TRAINING PROGRAM CBT DG

Guidance for the development and the approval

Document management

Revision list

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Approval

Name	Responsabilities	Date	Visa
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If you have any comments or suggestions about this guide, please contact the French Civil Aviation Safety Directorate at the following address: dsac-guides-bf@aviation-civile.gouv.fr

The present version in English is a courtesy translation of the French version that remains the reference.

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Objectives of this guide

Since the 2017-2018 edition, the Technical Instructions (Doc 9284) include the notion of CBT (Competency Based Training).

This guide aims at presenting the CBT approach (CBTA), already used by ICAO in other fields, and its implementation in the dangerous goods training. This, in replacement of the current training system based on categories.

In order to explain the philosophy of this concept and to propose implementation solutions, the DSAC has published this guide as well as two tools to assist in the creation of training plans:
an excel matrix; and
the software CBTool.

These tools are intended to be educational and to meet operators' operational needs.

Questions, remarks or comments concerning these tools can be sent to the DSAC using the functional email:
dsac-contact-CBTMD-bf@aviation-civile.gouv.fr

With the CBTA, new concepts are introduced. In order to assist in their understanding, a glossary is available in the appendix 13. The terms defined in this glossary are identified in the guide with this mark: [(1)].

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Preamble

An aircraft operator, whether authorized or not to transport dangerous goods (DG), must have a dangerous goods training program for its personnel. Depending on the case, this program has to be approved (see table hereafter).

The objective of this program is to ensure that the staff is competent to perform the assigned duties.

A training program includes elements such as design methodology, initial and recurrent trainings, assessment, instructor qualifications and competencies, training records and evaluation of its effectiveness.

The table below summarizes the necessary actions regarding training and procedures according to the type of operation and the applicable provisions from the AIR-OPS:

Type of operations	Provisions from AIR-OPS		
Operator carrying (or likely to carry) DG	Requirement to establish DG training programs	Required approval of DG training programs	Procedures to be defined
CAT	Yes*	Yes	Yes
NCC	Yes	Yes	Yes
NCO (including NCO.SPEC)	Yes NCO.GEN.140 (referencing SPA.DG) except in the cases referred to in NCO.GEN.140 (b) NCO.GEN.140 (f)	Yes	Yes In all cases
SPO	Yes*	Yes	Yes
Operator not carrying DG	Requirement to establish DG training programs	Required approval of DG training programs	Procedures to be defined
CAT	Yes*	Yes	Yes
NCC	Yes	No	Yes
NCO (including NCO.SPEC)	No	No	Yes
SPO	Yes*	No	Yes In all cases

* Possibility of information in the cases referred to in ORO.GEN.110.k)

Commission Regulation (EU) No 965/2012 on air operations:

- ORO.GEN.110 j) "The operator shall establish and maintain dangerous goods training programs for personnel as required by the technical instructions. Such training programs shall be commensurate with the responsibilities of personnel."
- ORO.GEN.110 k) "Notwithstanding point (j), operators conducting commercial operations with either of the following aircraft shall ensure that the flight crew has received an appropriate dangerous goods training or briefing, to enable them to recognise undeclared dangerous goods brought on board by passengers or as cargo:

    i) asingle-engined propeller-driven aeroplane having an MCTOM of 5 700 kg or less and a MOPSC of 5 or less, operated in a flight taking off and landing at the same aerodrome or operating site, under VFR by day;

    ii) an other-than-complex motor-powered helicopter, single-engined, with an MOPSC of 5 or less, operated in a flight taking off and landing at the same aerodrome or operating site, under VFR by day"

This program must be published in the framework of the operator's Operating Manual (OPS-MANUAL), (e.g.: part D – trainings for CAT operators).

Note: Subcontractor personnel working on behalf of the operator and under its responsibility are also liable for the training requirements according to the tasks they perform.

The operator must take into account the new elements introduced during the changes to the regulation (Commission Regulation (EU) No 965/2012, annex 18 and Technical Instructions (T.I.)), for which he must ensure regulatory monitoring. It must also take into account the feedback corresponding to its operation. Finally, it should also take into account any recommendations made by the DSAC.

Regulatory references

Commission Regulation (EU) No 965/2012 on air operations, including:

- ORO.GEN.110
- ORO.MLR.100
- ORO.MLR.101
- ORO.MLR.115 c)
- CAT.GEN.MPA.200 a) and d)
  and associated AMC
- SPA.DG.105 a)

ICAO:

- Annex 18
- Doc 9284 – Technical Instructions for the Safe Transport of Dangerous Goods by Air
- Doc 9284 Supplement (if applicable)
- Doc 9481 AN/928 – Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods,
- Doc 9868 – Procedures for air navigation services – Training (PANS-TRG)
- Doc 10147 – Guidance on a Competency-based Approach to Dangerous Goods Training and Assessment
- Doc 10002 – Cabin Crew Safety Training Manual

The above list is not exhaustive and must take into account any revision or amendment of the documents cited.

Authority in charge

The DSAC service in charge of the oversight of the French operator's AOC issues approval for DG training programs.

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In the remainder of this guide, the term "DSAC" will be used generically.

1. Definition of a training program

The training program is a means to ensure that personnel acquire and apply knowledge, skills and attitudes to perform their function competently.

It includes the following elements:

- the result from the training needs analysis;
- the training plan;
- the assessment plan;
- the evaluation measures.

The training program shall address initial and recurrent training.

Appendix 7 details the content of a training program according to the ADDIE approach:

Analysis / Design / Development / Implementation / Evaluation

This is the type of approach adopted in this guide.

2. The Competency Based Training Approach (CBTA)

Technical Instructions introduced the concept of Competency Based Training;

This guide takes into account this new approach, which is based on the identification of the training needs of each staff member with regard to the specificities of the operation.

Designated postal operators are not affected by these new provisions.

2.1. Category-based training

The dangerous goods category-based training model is based on the type of position a staff member occupies, whereas CBT training focuses on the functions for which he or she is responsible.

The tables below from the 2019-2020 edition of the Technical Instructions cover the knowledge that agents should have to perform their specific duties, but do not address the skills/attitudes that the personnel concerned must acquire to perform their tasks.

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Table 1-4.   Content of training courses

Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum	Shippers and packers		Freight forwarders			Operators and ground handling agents						Security staff
	Categories of staff											
	1	2	3	4	5	6	7	8	9	10	11	12
General philosophy	x	x	x	x	x	x	x	x	x	x	x	x
Limitations	x		x	x	x	x	x	x	x	x	x	x
General requirements for shippers	x		x			x						
Classification	x	x	x			x						x
List of dangerous goods	x	x	x			x				x		
Packing requirements	x	x	x			x						
Labelling and marking	x	x	x	x	x	x	x	x	x	x	x	x
Dangerous goods transport document and other relevant documentation	x		x	x		x	x					
Acceptance procedures						x						
Recognition of undeclared dangerous goods	x	x	x	x	x	x	x	x	x	x	x	x
Storage and loading procedures				x	x	x		x		x		
Pilots' notification						x		x		x		
Provisions for passengers and crew	x	x	x	x	x	x	x	x	x	x	x	x
Emergency procedures	x	x	x	x	x	x	x	x	x	x	x	x

Table 1-5.   Content of training courses for operators not carrying dangerous goods as cargo or mail

Contents	Categories of staff				
	13	14	15	16	17
General philosophy	X	X	X	X	X
Limitations	X	X	X	X	X
Labelling and marking	X	X	X	X	X
Dangerous goods transport document and other relevant documentation	X				
Recognition of undeclared dangerous goods	X	X	X	X	X
Provisions for passengers and crew	X	X	X	X	X
Emergency procedures	X	X	X	X	X

The validation of the training is based on proof that the personnel have completed the dangerous goods course and successfully passed the corresponding test. However, this does not guarantee that staff can apply what has been taught in the performance of their duties.

2.2. The CBT Approach – Generalities

A CBT approach designs training and assessment that is <u>specific to functions</u> (see chapter 4.1.2) and not only theoretical knowledge about dangerous goods. Its main purpose is to ensure that staff can perform <u>their</u> duties.

A competency[1]-based training program is based on:

- identification of the necessary competencies for the tasks actually performed;
- analysis of the population to be trained, their level of competence and their need for training;
- determination of the most effective means of carrying out these tasks;
- assessments developed to determine whether these competencies have been acquired.

A competency is manifested and observed through behavior patterns that mobilize knowledge[1], skills[1] and appropriate observable behaviors[1]/attitudes[1] to perform activities or tasks under specified conditions.

Competencies describe what the standard performance of a competent person should be in his/her function(s).
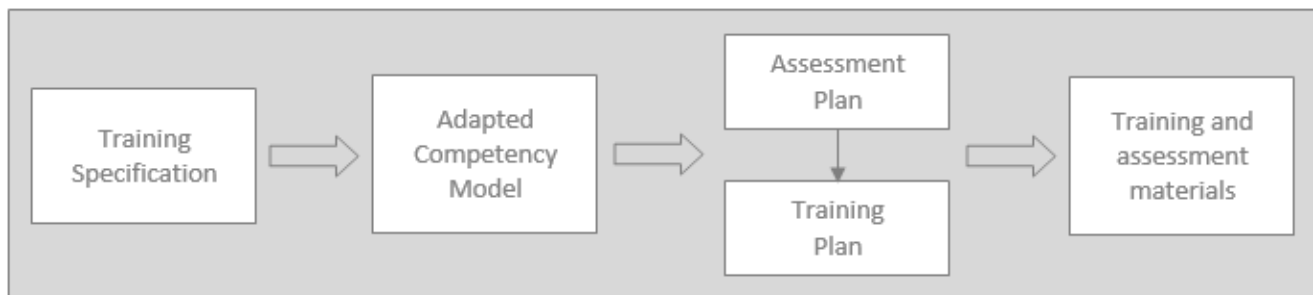
For example, the same person could perform many functions such as accepting dangerous goods and loading/stowing dangerous goods on board an aircraft. The training of this person must cover all the <u>functions</u> he or she performs.

The CBT approach offers many advantages:

- it is oriented towards learning and competence rather than the assimilation of essentially theoretical knowledge and success in a single test;
- it is directly related to the work and the way it is to be performed;
- it establishes the basic level of competence for this work;
- it ensures that trainees know what they are supposed to do and that evaluators know what performance to evaluate.

A training based on a CBT approach (CBTA) should put the trainees in an active position (e.g. practical training), as opposed to traditional training (mainly based on theory).

