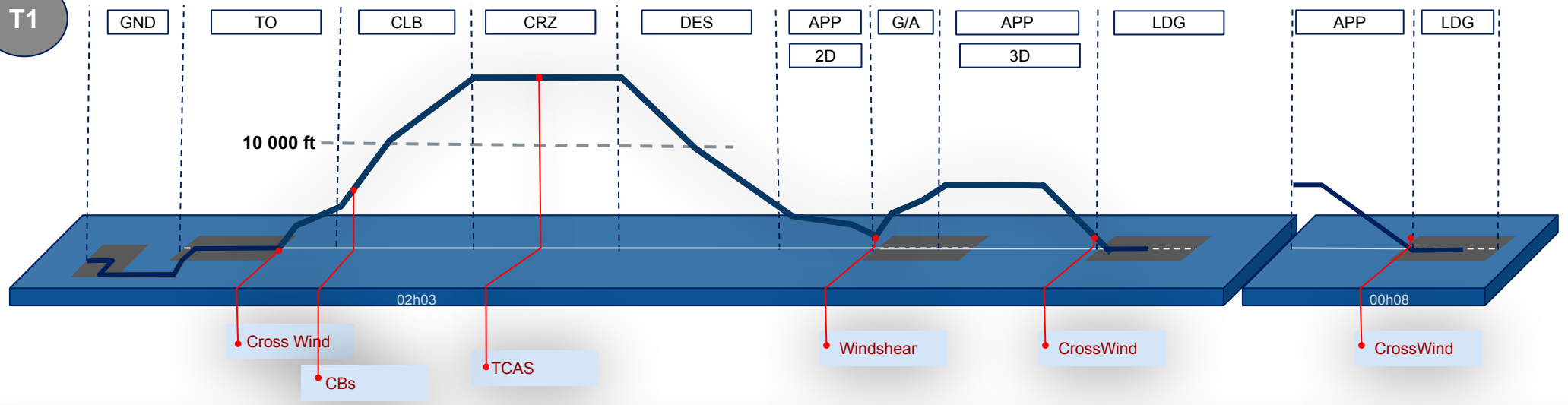
M4 - FFS 3 DRAFT.01

KNO PRO FPA FPM SAW COM WLM PSD LTW

03h49

02h11

T1

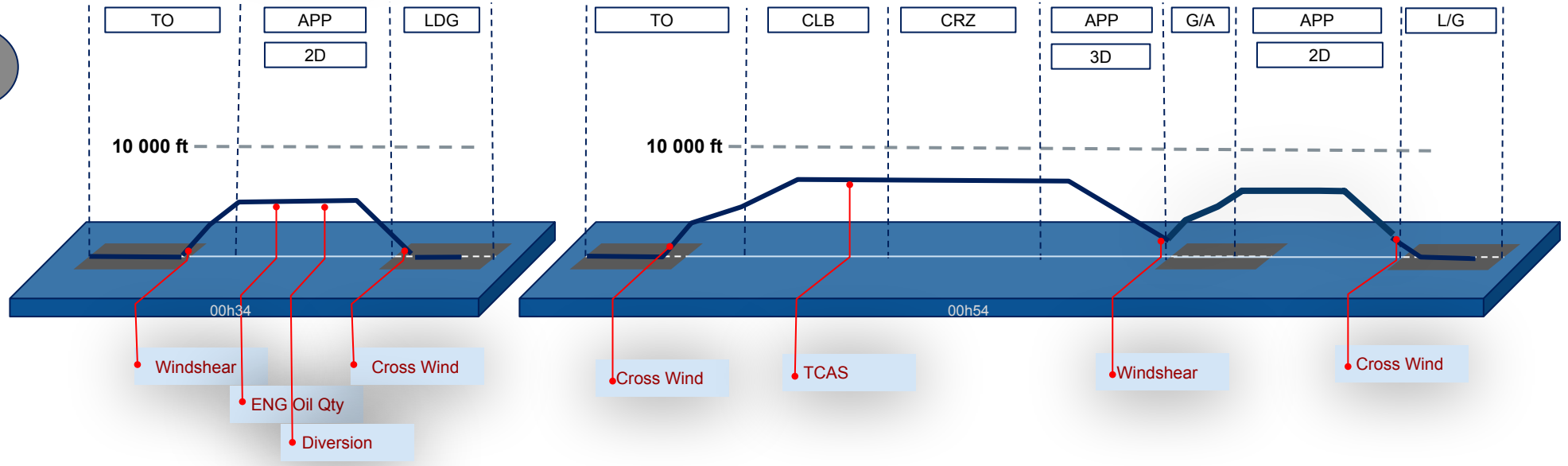


Ops. Context: Very Low

Env. Context: High

01h28

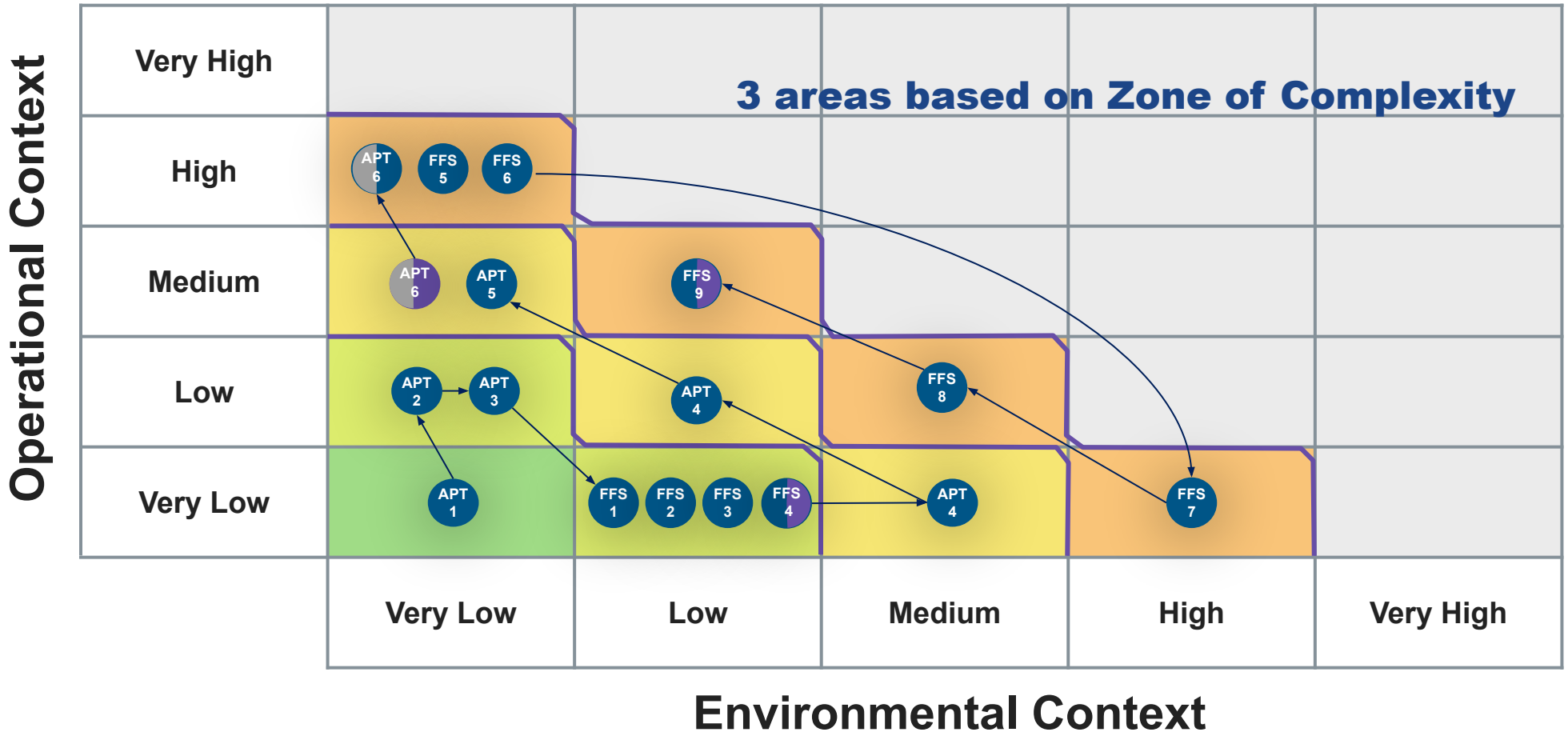
T2



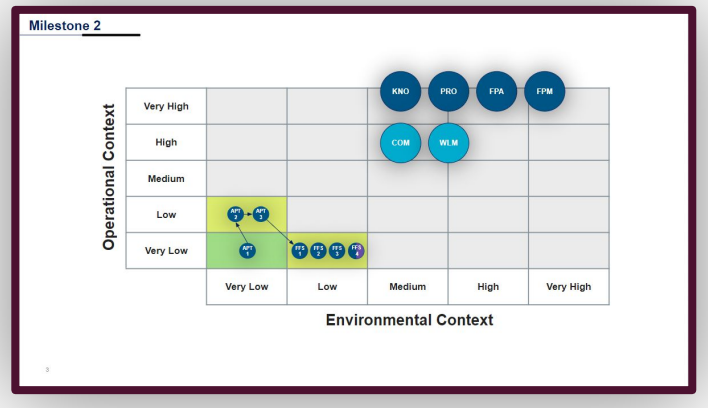
Ops. Context: Very Low

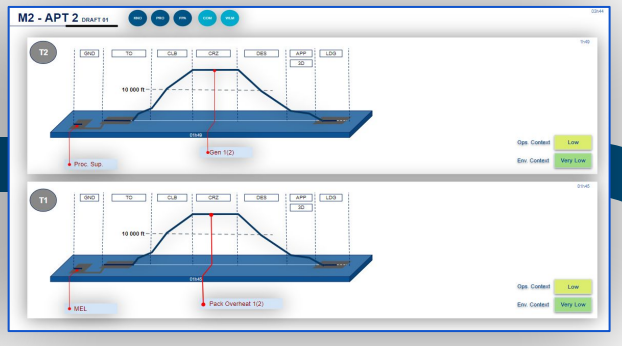
Env. Context: High

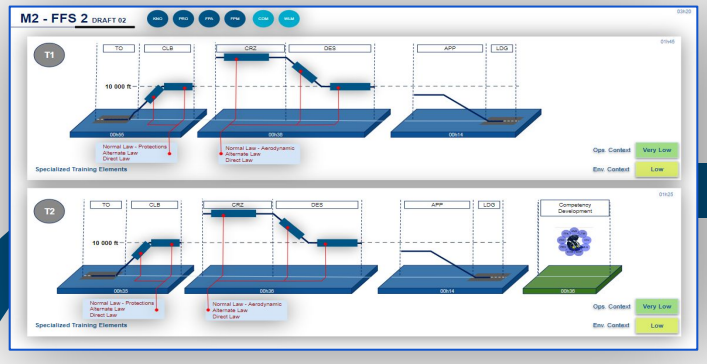
Type Rating - Competency Development

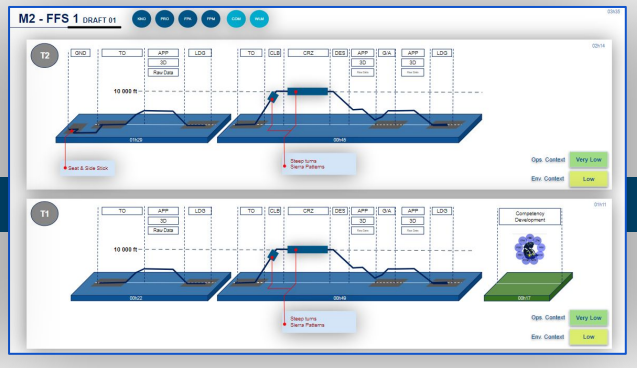


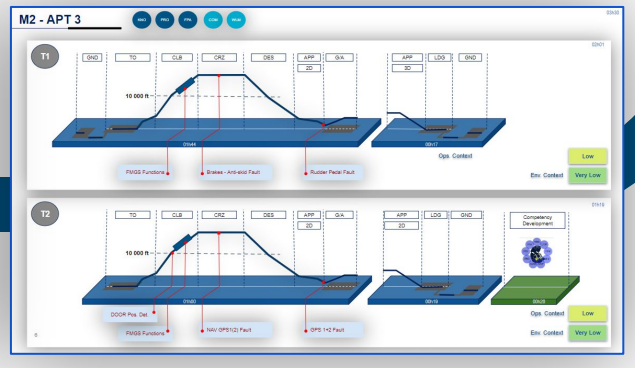
AIRBUS

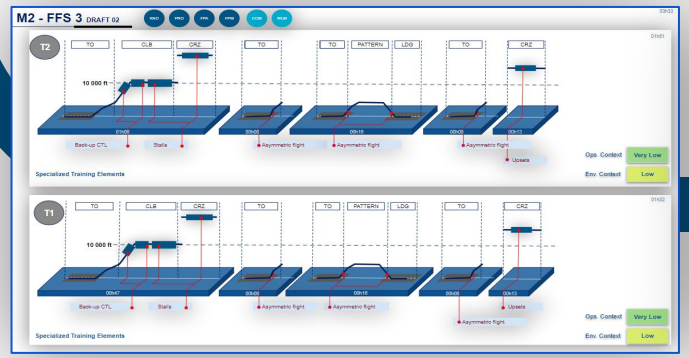


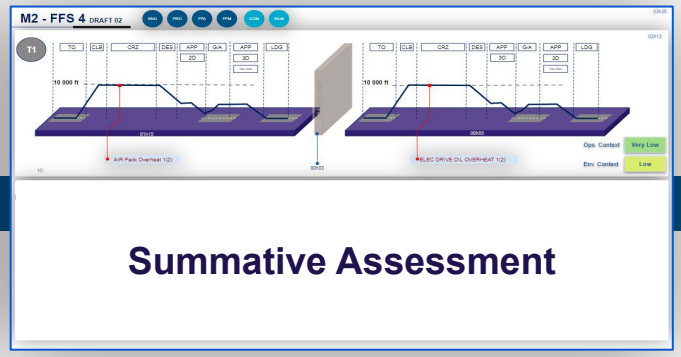




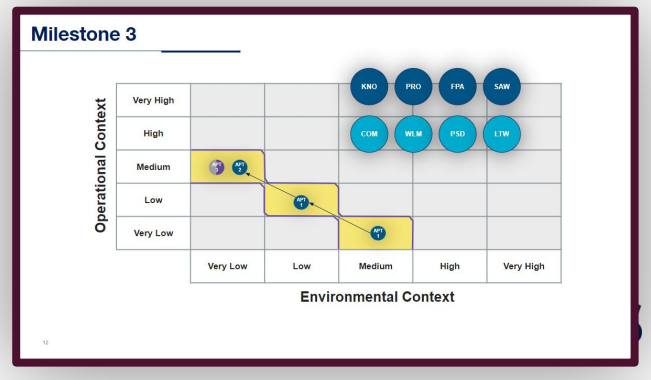








Summative Assessment



CBTA/EBT Workshop

Implement - Conduct the Course

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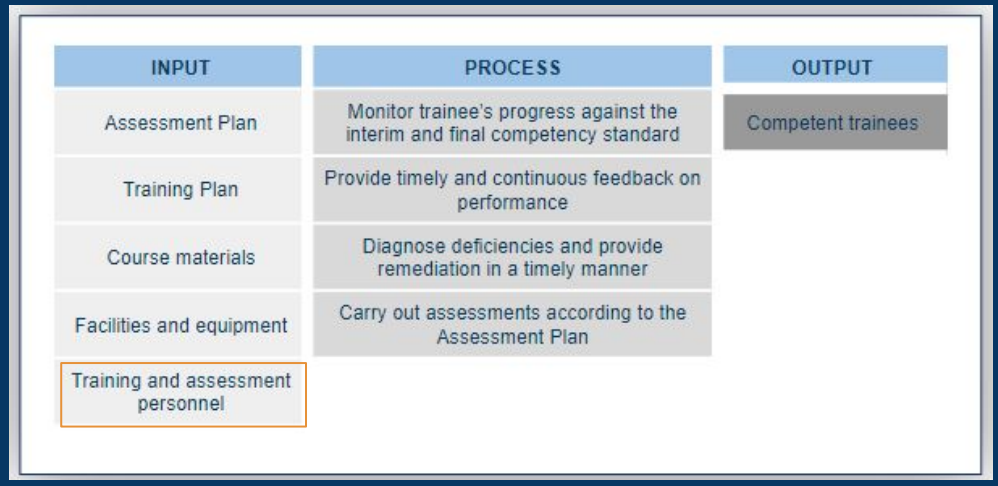
ADDIE MODEL - Workflow 4

INPUT	PROCESS	OUTPUT
Assessment Plan	Monitor trainee's progress against the interim and final competency standard	Competent trainees
Training Plan	Provide timely and continuous feedback on performance	
Course materials	Diagnose deficiencies and provide remediation in a timely manner	
Facilities and equipment	Carry out assessments according to the Assessment Plan	
Training and assessment personnel		

Implement

ADDIE Model

Training and assessment personnel



INPUT	PROCESS	OUTPUT
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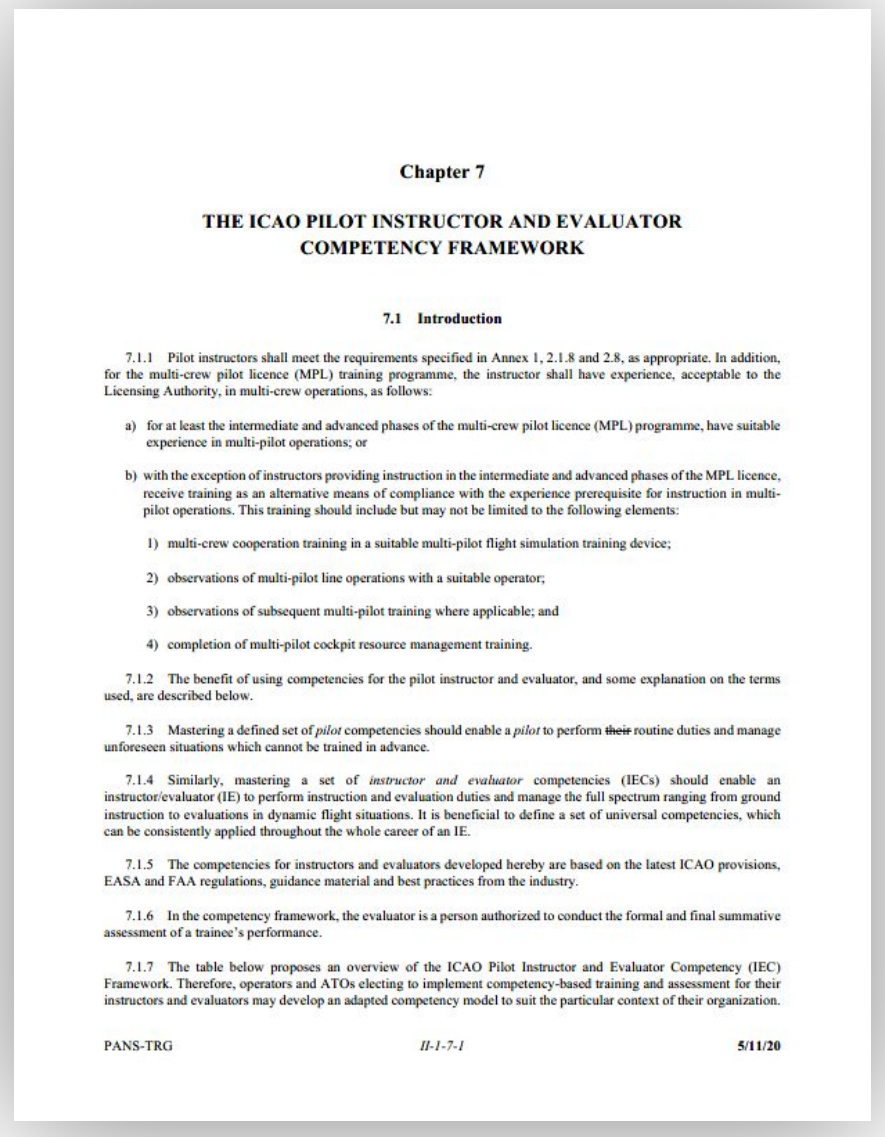
Training and assessment personnel		

Instructor Competencies



Chapter 7

THE ICAO PILOT INSTRUCTOR AND EVALUATOR COMPETENCY FRAMEWORK

7.1 Introduction

7.1.1 Pilot instructors shall meet the requirements specified in Annex 1, 2.1.8 and 2.8, as appropriate. In addition, for the multi-crew pilot licence (MPL) training programme, the instructor shall have experience, acceptable to the Licensing Authority, in multi-crew operations, as follows:

a) for at least the intermediate and advanced phases of the multi-crew pilot licence (MPL) programme, have suitable experience in multi-pilot operations; or

b) with the exception of instructors providing instruction in the intermediate and advanced phases of the MPL licence, receive training as an alternative means of compliance with the experience prerequisite for instruction in multi-pilot operations. This training should include but may not be limited to the following elements:

1) multi-crew cooperation training in a suitable multi-pilot flight simulation training device;

2) observations of multi-pilot line operations with a suitable operator;

3) observations of subsequent multi-pilot training where applicable; and

4) completion of multi-pilot cockpit resource management training.

7.1.2 The benefit of using competencies for the pilot instructor and evaluator, and some explanation on the terms used, are described below.

7.1.3 Mastering a defined set of *pilot* competencies should enable a *pilot* to perform ~~their~~ routine duties and manage unforeseen situations which cannot be trained in advance.

7.1.4 Similarly, mastering a set of *instructor and evaluator* competencies (IECs) should enable an instructor/evaluator (IE) to perform instruction and evaluation duties and manage the full spectrum ranging from ground instruction to evaluations in dynamic flight situations. It is beneficial to define a set of universal competencies, which can be consistently applied throughout the whole career of an IE.

7.1.5 The competencies for instructors and evaluators developed hereby are based on the latest ICAO provisions, EASA and FAA regulations, guidance material and best practices from the industry.

7.1.6 In the competency framework, the evaluator is a person authorized to conduct the formal and final summative assessment of a trainee's performance.

7.1.7 The table below proposes an overview of the ICAO Pilot Instructor and Evaluator Competency (IEC) Framework. Therefore, operators and ATOs electing to implement competency-based training and assessment for their instructors and evaluators may develop an adapted competency model to suit the particular context of their organization.

PANS-TRG *II-1-7-1* 5/11/20

ICAO DOC 9868 - PANS TRG

- **Chap 7 - THE ICAO PILOT INSTRUCTOR AND EVALUATOR COMPETENCY FRAMEWORK**
  - Pilot Competencies
  - Management of the learning environment
  - Instruction
  - Interaction
  - Assessment and evaluation

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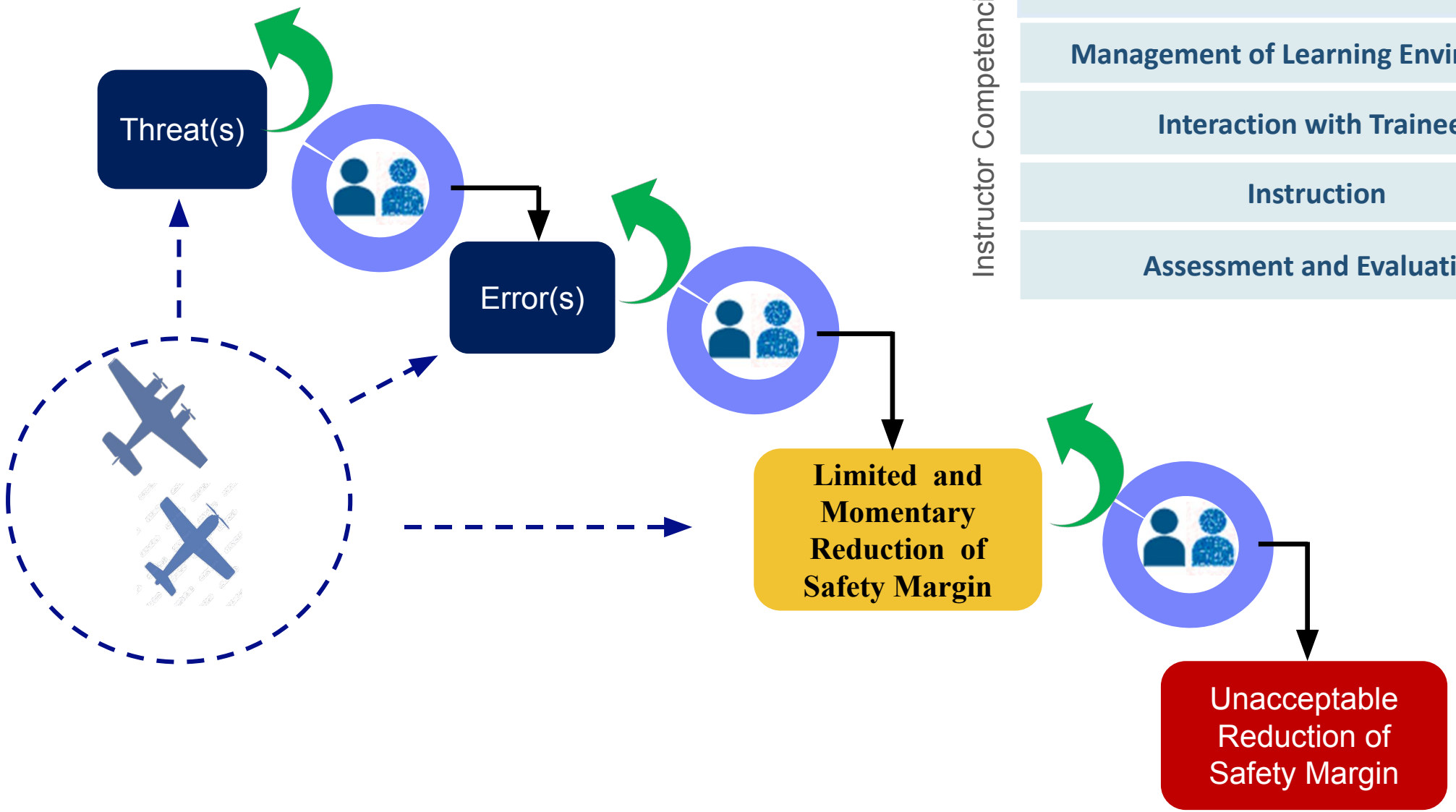

