CBTA expansion

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Reminder

Competency. A dimension of **human performance** that is used to reliably **predict successful performance on the job.**

A competency is manifested and observed through behaviors that mobilize the relevant knowledge, skills and attitudes **to carry out activities or tasks under specified conditions.**

"Basically, pilots' job is to operate the airplane safely and efficiently "

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Reference ICAO Doc 9868 PANS-TRG 3rd Edition

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To carry out Tasks…

…Under specified Conditions

❑ Flight Phase
=>Tasks
-> Sub-tasks

- ❑ PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS
- ❑ PERFORM TAKE-OFF
  =>Perform take-off roll
  ->Applies take-off thrust PF
  ->Checks engine parameters…
- ❑ PERFORM CLIMB
- ❑ PERFORM CRUISE
- ❑ PERFORM DESCENT
- ❑ PERFORM APPROACH
- ❑ PERFORM LANDING
- ❑ PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS

Context

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

Training Media

FSTD, System, Equipment

Instructor level of support

Assistance a trainee can expect from the instructor

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Reference ICAO Doc 9868 PANS-TRG 3rd Edition

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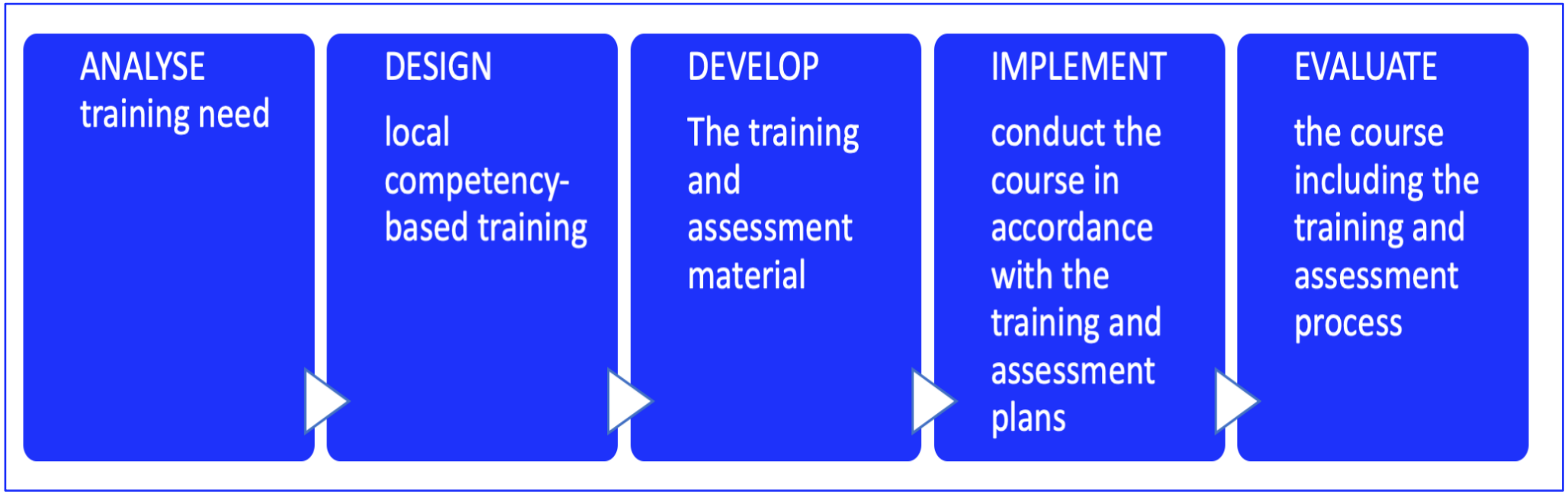
CBTA Instructional System Design (ISD)

Workflow 1 **Workflow 2** **Workflow 3** **Workflow 4** **Workflow 5**



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Training Gap Analysis - Challenge