The following diagram illustrates the various elements required to establish a competency-based training and assessment program:

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3. Examination of the file

3.1. The different steps

The diagram below summarizes the steps of the file examination.
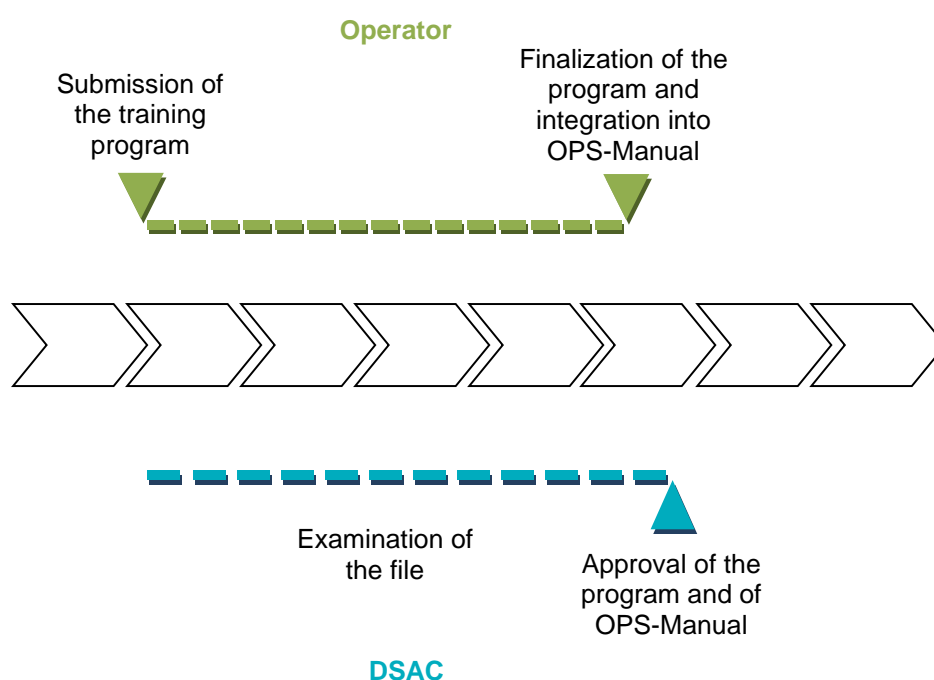
3.2. Training program changes

The establishment of an initial training program requires approval in accordance with ORO.GEN.110 j), except as identified in the preamble.

If there is a change in the training program, a new approval may be required in accordance with ARO.GEN.310 (c) and ORO.GEN.130 (b).

It is the operator's responsibility to define through its change policy, subject to DSAC approval, the nature of the changes requiring an approval.

The list of changes that affect the training program is presented in the lists below. It is not exhaustive.

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Changes to the operation:

- addition of class/division in SPA.DG (e.g. class 7);
- non SPA.DG operation to SPA.DG operation;
- SPA.DG operation to non SPA.DG operation (for CAT operator);
- NCC/SPO operation to CAT operation (for non SPA.DG operator);
- CAT operation to NCC/SPO and vice versa (for SPA.DG operator);
- operation in aircraft to operation in helicopter and vice-versa.

Changes to the training plan:

- composition and structure of the course (High level description of the design of the training/course, training method used, objectives of the training, sequence of the different parts of the training, tools used to develop the training plan e.g. the tools used in the ICAO guidance material);
- syllabus (high level description of the subject of the training and which modules the training is composed of);
- milestones (if required); (intermediate checks during the training to verify the understanding/level of competency)
- modules, training events and their delivery sequence; and detailed content of the modules;
- course schedule (this also includes duration);
- additional aspects that should be considered:
  - o facilities, infrastructure, equipment;
  - o number of trainees;
  - o utilization of third-party training organizations and oversight of these organizations;
  - o instructor qualifications and competencies;
- recurrent intervals.

Changes to the assessment plan:

- methods used to develop the assessment plan (e.g. the tools used in the ICAO guidance material);
- assessment type: one-time assessment, continuous assessment, on the job assessment…;
- assessment method or combination of methods: theoretical (multiple-choice quiz (MCQ), written test…), practical (exercise…)…;
- criteria set for success and, in case the trainees fail, policy to answer the situation;
- scheduling of the assessment;
- assessor qualifications and competencies.

3.3. Documents to be provided

In accordance with AIR-OPS regulation, the operator is responsible for verifying the regulatory compliance of the programs it submits to the DSAC for approval. This guide provides elements to facilitate this verification.

The list of documents to be provided by the operator to facilitate program approval when applying for approval of a CBT training is as follows:

- the relevant part of the operations manual (e.g. Part D for CAT operators) with objectives and detailed training program;
- the conformity checklist in Appendix 1, duly completed.

For each function:

- the list of tasks, subtasks, skills and attitudes (e.g. see appendix 9);
- the adapted competency model (e.g. see appendix 6);
- an extract from the tests or assessment techniques.

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The operator will identify initial and recurrent trainings for each function.

DSAC will review these documents for operations requiring approval of dangerous goods training programs.

The finalized documents should include a version number and/or date that allows them to be identified unambiguously. Where applicable, the letter of approval of the training program will include these references.

The implementation of the training and its suitability for the approved program may be verified by the DSAC as part of the programd monitoring actions or triggered in the event of identified deficiencies (stopover audit, audit of the flight/cabin crew training, inspections, etc.).

4. Creation of the assessment and training plans

As part of the establishment of its training plan and in accordance with AIR-OPS regulation, the operator shall:

- identify the different tasks performed by these staff and the required knowledge and skills;
- study the target population to identify the knowledge, skills, and attitudes they already possess and those to be acquired;
- develop a training program based on these elements;
- develop an assessment plan* for these employees;
- define ways of assessing its own training program.

.* To do so, it is possible to design an adapted competency model[1].

4.0.1 Satff concerned

All personnel to be trained and functions must be identified by the operator.

Note: The operator's personnel in charge of shipping AOG must receive training that is adapted to the type of equipment shipped by the operator (see Part 1 Chapter 2.2.2.2 of the Technical Instructions). This program will also be approved by the DSAC.

4.0.2 Method of training development

La The training design methodology can be divided into four main phases, namely:

1. an analysis of training needs through an identification of the competencies to be acquired by staff;
2. the design and production of the training program;
3. the evaluation of agents; and
4. the process for assessing the training program itself.

Thus, the training program will include at least the following elements:

- the identification of the trainee population;
- analysis of functions and tasks;
- the determination of training objectives;
- the development of training (theoretical and/or practical);
- the development of assessments (competency framework);
- the use of a continuous evaluation process to ensure the effectiveness of the training.

The different phases mentioned above are described in the following chapters.

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4.1. Step 1: analysis - training needs

The first phase consists of a training needs analysis.
It is essential to determine the results that the training must achieve and the resources required.
Training specifications are developed during this phase and detail the requirements that will need to be met. The purpose of the training as well as the operator's requirements (operational, technical, regulatory and organizational) can be included.

4.1.1. Identification of the target audience

The operator must study the target audience (future trainees) in order to identify the knowledge, skills and attitudes they possess in order to optimize the training to be implemented (preferred learning style, social and linguistic environment, etc.).

The target audience may be a mix of experienced and newly recruited people, different age groups, people who are comfortable or not with digital tools, etc. All these elements can have an impact on the design of the training, so they must be taken into account.

4.1.2. Definition of the different functions performed by the agents

This is a key element of the whole process because it is important to clearly define the responsibilities and expected results of the employee.

To assist operators in the implementation of their CBT training program, ICAO has defined 10 "typical" functions (well-defined roles):

- Personnel responsible for preparation of dangerous goods consignments;
- Persons responsible for processing or accepting goods presented as general cargo;
- Personnel responsible for processing or accepting dangerous goods consignments;
- Persons responsible for handling cargo in a warehouse, loading and unloading unit load devices and loading and unloading aircraft cargo compartments;
- Persons responsible for accepting passenger and crew baggage, managing aircraft boarding areas and other tasks involving direct passenger contact at an airport;
- Personnel responsible for the planning of aircraft loading;
- Flight crew;
- Flight operations officers and flight dispatchers;
- Cabin crew;
- Personnel responsible for the screening of passengers and crew and their baggage, cargo and mail.

It is important to remember that a function is not a job title but a description of an employee's responsibility within the operation.

Even if this list of functions represents a good basis for work, it is quite possible to define other types of functions (by grouping, splitting them or creating new ones).

To this extent, functions potentially involved in DG transport have been listed in appendix 9.

Once the existing functions within the operations framework have been identified, the continuation consists of defining the tasks associated with them.

4.1.3. Tasks and subtasks list

All tasks can be distributed among seven main tasks as defined by ICAO:
- classifying dangerous goods;
- preparing dangerous goods shipment;
- processing/accepting cargo;
- managing cargo pre-loading;
- accepting passenger and crew baggage;
- transporting cargo/baggage; and

- collecting safety data.

Each of these tasks integrates several subtasks.

E.g. the task "Transporting cargo/baggage" can be divided into three subtasks:
- load aircraft;
- manage dangerous goods pre- and during flight; and
- unload aircraft.

As part of the generic definition of functions related to the transport of dangerous goods (see previous chapter), ICAO has identified for each of them the tasks and subtasks that may be associated with them (see Appendix 4).

Although these lists can be used as they are, the operator has the possibility to adapt them to the realities of its operations.

As the functions, tasks and subtasks have been identified, it is necessary to define inherent skills. This step is important to identify the extent of knowledge, competencies and experience required of the person performing the function.

The list of tasks and subtasks is detailed in Appendix 2.

4.1.4. Skills

Skills[1] are abilities to perform observable, simple actions that will allow the subtask concerned to be carried out successfully.

Listing these actions will also help to establish assessment criteria.

E.g. ability to "Check for damage and/or leakage", "Apply stowage requirements" …

The list of skills is detailed in Appendix 2.

4.1.5. Summary function/tasks/skills

A defined function

Handling cargo

is composed of several tasks

Transporting cargo/bagage

divided in subtasks

Loading aircraft

…

themselves divided into simple actions

- Transport cargo/baggage to aircraft
- Check for damage and/or leakage
- Apply stowage requirements
- ...

- …
- …
- …

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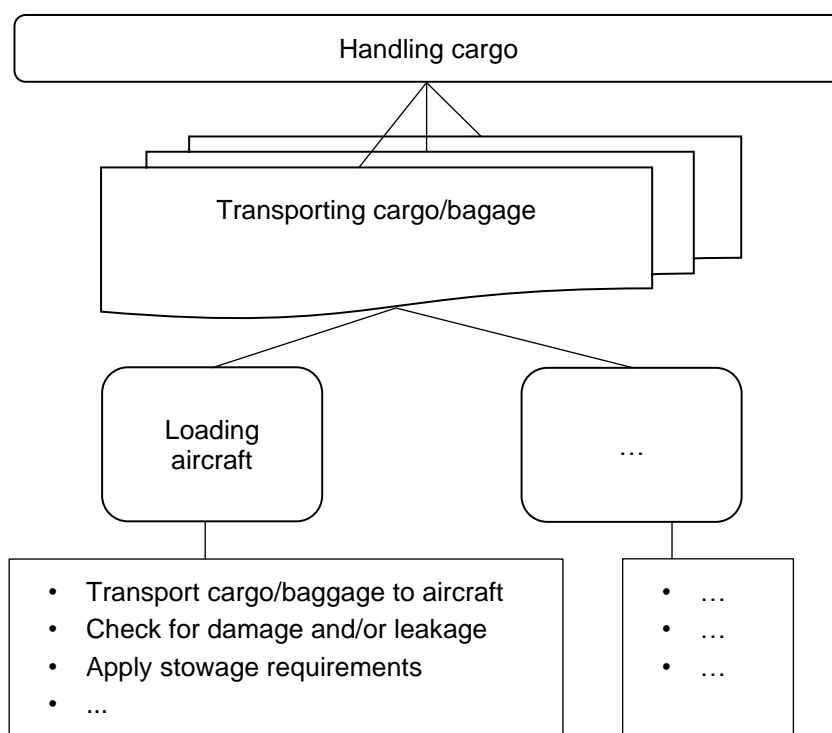
Based on the ICAO framework (and the appendices proposed in this guide, if desired), the operator selects or defines the tasks associated with its operations and the actions that its personnel will perform.