Instructor Competencies

- Pilot Competencies
- Management of Learning Environment
- Interaction with Trainees
- Instruction
- Assessment and Evaluation

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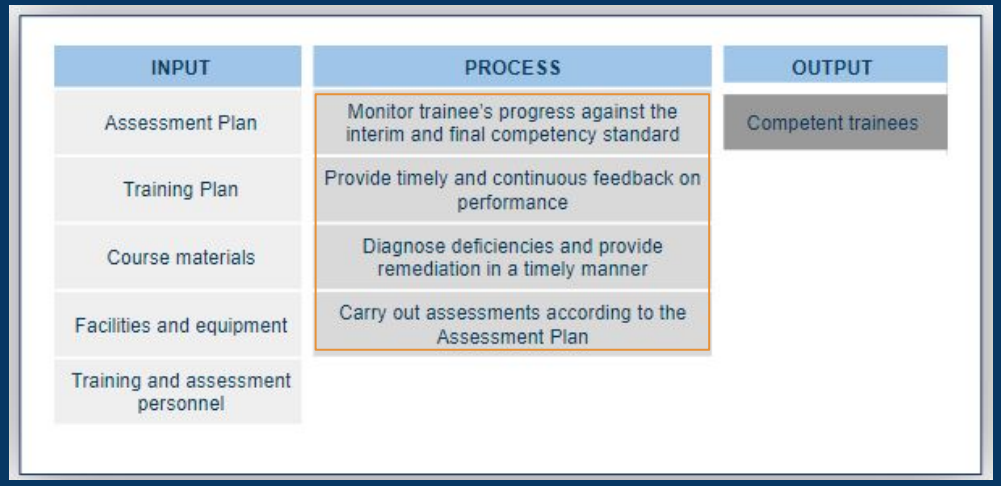
ADDIE Model

Monitor trainee’s progress against the interim and final competency standard
Provide timely and continuous feedback on performance
Diagnose deficiencies and provide remediation in a timely manner
Carry out assessments according to the Assessment Plan



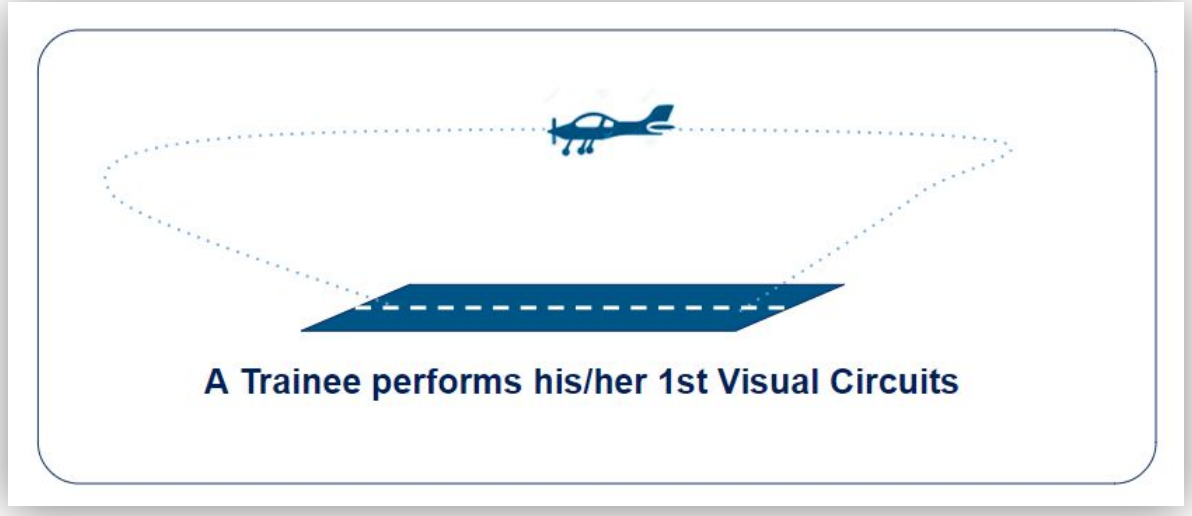
CBTA Instructor Training

Monitor trainee’s progress against the interim and final competency standard
Provide timely and continuous feedback on performance
Diagnose deficiencies and provide remediation in a timely manner
Carry out assessments according to the Assessment Plan

Assessment Process

Training Event

What are the Potential Threats?



Which level of Instructor assistance to manage the Threats?

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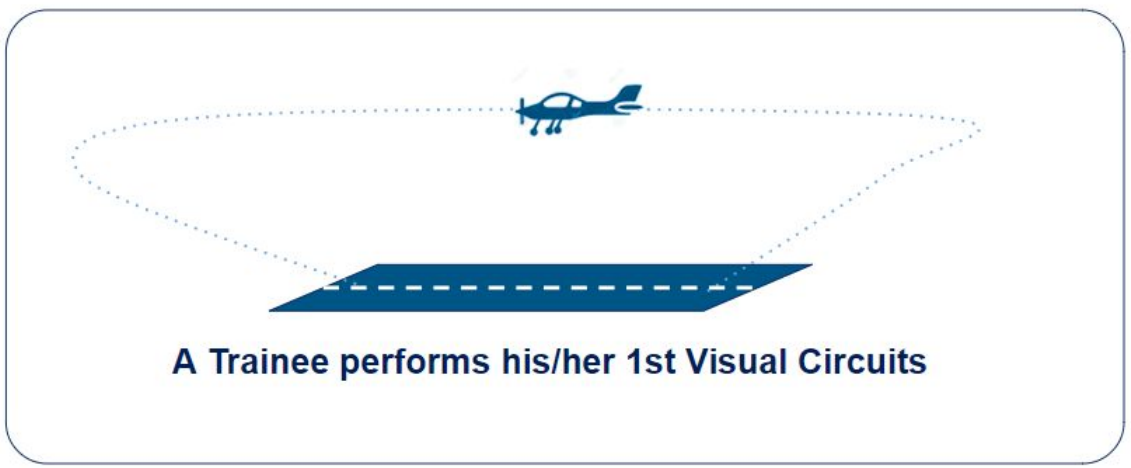
Training Event

What are the Potential UAS?



Long Flare

No Flare

……

Low Rate of Rotation at takeoff

Which level of Instructor assistance to manage the UAS?

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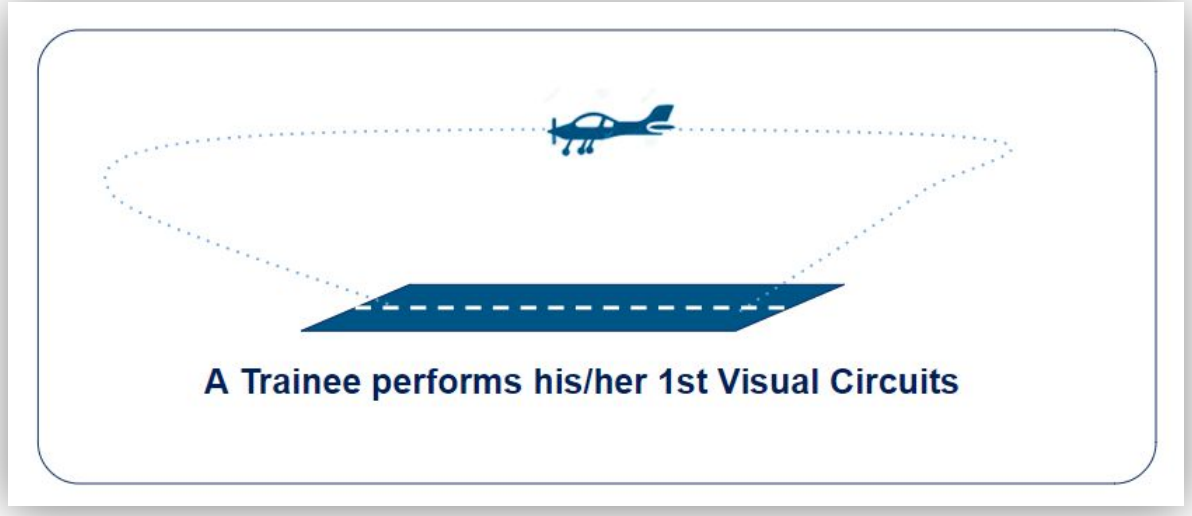
Training Event

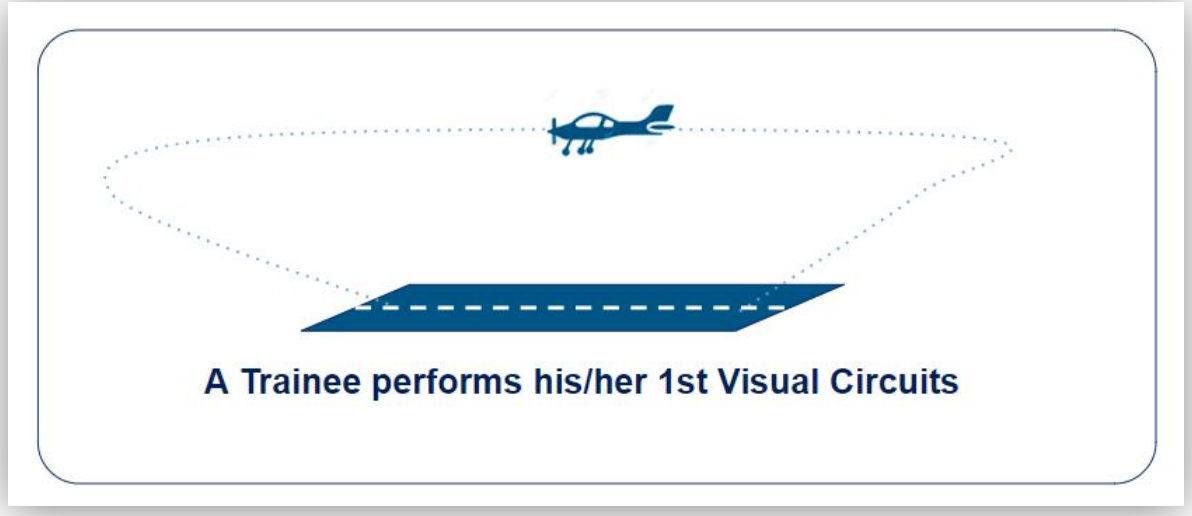
What are the Instructor Expectations?



- *Uses the relationship between attitude, speed, power, and visual information*
- *Controls with accuracy and smoothness*
- *Monitors and detects deviations from the intended flight path*
- *Follows SOPs*
- *Applies procedures and techniques*
- *Operates aircraft systems correctly*
- *Maintains the intended flight path during manual flight whilst managing other tasks and distractions*

Training Event

What are the Instructor Expectations?