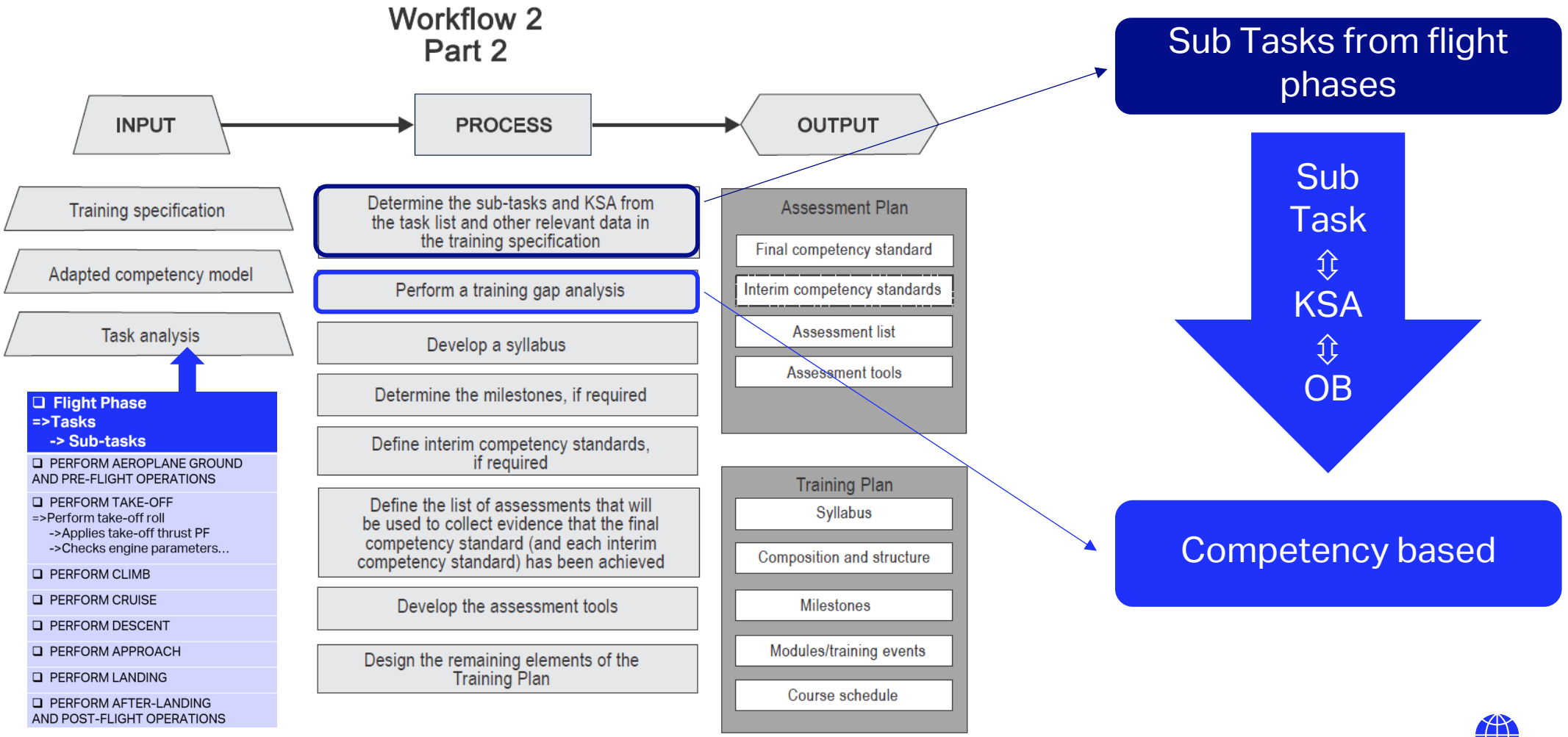

Figure I-2-C-7. Workflow 2, Part 2 — Design the assessment and training plans

Reference ICAO Doc 9868 PANS-TRG 3rd Edition

Training Gap Analysis - Competency Based

Any CBTA course aims to develop the pilots' competencies that are necessary to carry out their activities or tasks while managing the threats and errors that could happen in their specific operational and environmental context.

Process: the experts review every single Observable Behavior of the pilot competency framework to determine if it is critical for the pilot to demonstrate regularly the Observable Behavior in order to operate safely, effectively and efficiently.