The concepts of tasks, subtasks and skills have been created to facilitate the definition, observation and assessment of the competencies required for an agent.
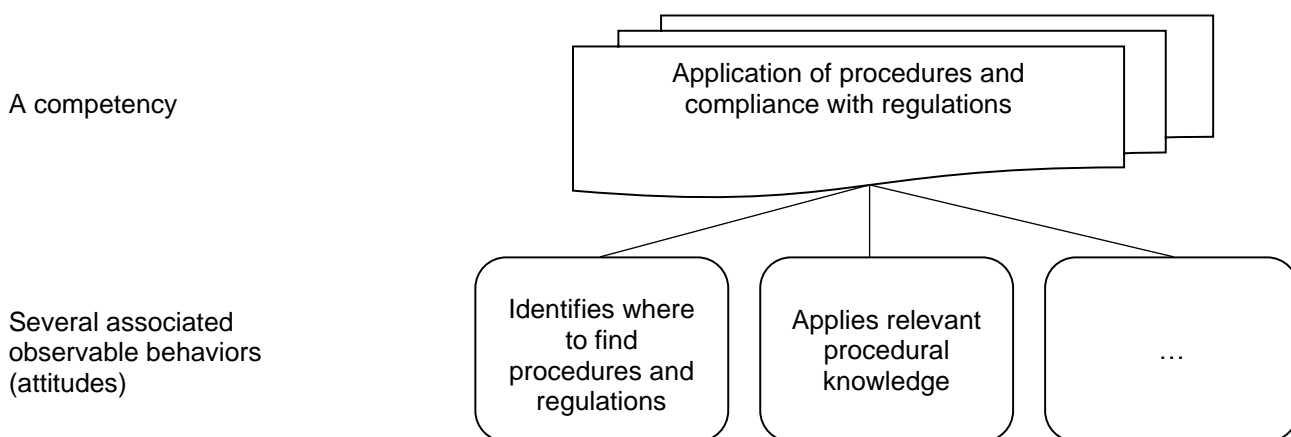
4.1.6. Competencies

Once the functions have been defined, and for the successful implementation of the activities identified, several competencies will be required. It is not only theoretical knowledge but also good practice, behaviors/attitudes to be adopted when carrying out these tasks.

In order to help operators define these behaviors, ICAO has defined 5 main families of competencies, which address a list of observable attitudes.

Competency framework[(1)]

The competency framework is presented as a list of observable behaviors/attitudes associated with competencies. ICAO has predefined a generic framework listing them (see Appendix 5), example:

A competency	Application of procedures and compliance with regulations
Several associated observable behaviors (attitudes)	Identifies where to find procedures and regulations / Applies relevant procedural knowledge / …

A CBT-type program is based on the principle that competencies are transferable.
The successful completion of an activity will depend on the combination of several observable attitudes, the same attitude being useful in the completion of several activities.

When designing the program, a limited number of competencies/attitudes are defined. This is called the adapted competency framework.

The purpose of this framework is to list all the competencies and attitudes required for a given function while taking into account the different organizational, operational and regulatory contexts or requirements.
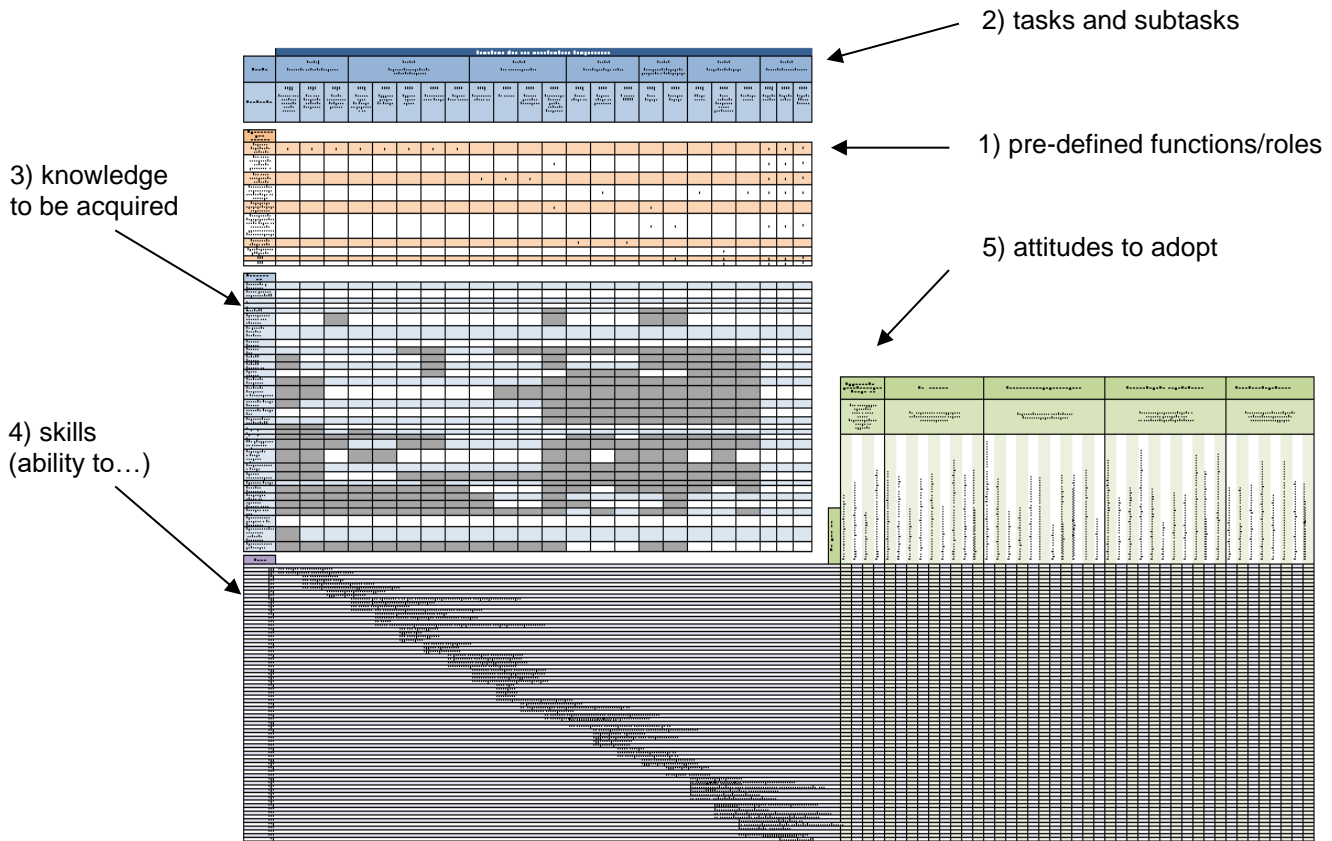
See example in 4.3.4

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4.1.7. Summary matrix

The matrix available in Appendix 10 is a model consolidating all the tables and concepts mentioned above. It helps to understand how all notions interact.

It can be used to determine the competencies to be acquired and maintained by the staff needed to carry out their activities.
The operator will be able to use it by adapting it to the specificities of its operations or build its own matrices.

How to use

3) knowledge to be acquired

4) skills (ability to…)

2) tasks and subtasks

1) pre-defined functions/roles

5) attitudes to adopt

4.1.8. Adapted matrices

From this consolidated matrix, it will be possible to generate adapted matrices for each identified function. (See "Simple example from A to Z" in Appendix 11)

This phase can be broken down into two stages:

1. Select useful concepts and delete those that are not useful (required/non-required). This will help to define the standard profile of each function - also known as the adapted competency framework.
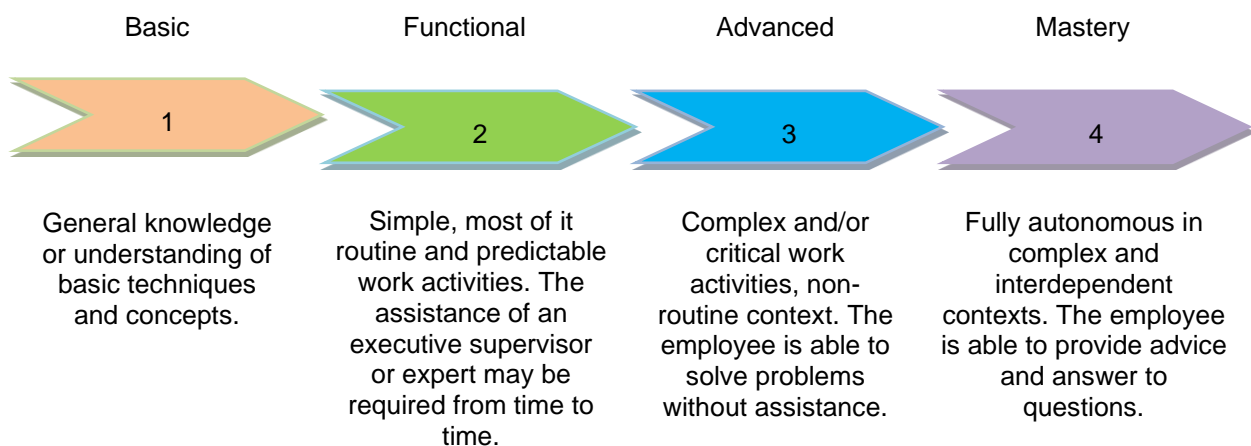

One function
with associated tasks and subtasks

requirements:

Know (knowledge)
Know how to do (skills)
Know how to be (attitudes)

2. For each identified competence (knowledge, skill, attitude), define an expected level of proficiency (from 1 to 4):

Assigning a proficiency level can help determine to which extent knowledge, a skill or an attitude is essential to the success of a task. If used, the concept of competency level can be very useful in determining the main areas on which the operator should focus during training and assessment. In determining the level of competency of the knowledge, skills or attitudes, the operator should take into account the complexity of the task or subtask, its criticality and the autonomy of the employee in performing it.

Basic	Functional	Advanced	Mastery
1	2	3	4
General knowledge or understanding of basic techniques and concepts.	Simple, most of it routine and predictable work activities. The assistance of an executive supervisor or expert may be required from time to time.	Complex and/or critical work activities, non-routine context. The employee is able to solve problems without assistance.	Fully autonomous in complex and interdependent contexts. The employee is able to provide advice and answer to questions.

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The summary matrix, in addition to consolidating and defining the requirements necessary for a function, will identify the competencies that require:

- basic knowledge;
- a functional level;
- an advanced level; or
- a proven mastery (for instruction or supervision functions).

Thanks to this matrix, it is now possible to choose the best training and assessment methods according to the level expected for each competency.

4.1.9. Training needs analysis summary

Training needs analysis

The adapted competency framework defines a function by detailing:
- tasks performed;
- inherent skills;
- necessary theoretical knowledge;
- attitudes to be acquired.

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4.2. Step 2: design methodology – training plan

During his/her training, a trainee must acquire:
- theoretical knowledge; and
- adapted attitudes that will allow him/her to carry out the activities related to his/her tasks.