PRO
OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner
OB 1.2 Follows SOPs unless a higher degree of safety dictates an appropriate deviation
OB 1.3 Operates aircraft systems and associated equipment correctly

FPM
OB 4.1 Controls the aircraft manually with accuracy and smoothness as appropriate to the situation
OB 4.2 Monitors and detects deviations from the intended flight path and takes appropriate action
OB 4.3 Manually controls the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information
OB 4.5 Maintains the intended flight path during manual flight whilst managing other tasks and distractions

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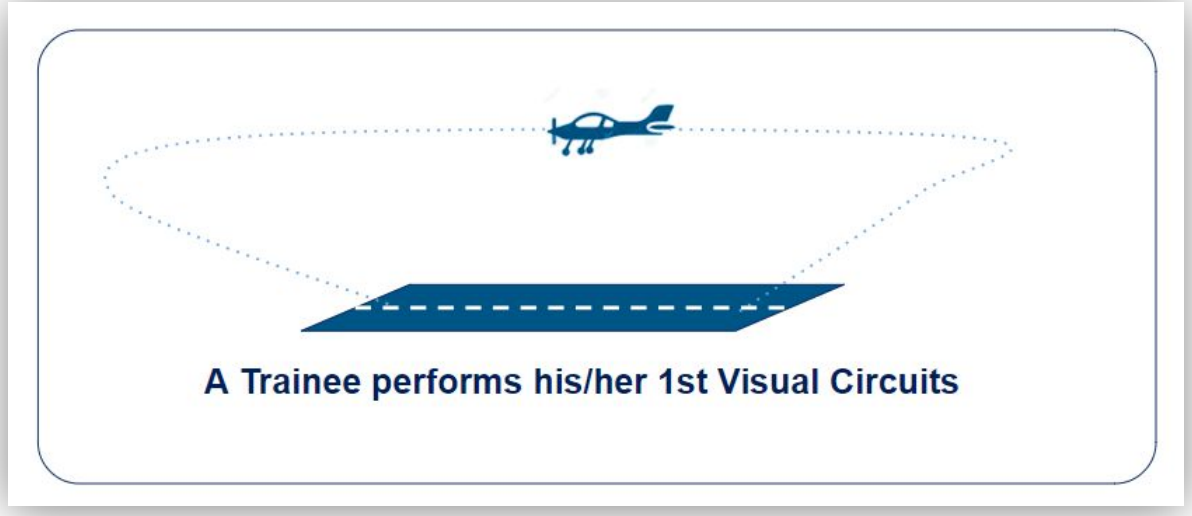
Training Event

What are the Instructor Expectations?



PRO
OB 1.2 Applies relevant operating instruction …
OB 1.2 Follows SOPs unless a higher d…
OB 1.3 Operates aircraft systems ….

FPM
OB 4.1 Controls the aircraft manually with accuracy ….
OB 4.2 Monitors and detects deviations…
OB 4.3 Manually controls the aeroplane …
OB 4.5 Maintains the intended flight path ….

Visual Circuit N	Visual Circuit N+1	Visual Circuit N+2	Visual Circuit …
Almost All	Almost All	Almost All	…
Almost All	Almost All	Almost All	

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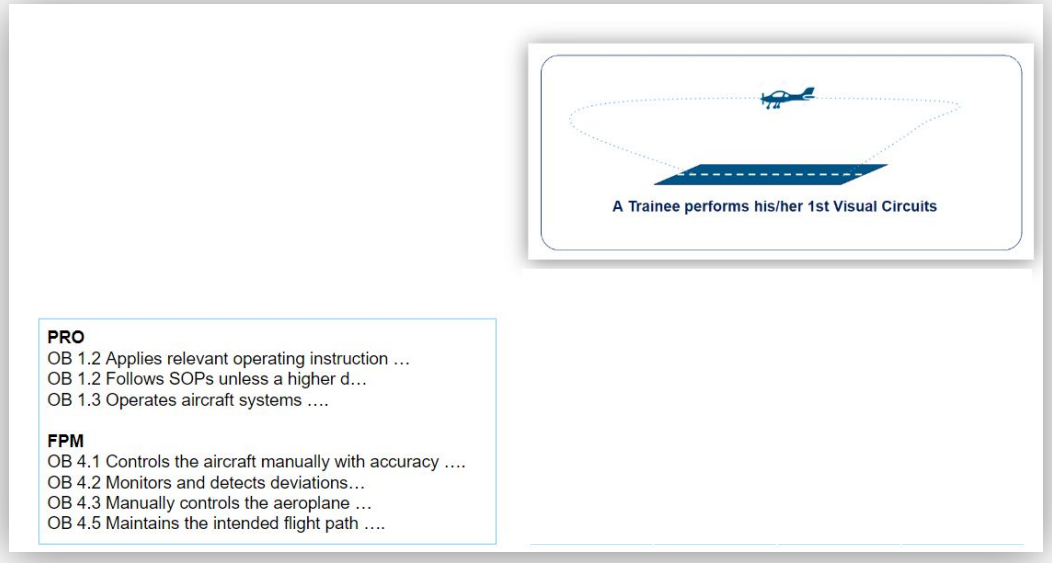
How to Assess the Performance

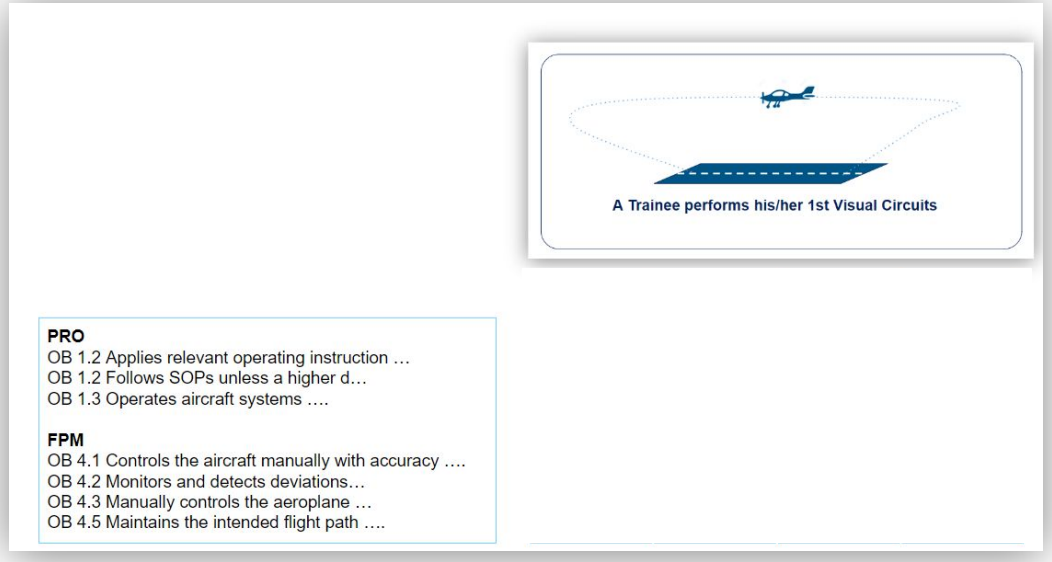
- 2 Competencies



Assessment

3 Key elements to assess a Competency

- Competency is acquired



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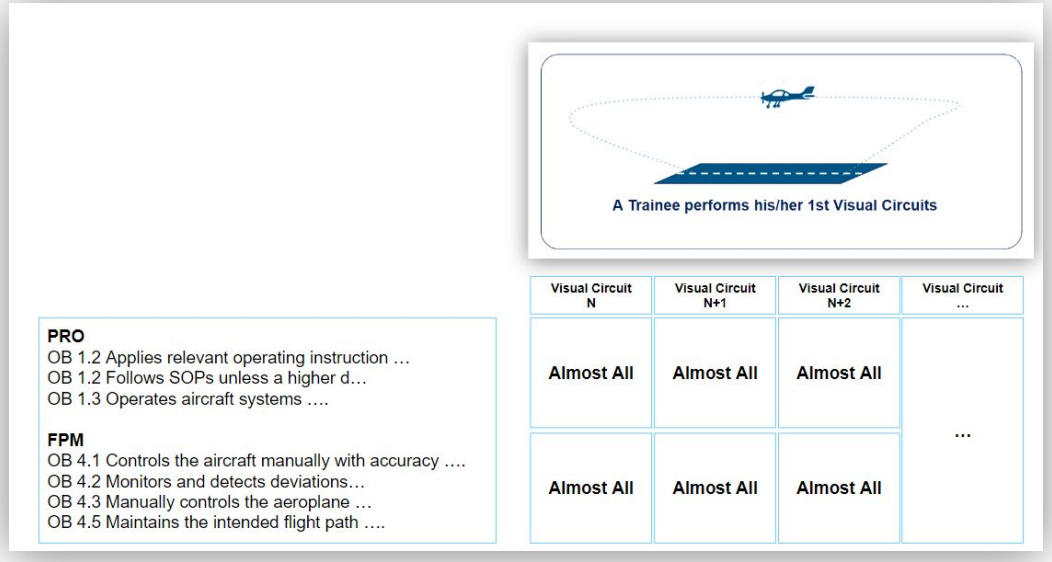
Assessment

3 Key elements to assess a Competency:

- Competency is acquired
- Competency is Robust

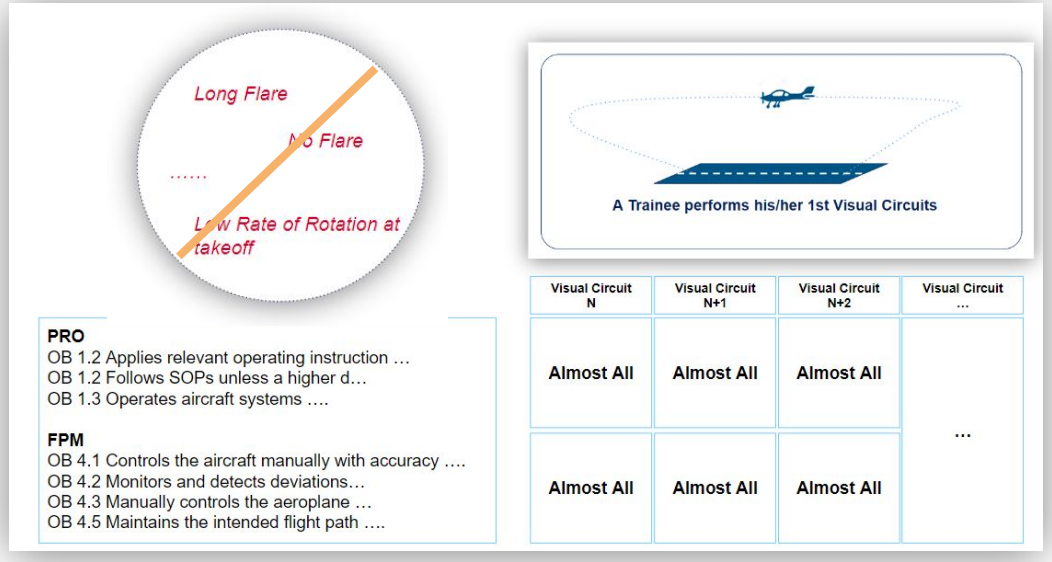


AIRBUS

Assessment

3 Key elements to assess a Competency:

- Competency is acquired
- Competency is Robust



- Competency is an effective countermeasure

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3 Key elements to assess a Competency:

- Acquisition
- Robustness
- Effective Countermeasure

Assessment

3 Key elements to assess a Competency:

- Acquisition → How Many
- Robustness → How Often
- Effective Countermeasure → Outcome of TEM

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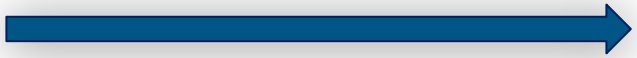
Assessment Process

- **How Many** *required OBs*
- **How Often** *required OBs*
- **Outcome of TEM** *related to the Safety performance*