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E.g.; Type Rating Course TA-SE competencies

	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-SE	TA

TA: *means Trained and Assessed*
TA-SE: *means Trained and Assessed with Special Emphasis*

Mapping Subtask-OB

❑ Flight Phase =>Tasks -> Sub-tasks
❑ PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS
❑ PERFORM TAKE-OFF =>Perform take-off roll ->Applies take-off thrust PF ->Checks engine parameters…
❑ PERFORM CLIMB
❑ PERFORM CRUISE
❑ PERFORM DESCENT
❑ PERFORM APPROACH
❑ PERFORM LANDING
❑ PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS

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

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200 + Sub Tasks

73 OBs

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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

C=Conditional, the OB demonstration depends on the context

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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

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SAW	Situation awareness and management of information
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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**

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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

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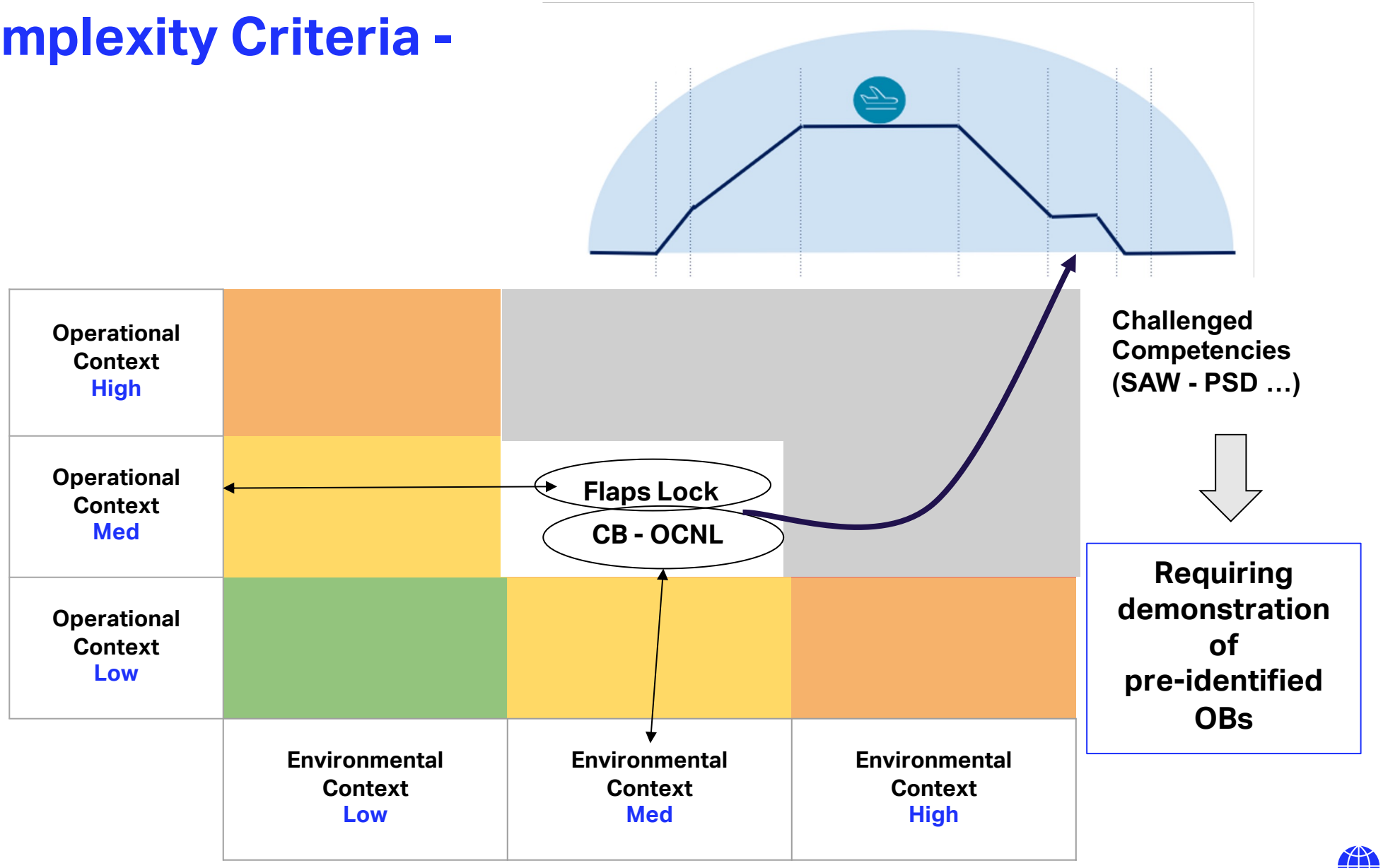
Context Complexity Criteria - Example