The rest of the process is intended to:
- establish an adapted competency model(1) that meets the training specification determined above;
- develop an assessment plan to be used to assess the competence of trainees; and
- design a training plan, useful for the development and delivery of the training course.

4.2.1. Training methods

Training will be adapted to the objectives and the audience concerned (e.g. new recruit, experienced agent, age, language, etc.). They will be demonstrated to be effective as part of the ongoing evaluation.

During his/her training, a trainee must no longer only acquire theoretical knowledge but also learn adapted attitudes.
Thus, the use of several teaching methodologies may be relevant.

The different kinds of training formats are listed and defined in the appendix 8.

4.2.2. Minimums training requirements

The Technical Instructions define 3 objectives of DG trainings:
  a) General awareness/familiarization training
     ➔ personnel are trained to be familiar with the general provisions;
  b) Function-specific training
     ➔ personnel are trained to perform competently any function for which they are responsible; and
  c) Safety training
     ➔ personnel are trained on how to recognize the hazards presented by dangerous goods, on the safe handling of dangerous goods, and on emergency response procedures.

A list of functions involved in DG transport and the related minimum training requirements has been defined: see appendix 9.

It lists the different functions potentially involved in DG transport and for each of them:

- objective of DG trainings (a, b, c);
- if a training is mandatory or recommended;
- the type of training format to be at least implemented for initial and for recurrent trainings.

4.2.3. Duration of trainings

As competency-based training programs are no longer based on the categories formerly defined by ICAO, there is no longer any notion of minimum duration in this guide.

Thus, ALTMOC 2014-10-23 - AIROPS - AMOC FR N°06 (REF EASA: 2014-00044) is not applicable within the framework of the CBT.

However, the operator will have to define durations for each training course based on:

- type of training (initial or recurrent);
- content of the courses;
- training format;
- trainees;
- etc.

The implementation of the evaluation of the training program effectiveness may lead to adjustments to the duration and content of the staff training and assessment plan.

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4.2.4. Initial and recurrent trainings

The training program must include the following components:

- initial training; and
- recurrent training.

The recurrent training and the corresponding assessment(s) must be completed within 24 months of the previous training at the latest, in order to ensure that competencies are maintained.

If they were completed within the last three months of the validity period of the previous training and assessment, the validity period runs from the month when they were completed to 24 months after the month the previous training expired..

Last certificate	- 3 months	24 months

It will be possible for an operator to rely on its Safety Management System (SMS) to consider ongoing training and evaluation of its employees.

This can be done through different types of actions: sessions under supervision, inspections/audits, feedback, quality controls, regular updates/information...

Subject to the implementation of these ongoing actions with employees, the provision of recurrent trainings defined by the operator based on feedback and analysis of employee performance could be reduced to the fundamental elements.

Last certificate	- 3 months	24 months

4.2.5. Additional individual trainings

Additional training may be required in the following cases:

as a result of the failure of an evaluation;
- as a result of an agent assignment to new tasks;
- for staff trained at another operator or in another structure;
- following feedback after an incident.

Each additional training will be initiated by an evaluation to assess the agent's actual level in relation to the expectations of the operation. Thus, each additional training will be adapted to the particular agents.

4.2.6. Language

The language in which the training is delivered (orally and in written form) must comply with the requirements of the Operations Manual.

The operator must ensure that the personnel to be trained are able to understand the language.

4.2.7. Instructors / Assessors

In competency-based training, the instructor facilitates the trainee's progress towards competencies acquisition.

Since CBT-based training uses several teaching methodologies, it is quite possible to rely on several instructors provided that the continuity of the trainee's training is ensured and traced out. The latter may also be assisted by supervisors as part of practical training, for example.

Instructors in initial and recurrent training programs for dangerous goods must demonstrate that they are competent or be deemed competent in the pedagogy and function they will teach before providing the training.

Thus, instructors should have a practical knowledge of the competencies taught, by observing or participating in activities linked to the trainings with a recommended frequency of at least two years.

Instructors who provide initial and recurrent training must provide these courses at least every 24 months or, failing that, undergo recurrent training.

Instructors should familiarize themselves with regulatory updates and adapt training materials accordingly whenever regulatory changes affect operations or when required by the ongoing assessment of training through the SMS.

In terms of level of proficiency, it is recommended that the instructor has a "Mastery" level for the competency being taught.

New instructors must acquire a sufficient level to enable them to teach. Ways of acquiring the different needed competencies are proposed in the table below.

In the case of distance/remote learning, the operator must ensure that the trainee is able to contact a DG instructor during the training within a reasonable time.

Reminder:

- the instructor facilitates the trainee's progress towards competencies acquisition;
- personnel in charge of on-the-job training, who are not instructors/assessors, may only meet the DG training requirements in accordance with their responsibilities.

The following table lists the expected requirements for instructors and assessors as well as the different means to demonstrate them.

Theoretical instructors and assessors (class sessions, distance/remote learnings…) must demonstrate at least that they have DG knowledge and pedagogical skills.

Instructors and assessors carrying out their duties in an operational environment (On-Job-Training, simulations, practical workshops…) must demonstrate that they have DG knowledge, pedagogical skills and professional skills.

	Requirements	Demonstration/Assessment
DG knowledge	For new instructors/assessors: DG training at least for the knowledge intended to be trained/assessed.	Valid certificate
	For current instructors: at least one training performed in the last 24 months on the knowledge intended to be trained.	Evidence of conduction of training
	All instructors/assessors shall familiarize themselves with regulatory updates and adapt training/assessing materials accordingly whenever regulatory changes affect operations or when required by the ongoing assessment of training through the SMS.	Will be checked during oversight actions (audits, inspections)

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Professional skills (operations)	Experience in the industry field they intend to train/assess: • airside operations; • DG for DG or Non DG operations; • non DG for Non DG operations. Duration of the experience: • Instructors: at least 2 years recommended (accomplished during the last 5 years before instructing), excepted for <u>current</u> DG instructors not fulfilling these requirements and who can benefit from grandfathers' rights. • Assessors: at least 2 years recommended (accomplished right before assessing),	Provisions of documents such as: • CV; • work certificate delivered by each former DG related operator; • job description (may be included in work certificates); or approval/recognition from the current operator.
Pedagogical skills (instruction)	New instructors must demonstrate pedagogical skills or be trained accordingly. When a training is required, the following approach is a way to acquire the necessary pedagogical skills: 1. attend the course (to be taught) as an observer; 2. prepare a course and co-facilitate it with an experienced instructor; 3. individually teach a complete course and, ideally, lead or establish a complete training program.	Evidence of teaching ability, assessment, certificate. or approval/recognition from the current operator.
	For current instructors: at least one training performed in the last 24 months.	Evidence of conduction of training
Additional requirements	For entities that have SMS implemented, instructors/assessors should undergo appropriate <u>SMS training</u>. see AMC4 ORO.GEN.200(a)(4) and GM1 ORO.GEN.200(a)(4)	Training certificate

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4.3. Step 3: design methodology – assessment plan

For a given type of agent and based on the adapted matrix, the operator is able to determine the expected level of proficiency (knowledge, attitudes) to perform each of the defined tasks.

4.3.1. The plan content

A competency-based training requires assessment of the trainee's progress until the trainee is competent to perform the assigned function.

The evaluation can be carried out using several tools including:

- a written test;
- an online test;
- an oral test;
- an observed practical test;
- a test to assess suitability for employment;
- observation in an operational environment by qualified personnel;
- etc.

The operator may choose to use an assessment method or a combination of methods, provided that the assessment confirms that the trainee has acquired the necessary competencies to perform the assigned tasks.

The operator must establish an assessment program that includes all the details necessary to determine whether the competency has been achieved by the trainee.
Thus, the assessment program may detail for each of the defined steps (intermediate or final):

- standard to be achieved;
- list of evaluations (formative and summative, examinations, oral evaluations, etc.);
- when these evaluations should take place;
- tools/means to be used;
- in the case of scoring, passing marks (see next chapter).

4.3.2. Continuous assessment of personnel

This chapter concerns specifically the assessment before the next recurrent training (between 2 training sessions). The main benefit of it is:

- to identify in the operational environment the progress of the competencies of the employees; and
- to target the specific needs for the next training session.

Continuous improvement is a component of both safety management and competency-based training and assessment.

In order to contribute to the adaptation of training needs, different sources of data can be used. These data can come from the continuous improvement loop of the SMS (safety and compliance data) but also from observation and in situ evaluation of personnel.
The results of the evaluation of the training program can be an interesting source of data, for example:

- occurrence reports;
- internal audits;
- feedbacks from supervisors, assessors, colleagues, (external) auditors, etc;
- performance of the involved employees.

See ICAO Doc 9859 – Safety Management Manual, 4.3.1 and 4.3.2.6.

The continuous assessment of training programs and their suitability for the competency levels of staff is part of the continuous improvement of risk management implemented through the operator's management system when implemented.

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4.3.3. Assessments with scoring

The evaluation principles should be completed according to the methods chosen. In the event that the evaluations used result in a scoring, the criteria defined below constitute an acceptable basis:

Test	% of correct answers		
	x < 60%	60% ≤ x < 80%	x ≥ 80%
Initial training (followed by the 1st evaluation)	Does not validate the training Many pedagogical objectives are not achieved. Action: take the training again and pass a new evaluation different from the first..	Does not validate the training Some pedagogical objectives require reinforcement. Action: take additional training and pass a new evaluation different from the first.	Validate the training
Recurrent training (followed by the 1st evaluation)	Does not validate training as soon as the results are known Many pedagogical objectives are not achieved. Action: re-take the recurrent training and pass a new assessment different from the first before the expiry of the current training certificate or undergo initial training if the validity date of the certificate has expired	Does not validate training as soon as the results are known Some pedagogical objectives require reinforcement. Action: complete additional recurrent training and pass a new assessment different from the first before the expiry of the current training certificate or undergo initial training if the validity date of the certificate has expired	Validate the training

4.3.4. How to use adapted matrices

For each function

A summary matrix can be defined. As explained in the previous paragraphs, the latter, in addition to consolidating and defining the requirements necessary for a function, can make it possible to identify the competencies that require:
- basic knowledge;
- a functional level;
- an advanced level; or
- a proven mastery.

For each agent

Il It is possible to implement a customized matrix that integrates the competency levels actually assessed.
This document then allows to have a summary of the agent's real profile and thus to follow its evolution in time.