Assessment Process

- **How Many** *required OBs*

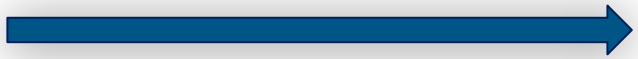


GLOBAL APPROACH

How Many
Few, hardly, any
Some
Many
Most
All, Almost All

Assessment Process

- **How Many** *required OBs*
- **How Often** *required OBs*



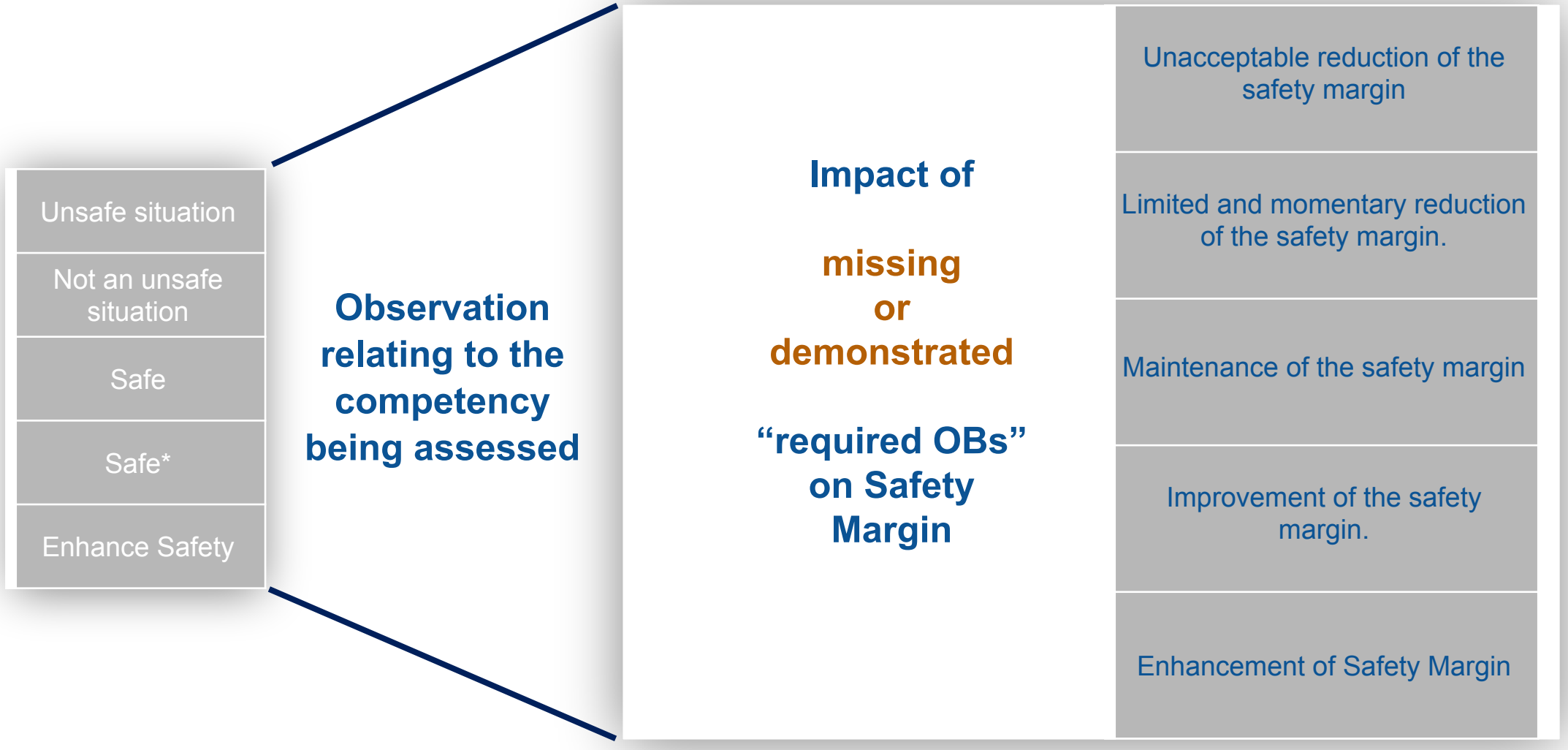
GLOBAL APPROACH

How Often
Rarely
Occasionally
Regularly
Regularly*
Always, almost always

Assessment Process

- **How Many** *required OBs*
- **How Often** *required OBs*
- **Outcome of TEM** *related to the Safety performance*

Assessment



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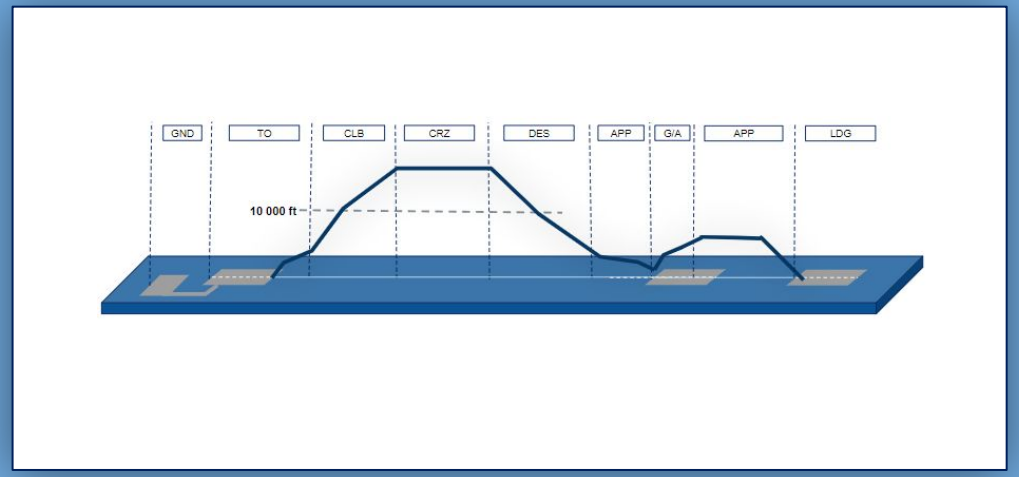
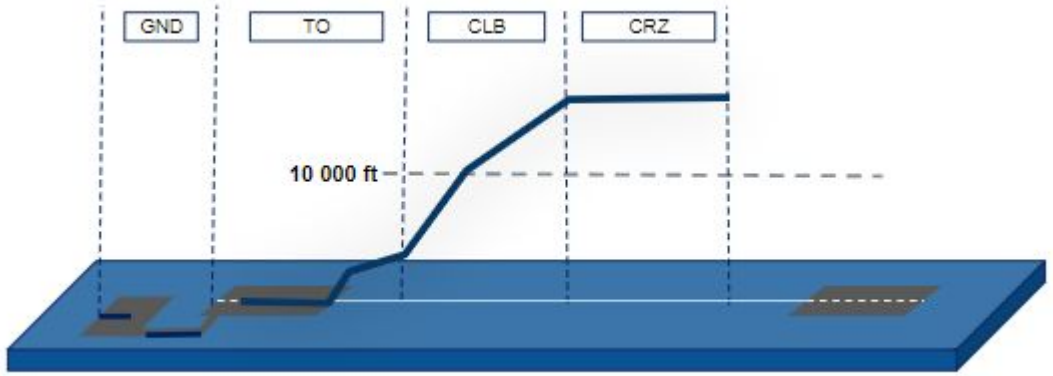
AIRBUS Approach to CBTA

Other Example:
Type Rating Course



What are the Instructor expectations?

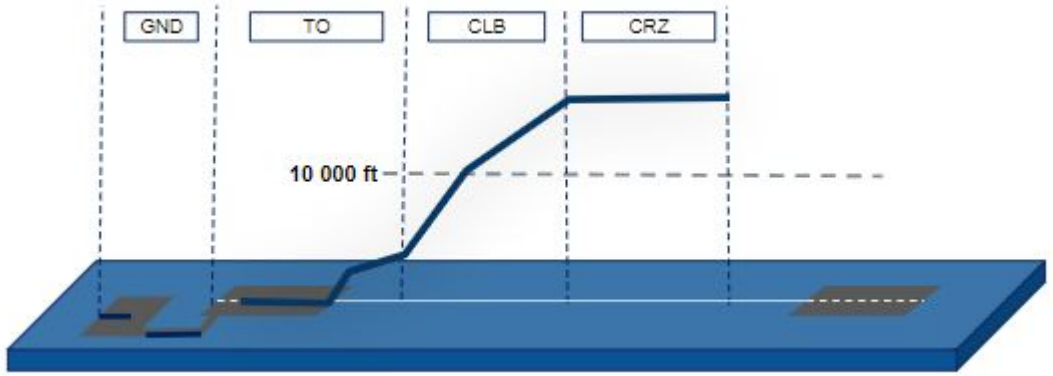


1st Session in a Procedure Trainer

- Applies relevant operating instructions, procedures and techniques in timely manner
- Follows SOPs
- Operates aircraft systems and associated equipment correctly
- Monitors, reviews and cross-checks actions conscientiously
- Verifies that tasks are completed to the expected outcome

AIRBUS

What are the Instructor expectations?



1st Session in a Procedure Trainer

PRO

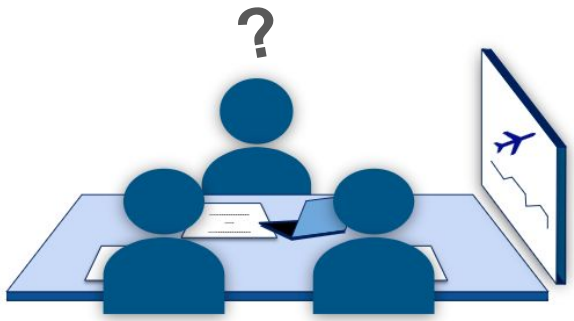
OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner
OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation
OB 1.4 Operates aircraft systems and associated equipment correctly

WLM

OB 8.7 Monitors, reviews and cross-checks actions conscientiously
OB 8.8 Verifies that tasks are completed to the expected outcome

AIRBUS

What are the Instructor expectations?



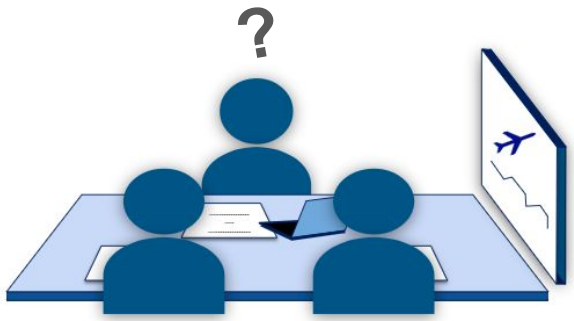
During the Briefing

In accordance with the session objectives

- *Trainees know relevant limitations and systems and their interaction*
- *Trainees know published operating instructions*
- *Trainees are able to find procedures*

AIRBUS

What are the Instructor expectations?



During the Briefing

KNO

OB 0.1 Demonstrates practical and applicable knowledge of limitations and systems and their interaction

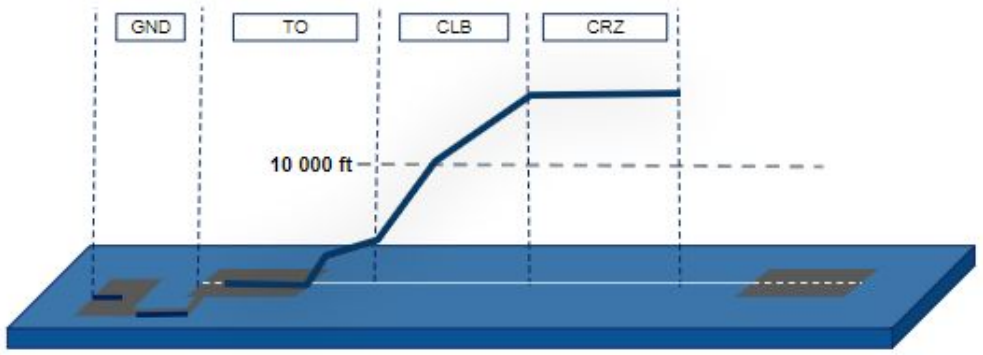
OB 0.2 Demonstrates required knowledge of published operating instructions

PRO

OB 1.1 Identifies where to find procedures and regulations

1st Session in a Procedure Trainer

During the Briefing



KNO

OB 0.1	Demonstrates practical and applicable knowledge of limitations and systems and their interaction
OB 0.2	Demonstrates required knowledge of published operating instructions

PRO

OB 1.1	Identifies where to find procedures and regulations
OB 1.2	Applies relevant operating instructions, procedures and techniques in a timely manner
OB 1.3	Follows SOPs unless a higher degree of safety dictates an appropriate deviation
OB 1.4	Operates aircraft systems and associated equipment correctly

WLM

OB 8.7	Monitors, reviews and cross-checks actions conscientiously
OB 8.8	Verifies that tasks are completed to the expected outcome