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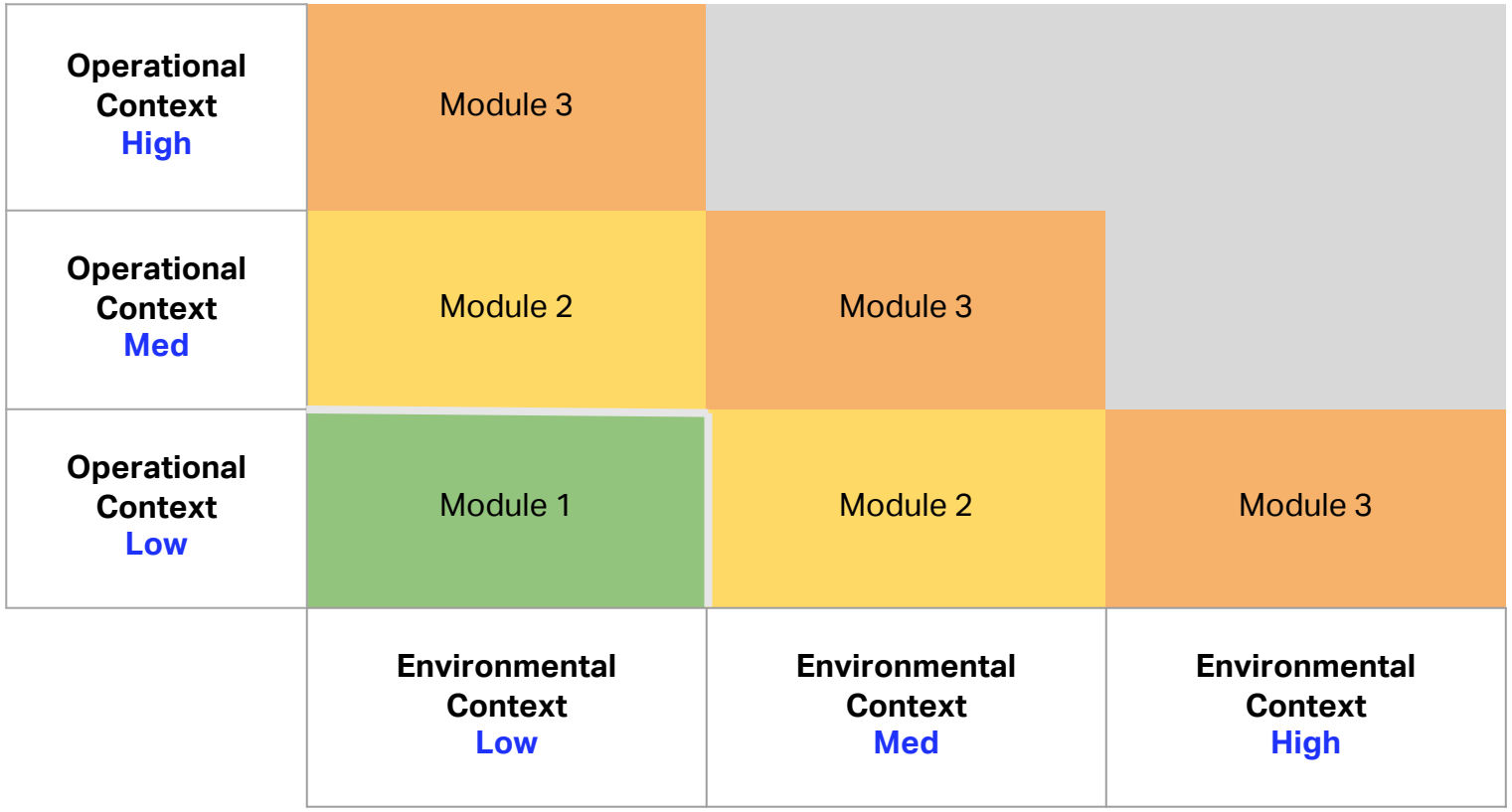
CBTA Type Rating - Competency Development vs Context