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4.3.5. Competency model

The competency framework as defined above includes
- the job description, the necessary theoretical knowledge; but also
- the list of activities performed (skills) and the associated observable behaviors (attitudes):

Skills		Application of procedures and compliance with regulations — Identifies and applies appropriate procedures in accordance with published operating instructions and in compliance with applicable regulations			Communication — Communicates through appropriate means in the work environment, in both normal and nonnormal situations								Leadership, teamwork and self-management — Demonstrates effective leadership, teamwork and self-management				Problem solving and decision making — Identifies problem precursors and resolves actual problems using decision-making techniques, in a timely manner			Workload Management — Maintains available workload capacity by prioritizing and distributing tasks using appropriate resources			
	Attitude →	Identifies where to find procedures and regulations	Follows relevant procedures in a timely manner	Complies with applicable regulations	Ensures the recipient is ready and able to receive information	Selects appropriately what, when, how and with whom to communicate	Conveys messages clearly, accurately and concisely	Confirms that the recipient correctly understands important information	Listens actively and demonstrates understanding when receiving information	Asks relevant and effective questions	Completes accurate reports as required by operating procedures	Announces deviations from normal or intended conditions	Admits mistakes and takes responsibility for own performance, detecting and resolving own errors	Carries out instructions when directed and applies effective intervention strategies	Confidently intervenes when important for safety	Self-evaluates the effectiveness of actions	Identifies, assesses and manages risks and threats to safety effectively	When an event conducive to islamic is encountered, recognizes and manages the situation	Exercises self-control in all situations	Monitors, reviews and cross-checks actions conscientiously	Verifies that tasks are completed to the expected outcome	Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks
6.2.1	Detect presence of dangerous goods not permitted in baggage	1	2							1							1				2		**2**
6.2.2	Interpret NOTOC	3		3								2					3			2	2		**3**
6.2.3	Apply procedures in the event of an emergency	3	3											2	2	2					2		**3**
6.2.4	Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency	2			2	2	2	2	2					2						3			**3**
6.2.5	Inform emergency services of the dangerous goods on board in the event of an emergency				2			2												3			**2**
7.1	Report dangerous goods accidents										1	2	2										**2**
7.2	Report dangerous goods incidents										1	2	2										**2**
7.3	Report undeclared/misdeclared DG										1	2											**1**
		3	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**2**	**2**	**2**	

This competency framework forms the basis from which the adapted competency model is obtained.

An adapted competency model is an effective tool for defining satisfactory performance and assessing whether trainees are achieving the desired level of proficiency.

It will include the final competency conditions and standards that must be assessed.

From all these specifications, the operator will be able to define its training plan.

A template for an adapted competency model (as proposed by ICAO) is presented in Appendix 6.

Example:

> Taking the case of flight crews (function):
> As part of their duties, these agents will be required to manage dangerous goods before and during the flight (subtask).
> During this phase, they will be asked to apply the procedures in case of emergency (skill).
> To carry out this activity, several observable behaviors have been defined in our competency framework.
>
> By importing them to the generic adapted competency model as defined by ICAO, we obtain:

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Apply procedures in the event of an emergency

Adapted competency	Description	Performance criteria	
		Observable behaviour	Competency assessment
Application of procedures and compliance with regulations	…	Identifies where to find procedures and regulations	
		Follows relevant procedures in a timely manner	
Leadership, teamwork and self-management	…	Carries out instructions when directed and applies effective intervention strategies when necessary	
		Confidently intervenes when important for safety	
		Self-evaluates the effectiveness of actions	
Problem solving and decision making	…	When an event conducive to startle is encountered, recognizes and manages the situation	
Workload Management	…	Exercises self-control in all situations	
		Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks	

it is now possible to set up criteria that will allow the assessment of agents (adapted competency model):

Apply procedures in the event of an emergency

Adapted competency	Description	Performance criteria	
		Observable behaviour	Competency assessment
Application of procedures and compliance with regulations	…	Identifies where to find procedures and regulations	Subpart "regulations/procedures" Note ≥ 80% — Questions in theoretical test
		Follows relevant procedures in a timely manner	NOTOC analysis + use of Doc 9481
Leadership, teamwork and self-management	…	Carries out instructions when directed and applies effective intervention strategies when necessary	Applies emergency instructions from Doc 9481 — Flight Simulator: Scenario of a fire in a cargo compartment with DG onboard.
		Confidently intervenes when important for safety	
		Self-evaluates the effectiveness of actions	
Problem solving and decision making	…	When an event conducive to startle is encountered, recognizes and manages the situation	NOTOC analysis + use of Doc 9481
Workload Management	…	Exercises self-control in all situations	See last Type Rating assessment
		Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks	

The adapted competency model described below details the observable attitudes related to each identified skill:

A skill

Apply procedures in the event of an emergency

Adapted competency	Description	Performance criteria	
		Observable behaviour	Competency assessment
Application of procedures and compliance with regulations	…	Identifies where to find procedures and regulations	
		Follows relevant procedures in a timely manner	
Leadership, teamwork and self-management	…	Carries out instructions when directed and applies effective intervention strategies when necessary	
		Confidently intervenes when important for safety	
		Self-evaluates the effectiveness of actions	
Problem solving and decision making	…	When an event conducive to startle is encountered, recognizes and manages the situation	
Workload Management	…	Exercises self-control in all situations	
		Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks	

based on several attitudes

In some cases it may be more practical to use a reverse adapted competency model (→ see appendix 11)

The reverse adapted competency model lists the skills for which the same type of behavior is required:

One type of attitude

Application of procedures and compliance with regulations
→*Identifies where to find procedures and regulations*

Skills	Performance criteria	
	Competency assessment	
6.2.1 Detect presence of dangerous goods not permitted in baggage		
6.2.2 Interpret NOTOC		
6.2.3 Apply procedures in the event of an emergency		

useful for several skills

(…)
Workload Management
→*Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks*

Skills	Performance criteria	
	Competency assessment	
6.2.3 Apply procedures in the event of an emergency		

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4.3.6. Design methodology summary

Function

Task performed

Basic theoretical knowledge*
(know)

Skills
(know how to do)

Attitudes*
(know how to be)

Adapted competency framework

Training needs analysis

* + definition of minimum requirements

Criteria/methods for
evaluating the agents

Adapted competency model

Assessment
of agents

Training plan
- Theory
- Practice
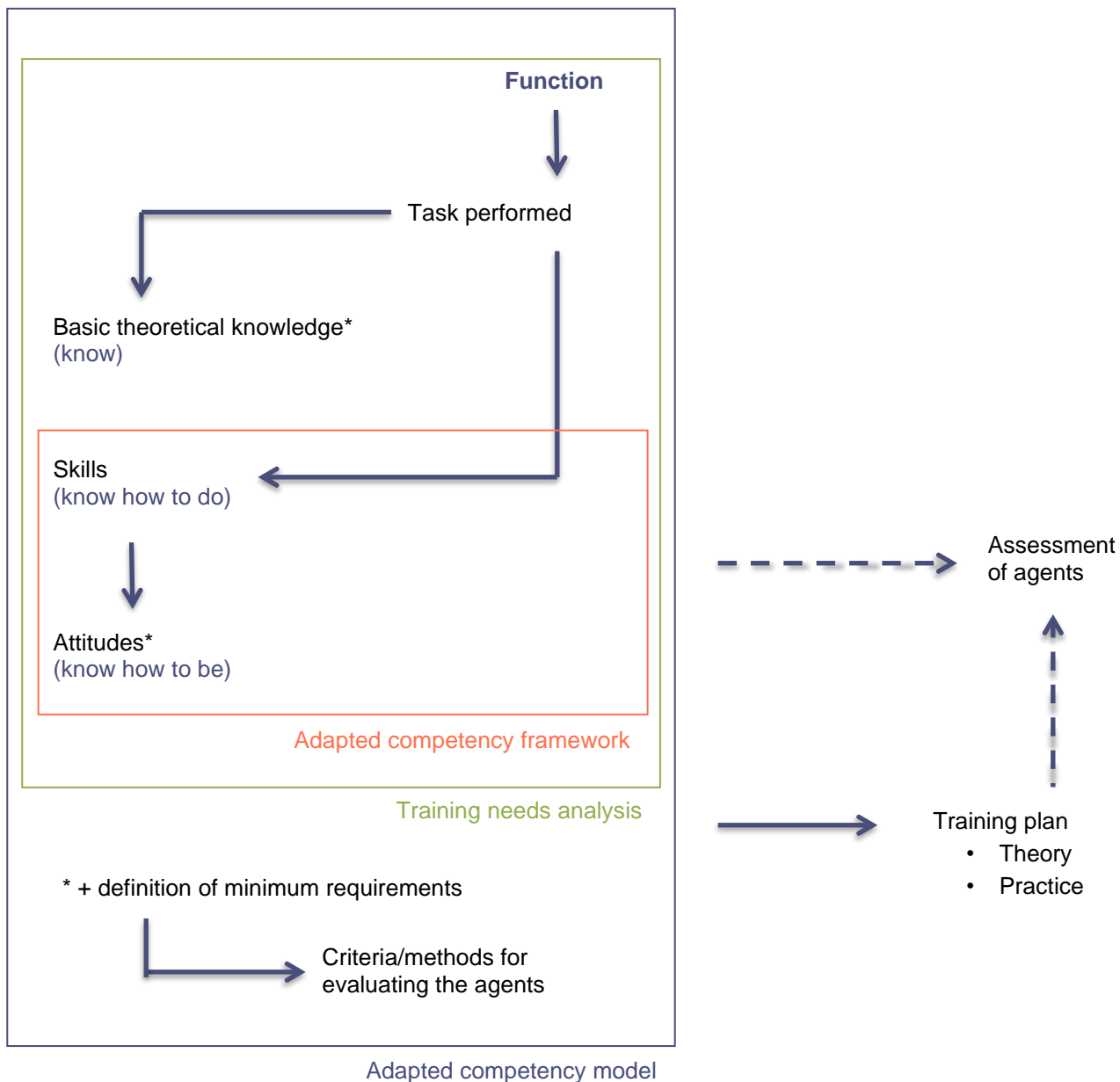
4.3.7. Training and evaluation files

The minimum elements to be contained in the training and evaluation file are listed in the following table.
In addition, it will be relevant to reference the list of main tasks and competences assessed.

As part of the monitoring of employee and program development, it may be considered to associate each competency with the level of competency actually assessed (from 1 to 4 – see chapter 4.1.8).

The training and evaluation file must be kept by the operator for a minimum period of 36 months from the month when the most recent training and evaluation took place and must be provided on request to the staff member or the competent national authority.

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Required elements	Optional elements

• individual's name;
• month of completion of the training/assessment;
• validity date;
• description, copy or reference of individual's functions/task list;
• training program ID and version;
• name and address of the training organization;
• statement that CBT has been successfully accomplished by the assessor.
	• identification of individual, e.g.
	   company registration ID
	   date of birth
	   passport/ID no.;
	• list of competencies (knowledge, skills and attitudes);
	• training content/material;
	• training format/method;
	• instructor name & signature;
	• operator/supervisor/manager names and signatures;
	• assessment score.

Example of a training record including only required elements based on table above:

Full name	
Training program ID and Version	
Name and address of the training organization	
Month of completion of training and assessment	
Validity	
Function(s)	
1.	
2.	
3.	
Task list	
1.	
2.	
3.	
4.	
CBT has successfully been accomplished	
Date	
Assessor name	
Assessor signature	

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Example of a training record including all required and optional elements based on above table:

Full name	
Identification (e.g. D.O.B., Passport/ID No, Comp. No.)	
Training program ID and Version	
Name and address of the training organization	
Month of completion of training and assessment	
Validity	

Function(s)

1.	
2.	
3.	

Task list

1.	
2.	
3.	
4.	

Competencies

Knowledge

	…

Skills

	…

Attitudes

	…

Training content

Training/assessment description	Supplied by	Date	Format/method	Assessment score	Signature

Has CBT been successfully accomplished?	☐ no		☐ yes
Date			
Assessor name			
Assessor signature			

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4.3.8. Training certificates

The list of main tasks and competencies evaluated should be associated with the certificate or the various certificates (in case of multiple training courses).