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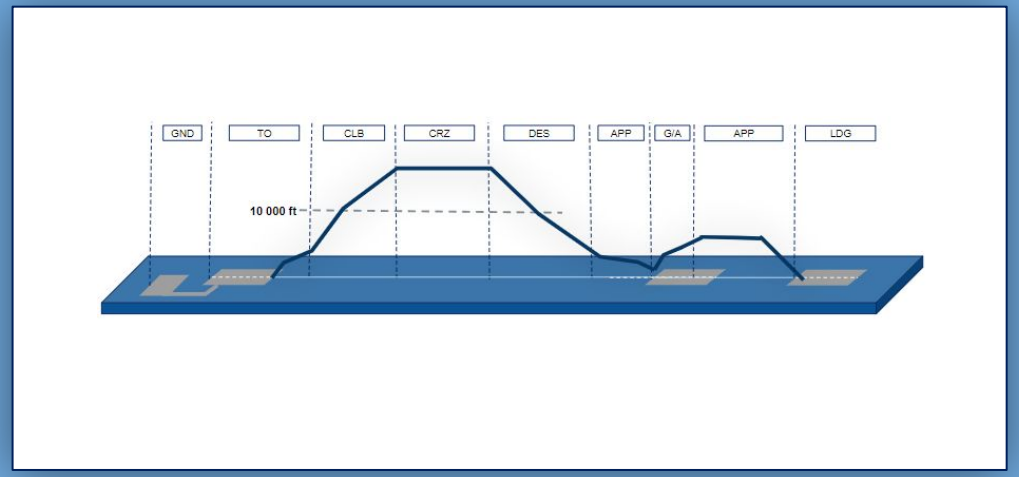
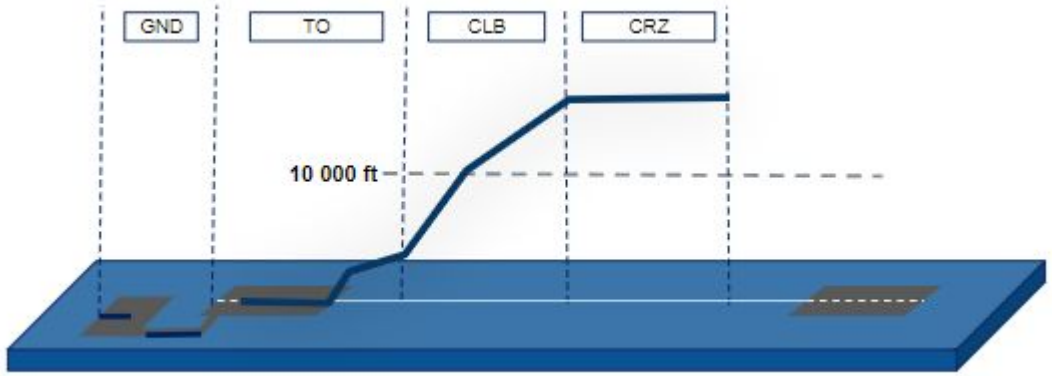
AIRBUS Approach to CBTA

Assessment





1st Session in a Procedure Trainer

PRO

OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner
OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation
OB 1.4 Operates aircraft systems and associated equipment correctly

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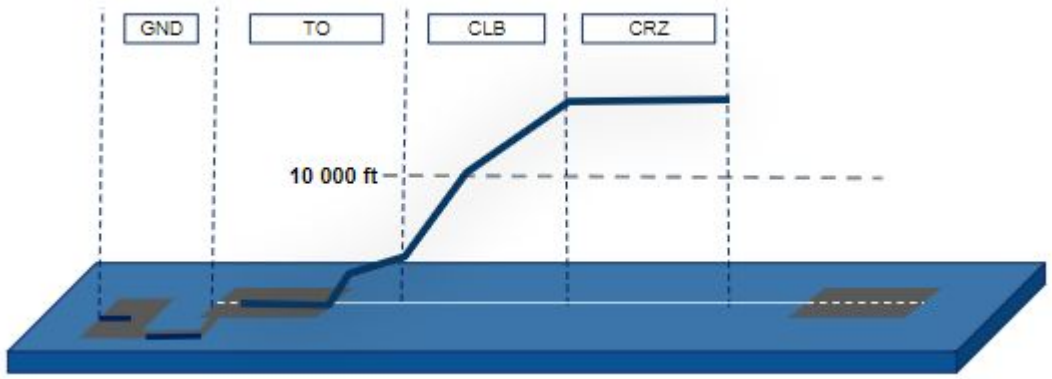


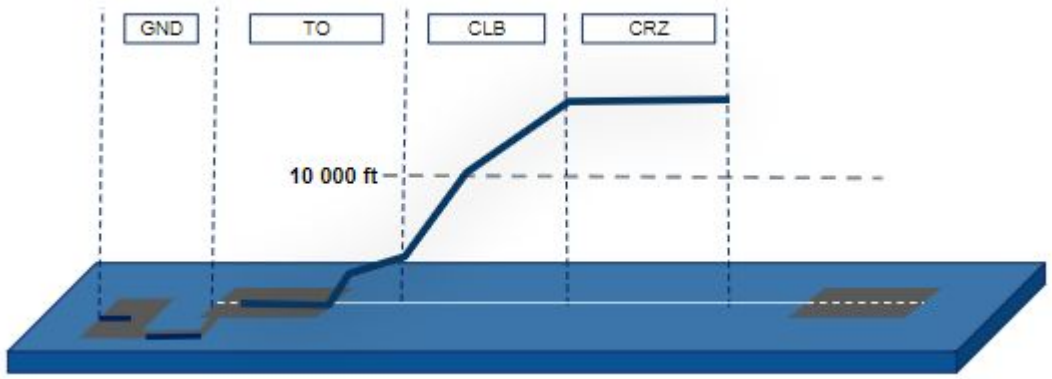
1st Session in a Procedure Trainer

How Many
Few, hardly, any
Some
Many
Most
All, Almost All

PRO

OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner
OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation
OB 1.4 Operates aircraft systems and associated equipment correctly

AIRBUS



1st Session in a Procedure Trainer

How Many
Few, hardly, any
Some
Many
Most
All, Almost All

PRO

OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner
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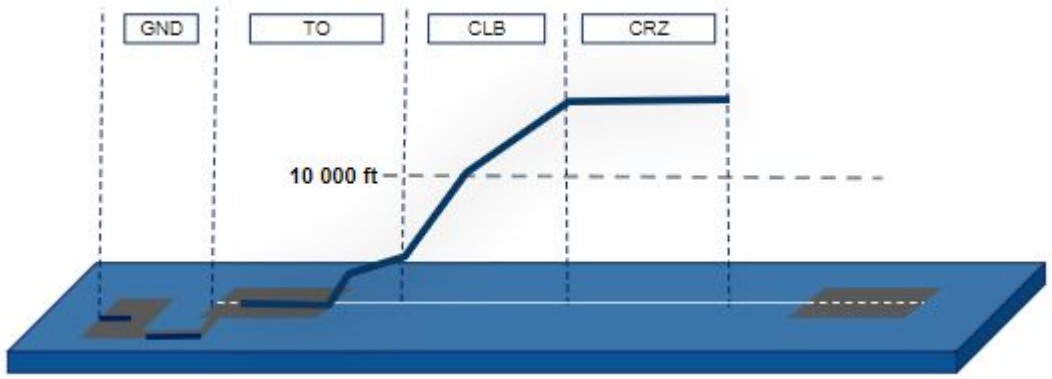
OB 1.4 Operates aircraft systems and associated equipment correctly

AIRBUS



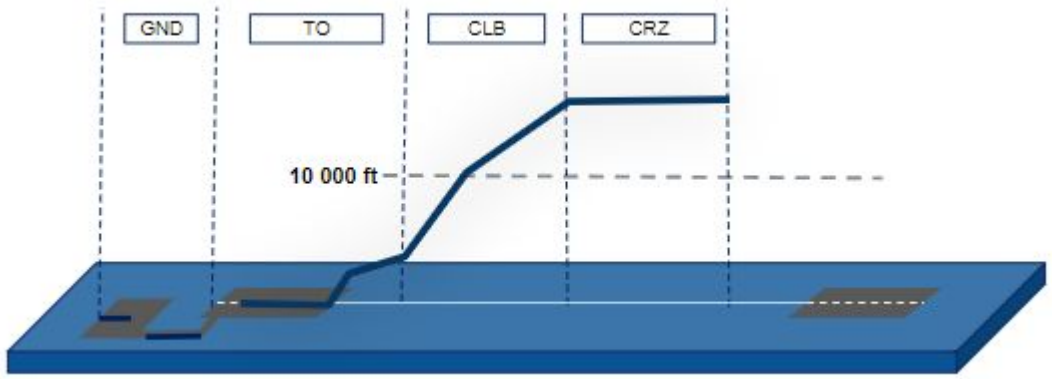
1st Session in a Procedure Trainer

How Many	How Often
Few, hardly, any	Rarely
Some	Occasionally
Many	Regularly
Most	Regularly*
All, Almost All	Always, almost always

PRO

OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner
OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation
OB 1.4 Operates aircraft systems and associated equipment correctly

AIRBUS



1st Session in a Procedure Trainer

How Many	How Often
Few, hardly, any	Rarely
Some	Occasionally
Many	Regularly
Most	Regularly*
All, Almost All	Always, almost always

PRO

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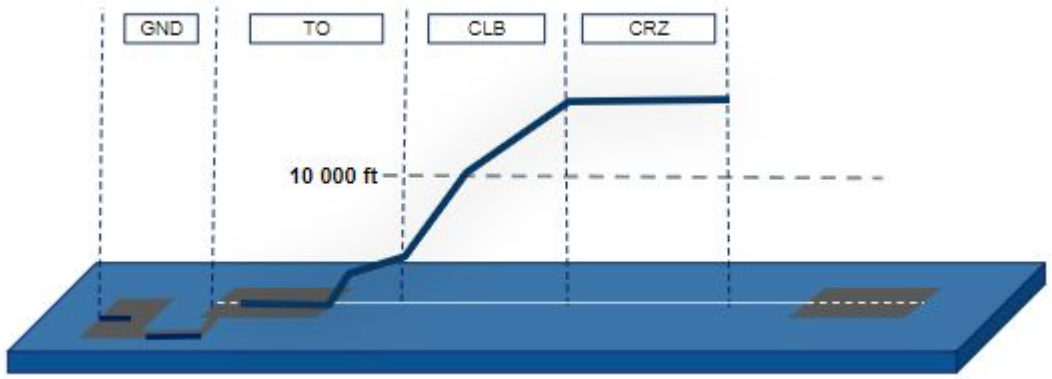
AIRBUS



1st Session in a Procedure Trainer

How Many	How Often	
Few, hardly, any	Rarely	Unsafe situation
Some	Occasionally	Not an unsafe situation
Many	Regularly	Safe
Most	Regularly*	Safe*
All, Almost All	Always, almost always	Enhance Safety

PRO

OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner

OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation

OB 1.4 Operates aircraft systems and associated equipment correctly

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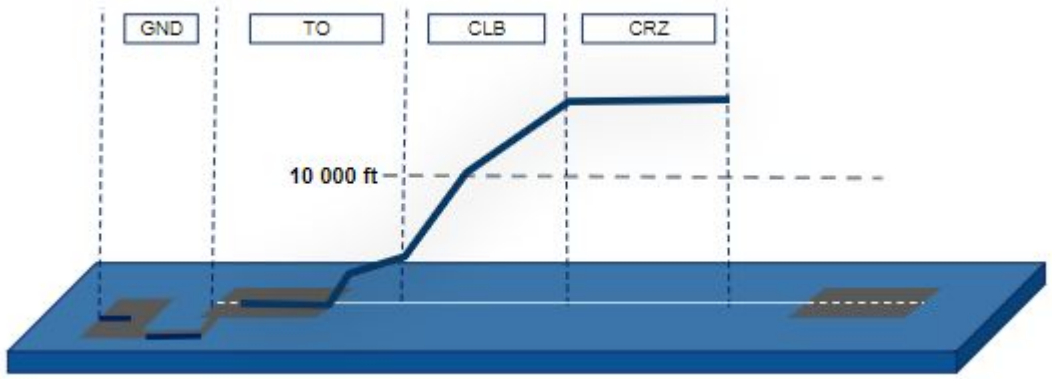