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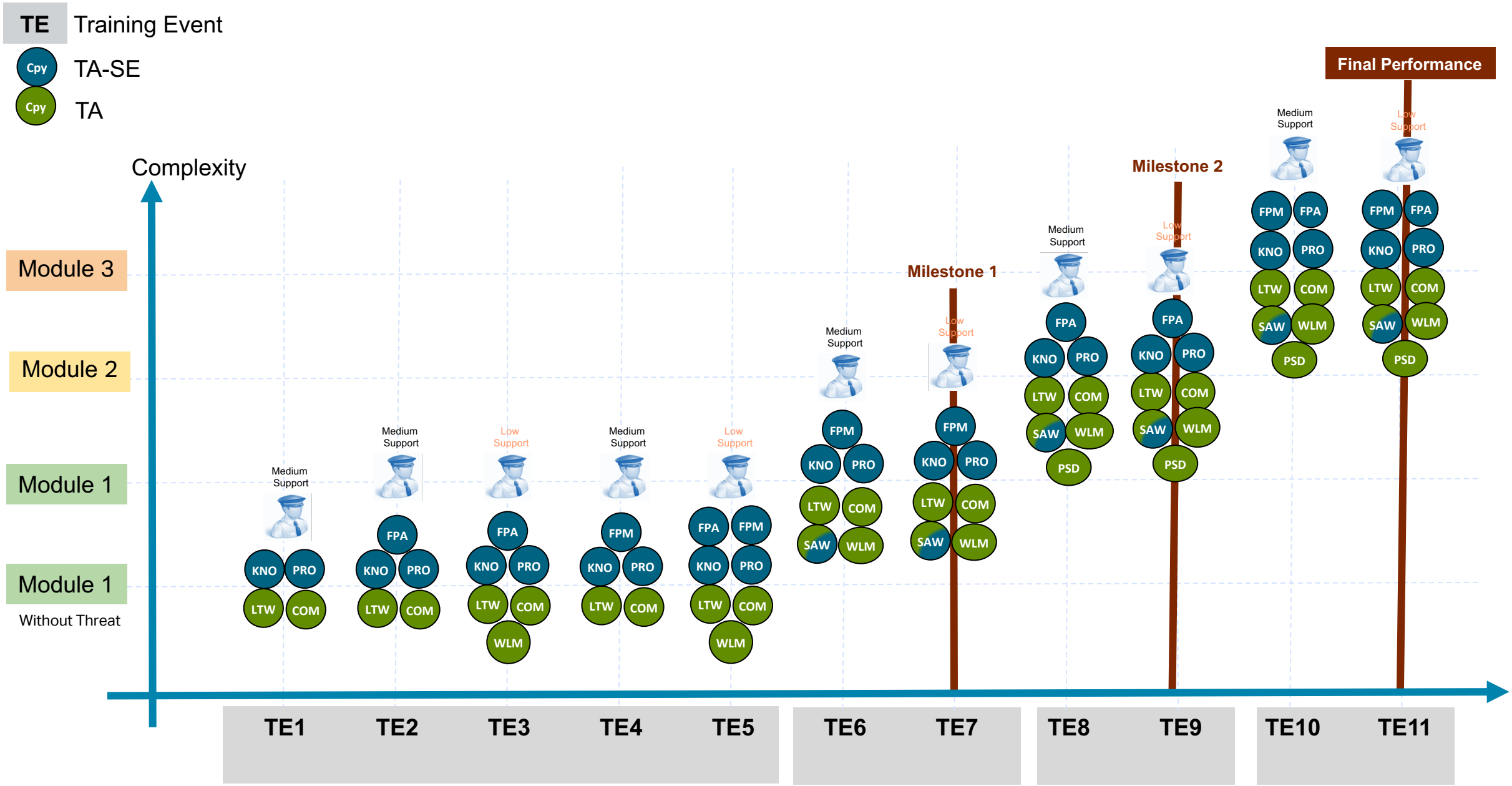