It may be considered to associate each competency with the level of competency actually assessed (from 1 to 4).

For example, training records (as defined previously) could be used for or attached to the certificate.

4.3.9. Deadlines management

The management of deadlines must be detailed in Operating Manual and describe the following:

- means used to monitor the deadlines;
- procedure for scheduling training courses;
- procedure for the tasks assigned to the agent in the event of the deadline overrun;
- in the event of a break in activity (work interruption, availability, etc.), deadlines when training is necessary and the type of training concerned (reminder, recurrent, initial).

4.3.10. Subcontracting of training

In the event of recourse to an external training organization, the operator shall specify in particular:

- criteria/requirements for selecting a training organization;
- subcontracting procedures (including monitoring).

The operator remains responsible for the training program even if it includes an external service provider, as the provider is considered a subcontractor of the operator. As such, the operator must maintain control of the training program in accordance with ORO.GEN.205.

The operator will also have to ensure that each training developed/implemented by this organization covers all the necessary elements as defined in the training needs analysis.
Operators who choose to send staff to third-party training organization must also establish an evaluation plan to ensure that the competency has been achieved by the trainee.

Thus, if the operator does not provide the training itself, he can still choose to evaluate the trainee at the workplace to ensure that he can competently perform the tasks assigned to him and integrate this process into his evaluation plan.

4.3.11. Subcontractors oversight

The operator will formalize the training requirements in the contract it will sign with each of its subcontractors in accordance with AMC1.ORO.GEN.205.

The operator is responsible for the level of training of subcontractors' personnel. In particular, it must ensure this during the audits of its subcontractors required under ORO.GEN.205.

Regarding stopovers located in a foreign country, training provided to the personnel of theses stopovers must comply with the requirements set by the authority of that country and take into account the specificities/requirements of the operator (e.g. through additional training).

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4.4. Step 4: evaluation of the effectiveness of the training

The operaotr should regularly evaluate the training program.

The aim of this evaluation is to determine to which extent the training meets the purpose it was designed for.

To do so, several tools can be used:

- evaluation forms/feedbacks (from trainees, instructors/assessors, employees, auditors, authorities…);
- synthesis of training results (e.g.: if the average score of a test is relatively low);
- analysis of the evolution of agents' ratings following the recurrent assessments;
- occurrences, accident/incident reports (including number of rejections at cargo acceptance);
- in-situ observations;
- etc.

If the training provided does not meet the identified needs, a reassessment of the training program could lead the operator to amend it. This feedback process should be integrated into the operator's SMS.

Annexes

APPENDIX 1: Compliance checklist

APPENDIX 2: Generic table of examples of tasks

Subtasks and associated skills

APPENDIX 3: Task/knowledge matrix

APPENDIX 4: Adapted task lists for certain well-defined roles   ICAO matrices

APPENDIX 5: Generic competency framework

APPENDIX 6: Template for an adapted competency model

APPENDIX 7: Steps of the ADDIE method

APPENDIX 8: Types and definitions of training formats

APPENDIX 9: List of functions, training needs and training formats

APPENDIX 10: Summary Matrix

APPENDIX 11: Simple example from A to Z - Use of the summary matrix

APPENDIX 12: Example from A to Z with personalization of the competencies

APPENDIX 13: FAQ – Frequently Asked Questions

APPENDIX 14: Glossary

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Appendix 1: Compliance checklist

Reference:

Date:

* Operator's documentation can consist of the operating manual, SMS manual, analysis process, risk analysis, result of analysis, management of change...

	Y/N	Documentary* reference
SCOPE OF THE TRAINING		
Has the operator applied for an approval to transport dangerous goods?		
If so, are the corresponding classes or divisions of dangerous goods specified?		
Are any restrictions defined?		
Are Class 7 (radioactive materials) dangerous goods included?		
TRAINEES AND NEEDS		
Are roles, functions and tasks performed within the operation (own or subcontracted) identified/defined?		
Are inherent competencies required (knowledge, skills and attitudes) identified/defined?		
Are all personnel involved in the operation with dangerous goods identified and tasks defined?		
Does the analysis take into account the knowledge, skills and attitudes/behavior of trainees, preferred learning styles and trainees' social and linguistic environments?		
TRAINING PLAN		
Are composition and structure of the course defined (high level description of the design of the training/course, method used to develop the training program, objectives of the training, sequence of the different parts of the training)?		
Is a syllabus defined (high level description of the subject of the training and which modules the training is composed of)?		
Are modules, training events and their delivery sequence detailed?		
Are course schedules described?		
MEANS USED		
Do the content of the training and assessments cover all the necessary knowledge elements?		
Is the language used for the training specified and adapted to the target audience?		
Are the selected training formats specified (see appendix 7)?		
Are these tools adapted to the target audience (language, comfort with the tools, etc.)?		
In the case of classroom training, is the maximum number of trainees per session specified?		
Are pedagogical tools used (in particular: computer-assisted instruction, specific equipment, models, equipment simulators, etc.) described?		
If staff training includes an in-situ part (on-the-job), are the terms and conditions specified (supervision by a trained agent, for example)?		

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INITIAL AND RECURRENT TRAININGS		
Do the notions of initial training and recurrent training appear?		
Are procedures for recurrent training defined?		
Are training durations specified?		
ASSESSMENTS		
Is the method used to develop the assessment plan described?		
Are different assessment types (one-time assessment, continuous assessment, on the job assessment…) defined?		
Are assessment methods or combination of methods (theoretical (multiple choice quiz (MCQ), written test…), practical (exercise…)…) defined?		
Are criteria set for success and, in case the trainees fail, policy to answer the situation defined?		
Is the scheduling of the assessment defined?		
If a theoretical part is used, is the evaluation method defined?		
If a theoretical part is used, are the modalities related to the elaboration of the tests defined (nature of the tests, number of questions, frequency of the tests updates, etc.)?		
If a theoretical part is used, are the criteria for successful completion of the tests and treatment of failure defined (additional training or new training, a new test (different from the previous one and covering all objectives), etc.)?		
If practical exercises are used, is the evaluation method defined?		
If practical exercises are used, are the criteria for success and treatment of failure defined?		
If a part of the training is used in-situ (on-the-job), is the evaluation method defined (e.g. performance observation)?		
If a part of the training is used in-situ (on-the-job), are the criteria for success and treatment of failure specified?		
TRAINING RECORDS		
Is the format of training records defined ?		
Are the method and duration of archiving defined ?		
CERTIFICATES		
Are the functions and competence elements specified in the certificates?		
Is the validity of the training specified in the certificates?		
QUALIFICATION AND COMPETENCIES OF INSTRUCTORS AND ASSESSORS		
Are pedagogical skills and qualifications required for the instructors and assessors (including: successful training in the functions taught) specified?		
EVALUATION OF THE EFFECTIVENESS OF THE TRAINING		
How does the operator evaluate the effectiveness of the training provided?		
Has the operator provided in its SMS a mechanism for analyzing this assessment, defining and implementing corrective measures and amending the training program?		
SUBCONTRACTING OF TRAINING		
If a training organization is used, are the terms of subcontracting specified? Contract No.		
Are the specificity of the operator's activity and the operator's feedback taken into account? How does the operator ensure this?		

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Has the operator identified the training company as one of its subcontractors? Is this subcontracting contractualized? Is it subject to compliance monitoring?		
If a distance / remote course is used for training and testing, are the procedures (in particular: training/testing at the operator's premises, at home, in the presence of an instructor, with the assistance (e.g. call with an instructor, monitoring the time spent by the trainee, identity of the trainee, etc.)) defined?		
TRAINING OF SUBCONTRACTORS		
Does the obligation to train the personnel of subcontractors who act on behalf of the operator and under his responsibility appear?		

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Appendix 2: Generic table of example of tasks, subtasks and associated skills

1	Classifying dangerous goods		
	1.1	Evaluate substance or article against classification criteria	
		1.1.1	Determine if it is dangerous goods
		1.1.2	Determine if it is forbidden under any circumstances
	1.2	Determine dangerous goods description	
		1.2.1	Determine class or division
		1.2.2	Determine packing group
		1.2.3	Determine proper shipping name and UN number
		1.2.4	Determine if it is forbidden unless approval or exemption is granted
	1.3	Review special provisions	
		1.3.1	Assess if special provision(s) is applicable
		1.3.2	Apply special provision(s)
2	Preparing dangerous goods shipment		
	2.1	Assess packing options including quantity limitations	
		2.1.1	Consider limitations (de minimis quantities, excepted quantities, limited quantities, passenger aircraft, cargo aircraft only, special provisions, dangerous goods in the mail)
		2.1.2	Consider State and operator variations
		2.1.3	Determine if all-packed-in-one can be used
		2.1.4	Select how dangerous goods will be shipped based on limitations and variations
	2.2	Apply packing requirements	
		2.2.1	Consider constraints of packing instructions
		2.2.2	Select appropriate packaging materials (absorbent, cushioning, etc.)
		2.2.3	Assemble package
		2.2.4	Comply with the packaging test report when UN specification packaging is required
	2.3	Apply marks and labels	
		2.3.1	Determine applicable marks
		2.3.2	Apply marks
		2.3.3	Determine applicable labels
		2.3.4	Apply labels
	2.4	Assess use of overpack	
		2.4.1	Determine if overpack can be used
		2.4.2	Apply marks if necessary
		2.4.3	Apply labels if necessary

	2.5		Prepare documentation	
		2.5.1	Complete the dangerous goods transport document	
		2.5.2	Complete other transport documents (e.g. air waybill)	
		2.5.3	Include other required documentation (approvals/exemptions, etc.)	
		2.5.4	Retain copies of documents as required	
3	Processing/accepting cargo			
	3.1		Review documentation	
		3.1.1	Verify dangerous goods transport document	
		3.1.2	Verify other transport documents (e.g. air waybill)	
		3.1.3	Verify other documents (exemptions, approvals, etc.)	
		3.1.4	Verify State/operator variations	
	3.2		Review package(s)	
		3.2.1	Verify marks	
		3.2.2	Verify labels	
		3.2.3	Verify package type	
		3.2.4	Verify package conditions	
		3.2.5	Verify State/operator variations	
	3.3		Complete acceptance procedures	
		3.3.1	Complete acceptance checklist	
		3.3.2	Provide shipment information for load planning	
		3.3.3	Retain documents as required	
	3.4		Process/accept cargo other than dangerous goods	
		3.4.1	Check documentation for indications of undeclared dangerous goods	
		3.4.2	Check packages for indications of undeclared dangerous goods	
4	Managing cargo pre-loading			
	4.1		Plan loading	
		4.1.1	Determine stowage requirements	
		4.1.2	Determine segregation, separation, aircraft/compartment limitations	
	4.2		Prepare load for aircraft	
		4.2.1	Check packages for indications of undeclared dangerous goods	
		4.2.2	Check for damage and/or leakage	
		4.2.3	Apply stowage requirements (e.g. segregation, separation, orientation)	
		4.2.4	Apply ULD tags when applicable	
		4.2.5	Transport cargo to aircraft	
	4.3		Issue NOTOC	
		4.3.1	Enter required information	
		4.3.2	Verify conformance with load plan	
		4.3.3	Transmit to loading personnel	