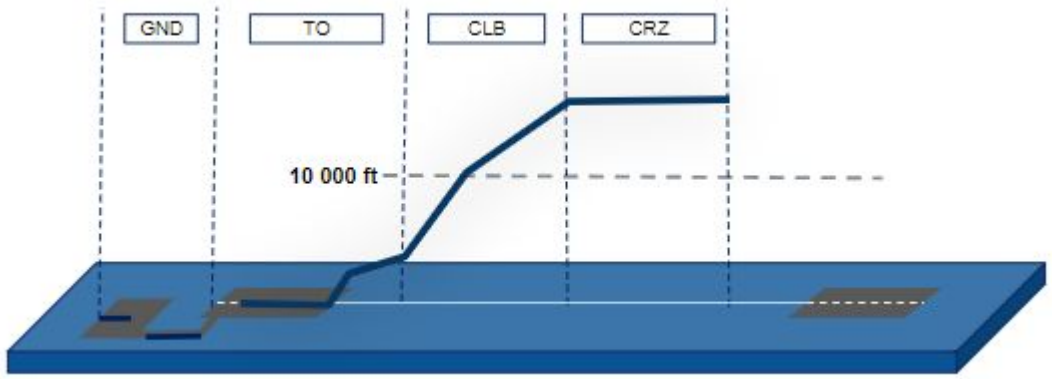
1st Session in a Procedure Trainer

How Many	How Often	
Few, hardly, any	Rarely	Unsafe situation
Some	Occasionally	Not an unsafe situation
Many	Regularly	Safe
Most	Regularly*	Safe*
All, Almost All	Always, almost always	Enhance Safety

PRO

OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner
OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation
OB 1.4 Operates aircraft systems and associated equipment correctly

AIRBUS



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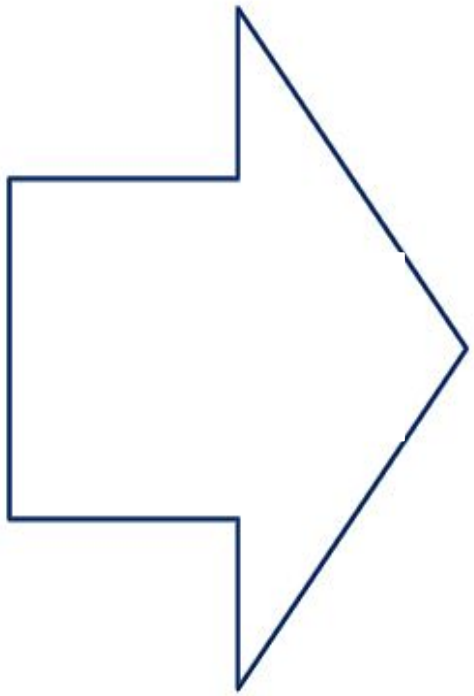
Observation relating to the competency being assessed

Observable Behaviours		Outcome of TEM
How Many	How Often	
Few, hardly, any	Rarely	Unsafe situation
Some	Occasionally	Not an unsafe situation
Many	Regularly	Safe
Most	Regularly*	Safe*
All, Almost All	Always, almost always	Enhance Safety

AIRBUS

Observation relating to the competency being assessed

Observable Behaviours		Outcome of TEM	Competency Assessment
How Many	How Often		How Well
Few, hardly, any	Rarely	Unsafe situation	Ineffectively
Some	Occasionally	Not an unsafe situation	Minimally acceptable
Many	Regularly	Safe	Adequately
Most	Regularly*	Safe*	Effectively
All, Almost All	Always, almost always	Enhance Safety	Exemplary manner



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Observation relating to the competency being assessed

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Most	Regularly*	Safe*	Effectively
All, Almost All	Always, almost always	Enhance Safety	Exemplary manner

LOWEST OF:
- **HOW MANY**
- **HOW OFTEN**
- **OUTCOME of TEM**

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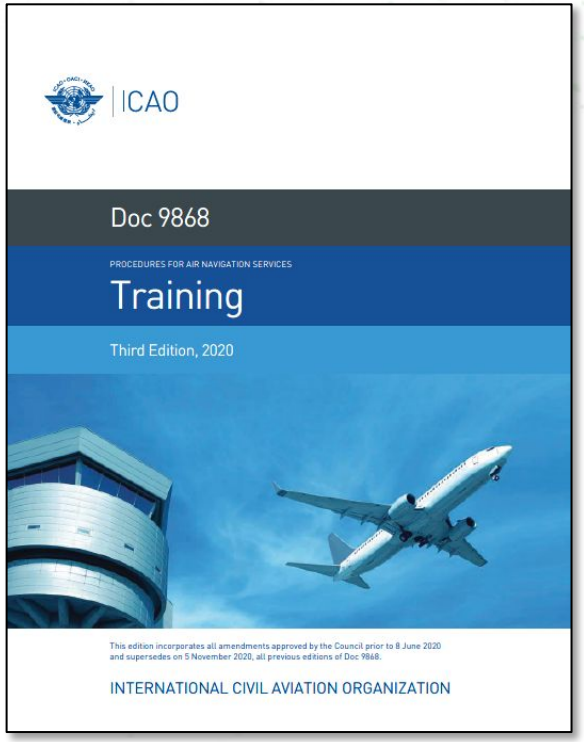
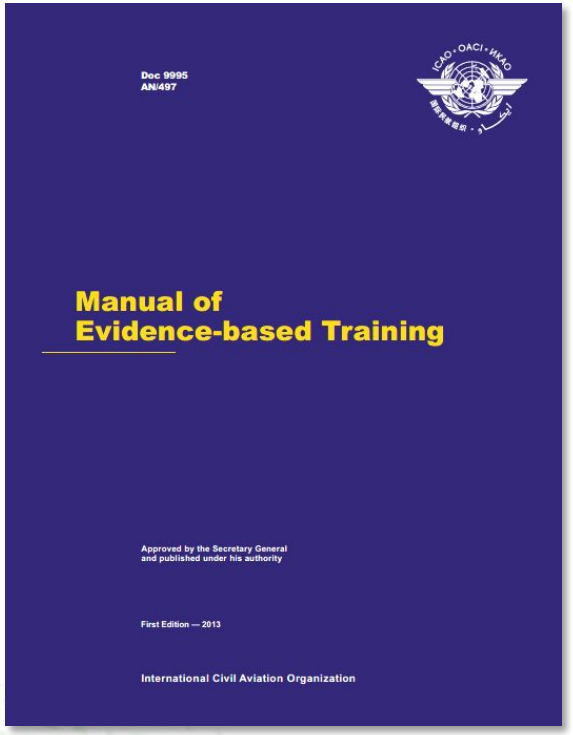
ICAO Standard



PNS TRG – 2020

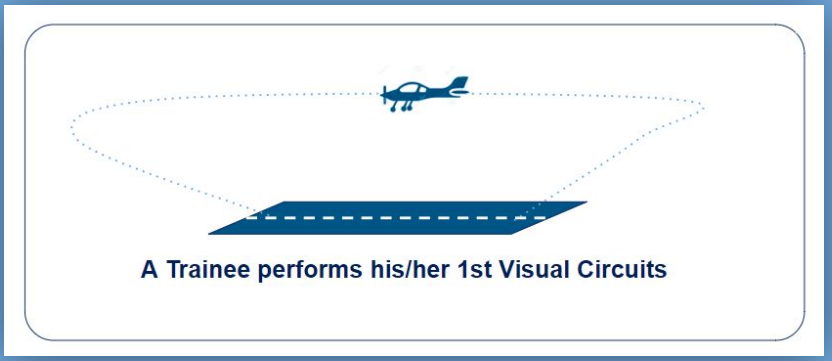
No VENN Model Guidance regarding the Assessment Process or Word Picture.



Doc 9995 - 2013

Assessment

Grading System



What’s the Objective of a Numerical grade?

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Observation relating to the competency being assessed

Observable Behaviours		Outcome of TEM
How Many	How Often	
Few, hardly, any	Rarely	Unsafe situation
Some	Occasionally	Not an unsafe situation
Many	Regularly	Safe
Most	Regularly*	Safe*
All, Almost All	Always, almost always	Enhance Safety

Competency Assessment
How Well
Ineffectively
Minimally acceptable
Adequately
Effectively
Exemplary manner

GRADING?

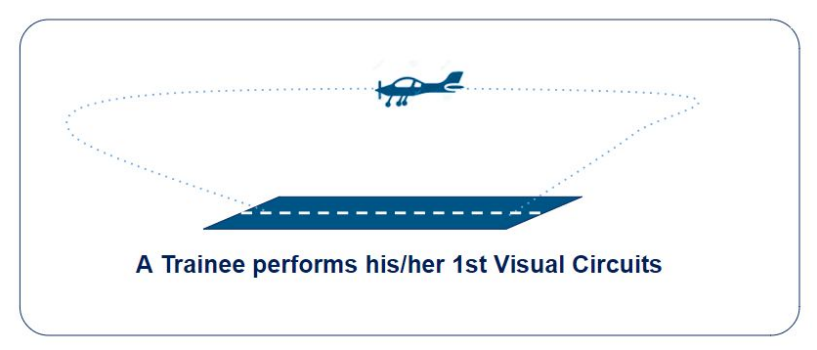
AIRBUS

Observation relating to the competency being assessed

Observable Behaviours		Outcome of TEM	Competency Assessment	Competency
How Many	How Often		How Well	GRADING
Few, hardly, any	Rarely	Unsafe situation	Ineffectively	1
Some	Occasionally	Not an unsafe situation	Minimally acceptable	2
Many	Regularly	Safe	Adequately	3
Most	Regularly*	Safe*	Effectively	4
All, Almost All	Always, almost always	Enhance Safety	Exemplary manner	5

Assessment

Outcome of Competency Assessment



Observation relating to the competency being assessed

Observable Behaviours		Outcome of TEM	Competency Assessment	Competency	TRAINING ORGANIZATION
How Many	How Often		How Well	GRADING	REMEDIAL
Few, hardly, any	Rarely	Unsafe situation	Ineffectively	1	Required
Some	Occasionally	Not an unsafe situation	Minimally acceptable	2	Refer to Policy
Many	Regularly	Safe	Adequately	3	Not Required
Most	Regularly*	Safe*	Effectively	4	Not Required
All, Almost All	Always, almost always	Enhance Safety	Exemplary manner	5	Not Required

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Outcome ….

EXAMPLE OF POLICY
Remedial training is required for:

- Any competency graded 1, **or**
- Two successive grades 2 in a same competency, **or**
- Any competency graded 2 if the trainer evaluates that the trainee will not be able to demonstrate an adequate performance (grade 3) during the next training or evaluation session.

CBTA/EBT Workshop

Course Implementation

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ADDIE MODEL - Workflow 5

INPUT	PROCESS	OUTPUT
Course results	Analyse results, reports and feedback	Course report
Trainee feedback	Formulate improvement actions, if required	
Instructor and assessor feedback		
Audit reports (if applicable)		

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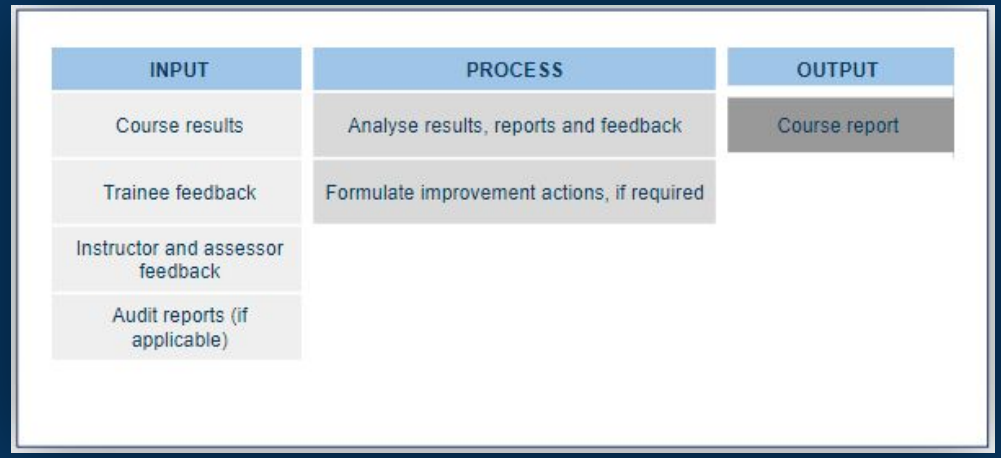
CBTA

Training Metrics



INPUT	PROCESS	OUTPUT
Course results	Analyse results, reports and feedback	Course report
Trainee feedback	Formulate improvement actions, if required	
Instructor and assessor feedback		
Audit reports (if applicable)		

AIRBUS – CBTA Training Metrics

Grading Metrics

Level 0: Competent / Not Competent

Level 1: Competency Grade (level of Performance in each Competence)

Level 2: Observable Behaviours (Improvement Area)