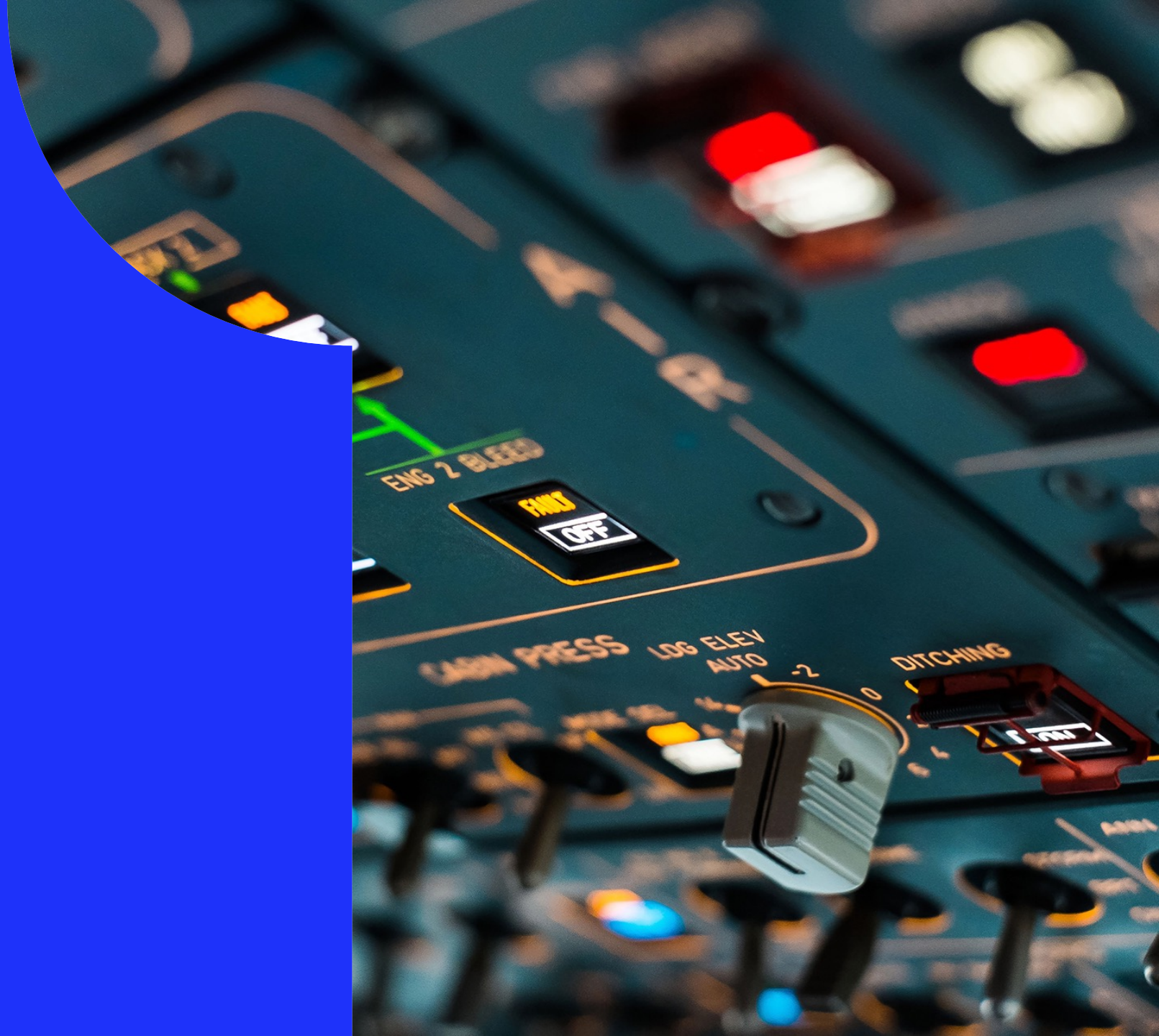
Competency Development type rating



Thank you