5	Accepting passenger and crew baggage		
	5.1	Process baggage	
		5.1.1	Identify forbidden dangerous goods
		5.1.2	Apply approval requirements
	5.2	Accept baggage	
		5.2.1	Apply operator requirements
		5.2.2	Verify passenger baggage requirements
		5.2.3	Advise pilot-in-command
6	Transporting cargo/baggage		
	6.1	Load aircraft	
		6.1.1	Transport cargo/baggage to aircraft
		6.1.2	Check packages for indications of undeclared dangerous goods
		6.1.3	Check for damage and/or leakage
		6.1.4	Apply stowage requirements (e.g. segregation, separation, orientation, securing and protecting from damage)
		6.1.5	Verify that NOTOC reflects against aircraft load
		6.1.6	Verify passenger baggage requirements
		6.1.7	Inform pilot-in-command and flight operations officer/flight dispatcher
	6.2	Manage dangerous goods pre- and during flight	
		6.2.1	Detect presence of dangerous goods not permitted in baggage
		6.2.2	Interpret NOTOC
		6.2.3	Apply procedures in the event of an emergency
		6.2.4	Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency
		6.2.5	Inform emergency services of the dangerous goods on board in the event of an emergency
	6.3	Unload aircraft	
		6.3.1	Apply specific unloading considerations
		6.3.2	Check packages for indications of undeclared dangerous goods
		6.3.3	Check for damage and/or leakage
		6.3.4	Transport cargo/baggage to facility/terminal
7	Collecting safety data		
	7.1	Report dangerous goods accidents	
	7.2	Report dangerous goods incidents	
	7.3	Report undeclared/misdeclared dangerous goods	
	7.4	Report dangerous goods occurrences	

Appendix 3: Task/knowledge matrix

This appendix contains a generic task/knowledge matrix table that can be used as a tool to map out the knowledge that is necessary to perform specific tasks. The operator should indicate what knowledge is needed for a particular task within the organization.

To facilitate this process, some cells in the table have been shaded. These shaded cells identify knowledge elements that would normally be irrelevant to the corresponding task and for which a checkmark would not normally be necessary.

Dangerous goods knowledge	1. Classifying dangerous goods			2. Preparing dangerous goods shipment					3. Processing/ accepting cargo				4. Managing cargo pre-loading			5. Accepting passenger and crew baggage		6. Transporting cargo/baggage			7. Collecting safety data			
	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	6.1	6.2	6.3	7.1	7.2	7.3	7.4
Scope and applicability																								
Limitation of dangerous goods on aircraft																								
Definitions																								
Training																								
Dangerous goods security												▓				▓	▓							
General provisions concerning radioactive material			▓									▓				▓	▓							
Reporting of dangerous goods accidents, incidents and other occurrences																								
Classification — General																								
Classification — Class 1						▓	▓		▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				
Classification — Class 2						▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				
Classification — Class 3				▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				
Classification — Class 4				▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				
Classification — Class 5				▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				
Classification — Class 6				▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				
Classification — Class 7					▓	▓	▓		▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				

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Dangerous goods knowledge	1. Classifying dangerous goods			2. Preparing dangerous goods shipment					3. Processing/ accepting cargo				4. Managing cargo pre-loading			5. Accepting passenger and crew baggage		6. Transporting cargo/baggage			7. Collecting safety data			
	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	6.1	6.2	6.3	7.1	7.2	7.3	7.4
Classification — Class 8				▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				
Classification — Class 9				▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				
Dangerous goods list — General	▓						▓		▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				
Dangerous goods list — Arrangement	▓						▓		▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				
Special provisions							▓						▓	▓	▓		▓	▓	▓	▓				
Dangerous goods in limited quantities	▓	▓											▓	▓	▓	▓	▓	▓	▓	▓				
Dangerous goods packed in excepted quantities	▓	▓								▓	▓		▓	▓	▓	▓	▓	▓	▓	▓				
Packing Instructions — General	▓												▓	▓	▓	▓	▓	▓	▓	▓				
Packing Instructions — Class 1													▓	▓	▓	▓	▓	▓	▓	▓				
Packing Instructions — Class 2	▓												▓	▓	▓	▓	▓	▓	▓	▓				
Packing Instructions — Class 3	▓		▓										▓	▓	▓	▓	▓	▓	▓	▓				
Packing Instructions — Class 4	▓		▓										▓	▓	▓	▓	▓	▓	▓	▓				
Packing Instructions — Class 5	▓												▓	▓	▓	▓	▓	▓	▓	▓				
Packing Instructions — Class 6	▓												▓	▓	▓	▓	▓	▓	▓	▓				
Packing Instructions — Class 7													▓	▓	▓	▓	▓	▓	▓	▓				
Packing Instructions — Class 8	▓												▓	▓	▓			▓	▓	▓				
Packing Instructions — Class 9	▓												▓	▓	▓	▓	▓	▓	▓	▓				

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Dangerous goods knowledge	Dangerous goods tasks																							
	1. Classifying dangerous goods			2. Preparing dangerous goods shipment					3. Processing/ accepting cargo				4. Managing cargo pre-loading			5. Accepting passenger and crew baggage		6. Transporting cargo/baggage			7. Collecting safety data			
	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	6.1	6.2	6.3	7.1	7.2	7.3	7.4
Requirements for packagings	■	■											■	■	■	■	■	■	■	■				
Packaging performance tests	■	■				■	■	■	■				■	■	■	■	■	■	■	■				
Requirements for the construction and testing of cylinders and closed cryogenic receptacles, aerosol dispensers and small receptacles containing gas (gas cartridges) and fuel cell cartridges containing liquefied flammable gas	■					■							■	■	■	■	■	■	■	■				
Packagings for infectious substances of Category A	■	■	■			■							■	■	■	■	■	■	■	■				
Requirements for the construction, testing and approval of packages for radioactive material and for the approval of such material	■						■						■	■	■	■	■	■	■	■				
Acceptance procedures	■	■	■	■	■	■	■	■		■	■	■	■		■	■		■	■	■				
Storage and loading	■	■	■	■	■	■	■	■	■				■		■			■						
Inspection and decontamination	■	■	■	■	■	■	■	■						■			■							
Provision of information	■	■	■	■	■	■	■	■	■	■	■		■			■			■					
Provisions concerning passengers and crew																								
Provisions to aid recognition of undeclared dangerous goods	■																							
Helicopter operations	■	■	■	■	■	■	■	■	■	■	■	■				■	■							

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Appendix 4: Adapted task list for certain well-defined roles

PERSONNEL RESPONSIBLE FOR PREPARATION OF DANGEROUS GOODS CONSIGNMENTS

1 Classifying dangerous goods
    1.1 Evaluate substance or article against classification criteria
        1.1.1 Determine if it is dangerous goods
        1.1.2 Determine if it is forbidden under any circumstances
    1.2 Determine dangerous goods description
        1.2.1 Determine class or division
        1.2.2 Determine packing group
        1.2.3 Determine proper shipping name and UN number
        1.2.4 Determine if it is forbidden unless approval or exemption is granted
    1.3 Review special provisions
        1.3.1 Assess if special provision(s) is applicable
        1.3.2 Apply special provision(s)

2 Preparing dangerous goods shipment
    2.1 Assess packing options including quantity limitations
        2.1.1 Consider limitations (de minimis quantities, excepted quantities, limited quantities, passenger aircraft, cargo aircraft only, special provisions, dangerous goods in the mail)
        2.1.2 Consider State and operator variations
        2.1.3 Determine if all-packed-in-one can be used
        2.1.4 Select how dangerous goods will be shipped based on limitations and variations
    2.2 Apply packing requirements
        2.2.1 Consider constraints of packing instructions
        2.2.2 Select appropriate packaging materials (absorbent, cushioning, etc.)
        2.2.3 Assemble package
        2.2.4 Comply with the packaging test report when UN specification packaging is required
    2.3 Apply marks and labels
        2.3.1 Determine applicable marks
        2.3.2 Apply marks
        2.3.3 Determine applicable labels
        2.3.4 Apply labels
    2.4 Assess use of overpack
        2.4.1 Determine if overpack can be used
        2.4.2 Apply marks if necessary
        2.4.3 Apply labels if necessary
    2.5 Prepare documentation
        2.5.1 Complete the dangerous goods transport document
        2.5.2 Complete other transport documents (e.g. air waybill)
        2.5.3 Include other required documentation (approvals/exemptions, etc.)
        2.5.4 Retain copies of documents as required

7 Collecting safety data
    7.1 Report dangerous goods accidents
    7.2 Report dangerous goods incidents
    7.3 Report undeclared/misdeclared dangerous goods
    7.4 Report dangerous goods occurrences

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PERSONS RESPONSIBLE FOR PROCESSING OR ACCEPTING GOODS PRESENTED AS GENERAL CARGO

3 Processing/accepting cargo
    3.4 Process/accept cargo other than dangerous goods
        3.4.1 Check documentation for indications of undeclared dangerous goods
        3.4.2 Check packages for indications of undeclared dangerous goods

7 Collecting safety data
    7.1 Report dangerous goods accidents
    7.2 Report dangerous goods incidents
    7.3 Report undeclared/misdeclared dangerous goods
    7.4 Report dangerous goods occurrences

PERSONNEL RESPONSIBLE FOR PROCESSING OR ACCEPTING DANGEROUS GOODS CONSIGNMENTS

3 Processing/accepting cargo
    3.1 Review documentation
        3.1.1 Verify air waybill
        3.1.2 Verify dangerous goods transport document
        3.1.3 Verify other documents (exemptions, approvals, etc.)
        3.1.4 Verify State/operator variations
    3.2 Review package(s)
        3.2.1 Verify marks
        3.2.2 Verify labels
        3.2.3 Verify package type
        3.2.4 Verify package conditions
        3.2.5 Verify State/operator variations
    3.3 Complete acceptance procedures
        3.3.1 Complete acceptance checklist
        3.3.2 Provide shipment information for load planning
        3.3.3 Retain documents as required

7 Collecting safety data
    7.1 Report dangerous goods accidents
    7.2 Report dangerous goods incidents
    7.3 Report undeclared/misdeclared dangerous goods
    7.4 Report dangerous goods occurrences

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PERSONS RESPONSIBLE FOR HANDLING CARGO IN A WAREHOUSE, LOADING AND UNLOADING UNIT LOAD DEVICES AND LOADING AND UNLOADING AIRCRAFT CARGO COMPARTMENTS

4 Managing cargo pre-loading
      4.2 Prepare load for aircraft
            4.2.1 Check packages for indications of undeclared dangerous goods
            4.2.2 Check for damage and/or leakage
            4.2.3 Apply stowage requirements (e.g. segregation, separation, orientation)
            4.2.4 Apply ULD tags when applicable
            4.2.5 Transport cargo to aircraft