Level 3: Other (TEM …)

Crew Performance in training

Technique & Non-technique Performance when facing Expected & Unexpected events

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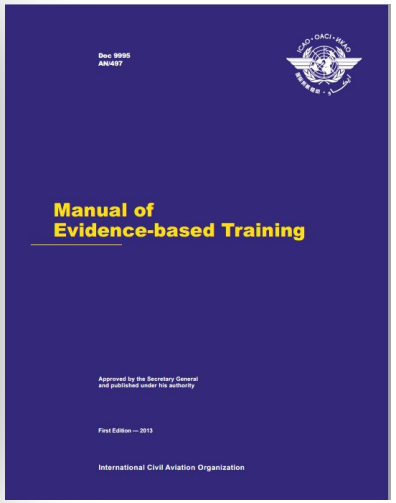
AIRBUS – CBTA Training Metrics

- Data Harmonization
  - Facilitate Data sharing & Analysis
- Data Gathering
  - Instructor-based Observation
  - New Technologies?
- Data Reliability
  - Assessment method
  - Instructor Calibration
- Data Relevance
  - Specific Training or Course Design

    as described in ICAO Doc 9868 - PANS TRG

ICAO Doc 9868 - PANS TRG



ICAO Doc 9995 - EBT

TRAINING DATA

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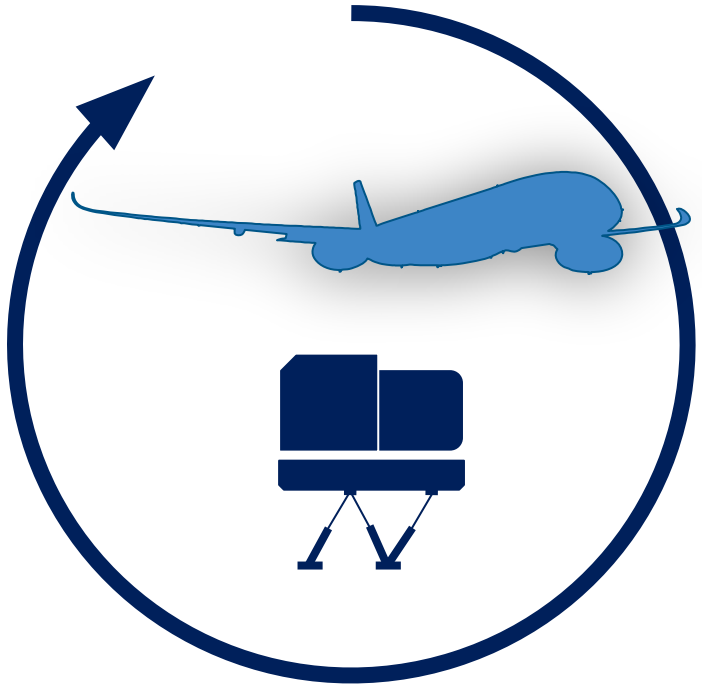
CBTA

Challenges

INPUT	PROCESS	OUTPUT
Course results	Analyse results, reports and feedback	Course report
Trainee feedback	Formulate improvement actions, if required	
Instructor and assessor feedback		
Audit reports (if applicable)		

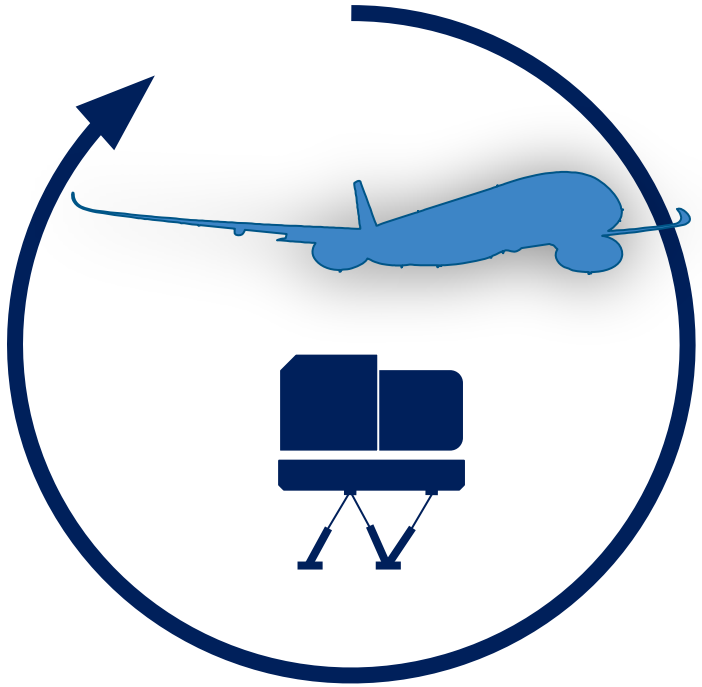
Training Data - Objectives



Inner Loop
(Operator)

- Regulation
- OEM recommendations
- Safety recommendations

Training Data - Objectives



Inner Loop
(Operator)

Ops data

Outer Loop

- Regulation
- OEM recommendations
- Safety recommendations

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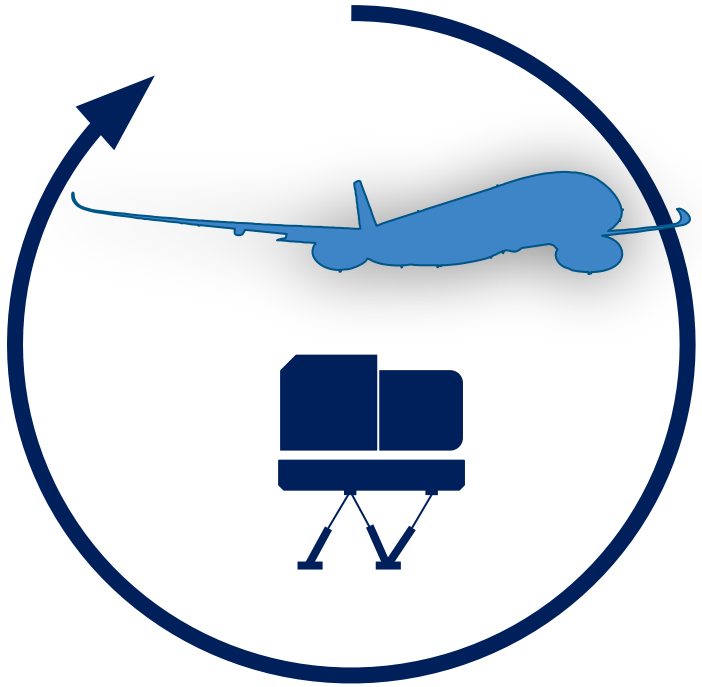
Training Data - Objectives



Inner Loop
(Operator)

Ops & Training data

Outer Loop

- Regulation
- OEM recommendations
- Safety recommendations

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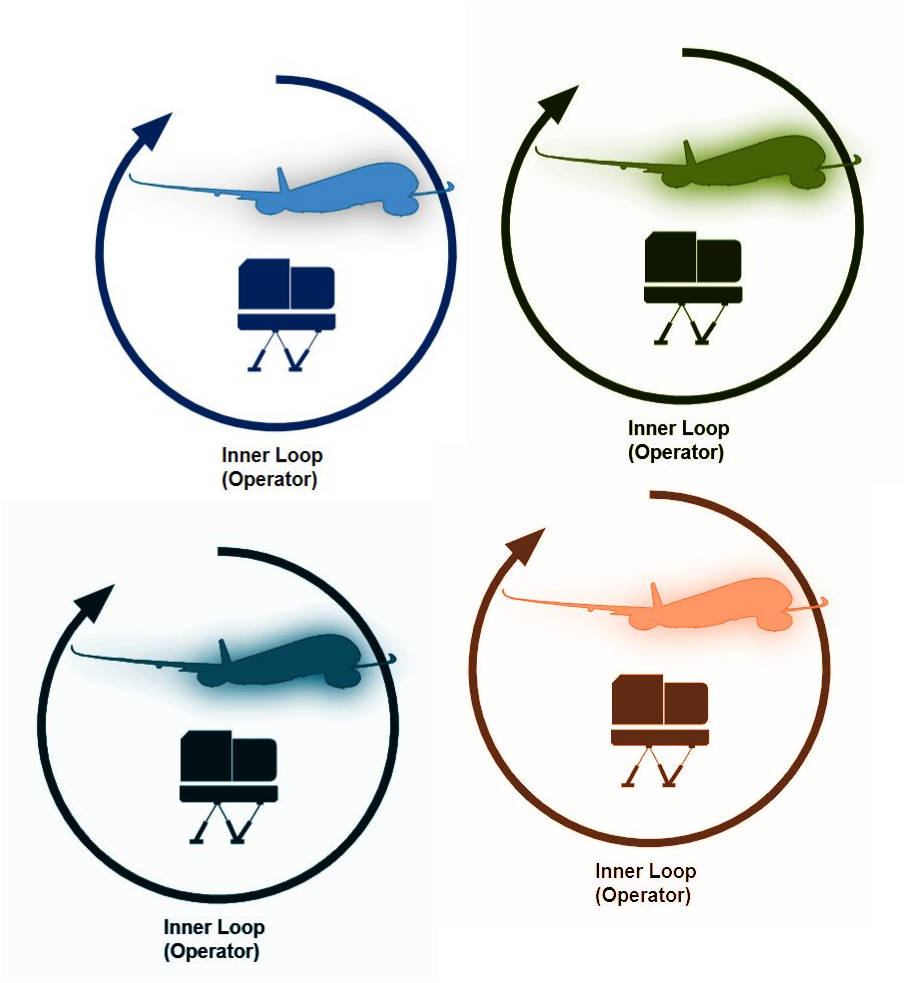
Training Data - Objectives



Ops & Training data

Outer Loop

- Regulation
- OEM recommendations
- Safety recommendations

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Training Data

- Data Harmonization
  - To facilitate Data sharing & Analysis
- Data Gathering
  - Instructor-based Observation
  - New Technologies?
- Data Reliability
  - Assessment method
  - Instructor Calibration
- Data Relevance
  - Course Design

CBTA/EBT Workshop

CBTA/EBT Implementation

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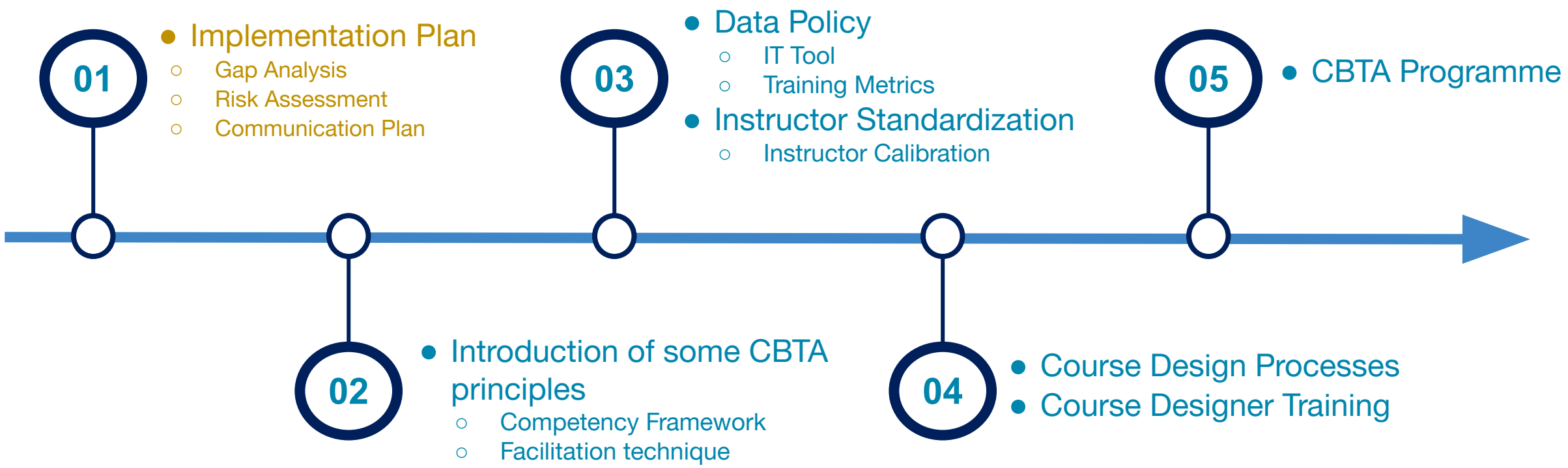
AIRBUS – Implementation Background



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Thank you

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