6 Transporting cargo/baggage
      6.1 Load aircraft
            6.1.1 Transport cargo/baggage to aircraft
            6.1.2 Check packages for indications of undeclared dangerous goods
            6.1.3 Check for damage and/or leakage
            6.1.4 Apply stowage requirements (e.g. segregation, separation, orientation, securing and protecting from damage)
            6.1.5 Verify that NOTOC reflects against aircraft load
            6.1.6 Verify passenger baggage requirements
            6.1.7 Inform pilot-in-command and flight operations officer/flight dispatcher
      6.3 Unload aircraft
            6.3.1 Apply specific unloading considerations
            6.3.2 Check packages for indications of undeclared dangerous goods
            6.3.3 Check for damage and/or leakage
            6.3.4 Transport cargo/baggage to facility/terminal

7 Collecting safety data
      7.1 Report dangerous goods accidents
      7.2 Report dangerous goods incidents
      7.3 Report undeclared/misdeclared dangerous goods
      7.4 Report dangerous goods occurrences

PERSONS RESPONSIBLE FOR ACCEPTING PASSENGER AND CREW BAGGAGE, MANAGING AIRCRAFT BOARDING AREAS AND OTHER TASKS INVOLVING DIRECT PASSENGER CONTACT AT AN AIRPORT

5 Accepting passenger and crew baggage
      5.1 Process baggage
            5.1.1 Identify forbidden dangerous goods
            5.1.2 Apply approval requirements
      5.2 Accept baggage
            5.2.1 Apply operator requirements
            5.2.2 Verify passenger baggage requirements
            5.2.3 Advise pilot-in-command

7 Collecting safety data
      7.1 Report dangerous goods accidents
      7.2 Report dangerous goods incidents
      7.3 Report undeclared/misdeclared dangerous goods
      7.4 Report dangerous goods occurrences

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PERSONNEL RESPONSIBLE FOR THE PLANNING OF AIRCRAFT LOADING

4 Managing cargo pre-loading
    4.1 Plan loading
            4.1.1 Determine stowage requirements
            4.1.2 Determine segregation, separation, aircraft/compartment limitations
    4.3 Issue NOTOC
            4.3.1 Enter required information
            4.3.2 Verify conformance with load plan
            4.3.3 Transmit to loading personnel

FLIGHT CREW

6 Transporting cargo/baggage
    6.2 Manage dangerous goods pre- and during flight
            6.2.1 Detect presence of dangerous goods not permitted in baggage
            6.2.2 Interpret NOTOC
            6.2.3 Apply procedures in the event of an emergency
            6.2.4 Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency
            6.2.5 Inform emergency services of the dangerous goods on board in the event of an emergency

7 Collecting safety data
    7.1 Report dangerous goods accidents
    7.2 Report dangerous goods incidents
    7.3 Report undeclared/misdeclared dangerous goods
    7.4 Report dangerous goods occurrences

FLIGHT OPERATIONS OFFICERS AND FLIGHT DISPATCHERS

6 Transporting cargo/baggage
    6.2 Manage dangerous goods pre- and during flight
            6.2.2 Interpret NOTOC
            6.2.3 Apply procedures in the event of an emergency
            6.2.5 Inform emergency services of the dangerous goods on board in the event of an emergency

CABIN CREW

Accepting passenger and crew baggage
> 5.2 Accept baggage
>> 5.2.1 Apply operator requirements
>> 5.2.2 Verify passenger baggage requirements
>> 5.2.3 Advise pilot-in-command

6 Transporting cargo/baggage
> 6.2 Manage dangerous goods pre- and during flight
>> 6.2.1 Detect presence of dangerous goods not permitted in baggage
>> 6.2.2 Interpret NOTOC
>> 6.2.3 Apply procedures in the event of an emergency
>> 6.2.4 Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency
>> 6.2.5 Inform emergency services of the dangerous goods on board in the event of an emergency

7 Collecting safety data
> 7.1 Report dangerous goods accidents
> 7.2 Report dangerous goods incidents
> 7.3 Report undeclared/misdeclared dangerous goods
> 7.4 Report dangerous goods occurrences

PERSONNEL RESPONSIBLE FOR THE SCREENING OF PASSENGERS AND CREW AND THEIR BAGGAGE, CARGO AND MAIL

3 Processing/accepting cargo
> 3.4 Process/accept cargo other than dangerous goods
>> 3.4.2 Check packages for indications of undeclared dangerous goods

5 Accepting passenger and crew baggage
> 5.1 Process baggage
>> 5.1.1 Identify forbidden dangerous goods

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Appendix 5: Generic competency framework

This table, taken from Doc 10147, lists observable behaviors potentially applicable to all functions concerned with the transport of dangerous goods by air.
In addition, a list of observable behaviors applicable to <u>cabin crew</u> is detailed in the annex to chapter 2 of Doc 10002.

Generic competency	Description	Observable behaviour
Application of procedures and compliance with regulations	Identifies and applies appropriate procedures in accordance with published operating instructions and in compliance with applicable regulations	Identifies where to find procedures and regulations
		Follows relevant procedures in a timely manner
		Complies with applicable regulations
		Applies relevant procedural knowledge
Communication	Communicates through appropriate means in the work environment, in both normal and non-normal situations	Ensures the recipient is ready and able to receive information
		Selects appropriately what, when, how and with whom to communicate
		Conveys messages clearly, accurately and concisely
		Confirms that the recipient correctly understands important information
		Listens actively and demonstrates understanding when receiving information
		Asks relevant and effective questions
		Completes accurate reports as required by operating procedures
		Announces deviations from normal or intended conditions
		Correctly uses and interprets non-verbal communication
Leadership, teamwork and self-management	Demonstrates effective leadership, teamwork and self-management	Encourages team participation and open communication
		Demonstrates initiative and provides direction when required
		Engages others in planning
		Considers inputs from others
		Gives and receives feedback constructively
		Addresses and resolves conflicts and disagreements in a constructive manner
		Exercises decisive leadership
		Admits mistakes and takes responsibility for own performance, detecting and resolving own errors
		Carries out instructions when directed and applies effective intervention strategies when necessary
		Confidently intervenes when important for safety
		Self-evaluates the effectiveness of actions
Problem-solving and decision-making	Identifies problem precursors and resolves actual problems using decision-making techniques, in a timely manner	Seeks accurate and adequate information from appropriate sources
		Identifies and verifies what and why things have gone wrong
		Employs proper problem-solving strategies
		Perseveres in working through problems while prioritizing safety
		Uses appropriate and timely decision-making techniques
		Sets priorities appropriately
		Identifies and considers options as appropriate
		Monitors, reviews, and adapts decisions as required
		Identifies, assesses and manages risks and threats to safety effectively
		Adapts when faced with situations where no guidance or procedure exists
		When an event conducive to startle is encountered, recognizes and manages the situation
Workload management	Maintains available workload capacity by prioritizing and distributing tasks using appropriate resources	Exercises self-control in all situations
		Plans, prioritizes and schedules tasks effectively
		Manages time efficiently when carrying out tasks
		Offers and gives assistance, delegates when necessary
		Seeks and accepts assistance, when appropriate
		Monitors, reviews and cross-checks actions conscientiously
		Verifies that tasks are completed to the expected outcome
		Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks

Appendix 6: Template for an adapted competency model

An adapted competency model is an effective tool for defining professional performance and providing means of assessing whether trainees are achieving the desired performance.

The adapted competency model will include the final competency standards and conditions that must be assessed in addition to the competencies and their descriptions.

Adapted competency	Description	Performance criteria		
		Observable behaviour	Competency assessment	
Adapted competency 1	Description 1	OB 1	Final competency standard	Conditions
		OB 2		
		OB n		
Adapted competency 2	Description 2	OB 1	Final competency standard	Conditions
		OB 2		
		OB n		
Adapted competency 3	Description 3	OB 1	Final competency standard	Conditions
		OB 2		
		OB n		

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Appendix 7: Steps of the ADDIE method

The tables below are based on the ADDIE method (Analysis / Design / Development / Implementation / Evaluation)

The components of the training program as presented in Chapter 1, i.e.

- the result of the training needs analysis;
- the training plan;
- the evaluation plan;
- the evaluation measures.

are detailed in steps 1, 2 and 5.

STEP 1	Analysis elements for developing the training plan and the assessment plan	
ANALYSIS*	Training needs	DGs: Class/division
		SPA.DG or not CAT, NCC, SPO Airplane vs helicopter Transport as internal/external loads Freight vs Passengers/Crew/Task specialists
		Population concerned: • Roles, functions, tasks the personnel will perform • Competencies required (knowledge, skills and attitudes)
		Characteristics of the population to be trained: • Training received so far, and/or roles, functions, tasks performed so far • Knowledge, skills and attitudes trainees already have • Ability to cope with training formats (types/methods-techniques) • Ability to understand languages • ...

In case the operator contracts certain activities to external organisations, these organisations acting as subcontractors, a written agreement should exist between the operator and the contracted organisations clearly defining the contracted activities, the applicable requirements, the access process to the policy regarding DGs (approval, …) and provision of information (documentation such as manuals, procedures, …), the level of training required by the operator and the process of notification of incidents/accidents notification between the parties. Requirements for air operators are defined in ORO.GEN.205 of regulation (EU) n° 965/2012. Requirements in case of resorting to subcontracted training organizations must be defined, including instructors and assessors.

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STEP 2	Outputs	

DESIGN METHODOLOGY	Training plan	The training plan must provide a clear understanding of the training process.
		
		The training plan includes:
		a. Composition and structure of the course (High level description of the design of the training/course, training method used, objectives of the training, sequence of the different parts of the training, tools used to develop the training plan e.g. the tools used in the ICAO guidance material);
		b. Syllabus (high level description of the subject of the training and which modules the training is composed of);
		c. Milestones (if required); (intermediate checks during the training to verify the understanding/level of competency)
		d. Modules, training events and their delivery sequence; and detailed content of the modules;
		e. Course schedule (this also includes duration);
		f. Additional aspects that should be considered:
		   i) Facilities, infrastructure, equipment
		   ii) Number of trainees
		   iii) Utilization of third-party training organizations and oversight of these organizations.
		   iv) Instructor qualifications and competencies
		   v) Training records
		g. Recurrent intervals.

	Assessment plan	The assessment plan shall provide a clear understanding of the whole assessment process. The following items should be considered: a. Tools used to develop the assessment plan e.g. the tools used in the ICAO guidance material); b. Assessment type: one-time assessment, continuous assessment, on the job assessment, etc. c. Assessment method or combination of methods: theoretical (multiple choice quizz (MCQ), written test, etc.), practical (exercise, etc.)… d. Criteria set for success and, in case the trainees fail, policy to answer the situation; e. Scheduling of the assessment; f. Assessor qualifications and competencies.

STEP 3	Outputs	
DEVELOPMENT	Training material It includes but is not limited to: documents for students, instructor notes, exercises, briefings, practical exercises, case studies, presentations, video clips, self-test quizzes, examinations, assessments and assessment tools, etc.	

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STEP 4	Outputs	
IMPLEMENTATION	Training conduction	

STEP 5	Outputs	
EVALUATION OF THE EFFECTIVENESS OF THE TRAINING	Evaluation measures and process to improve the training	For instance: a. Feedback from trainees, instructors, employees, auditors, authorities…; b. Number of rejections at cargo acceptance; c. Occurrences, incidents, accidents; d. Assessments; e. SMS; f. Etc.

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Appendix 8: Types and definitions of training formats

Types and definitions (This list includes just a few of the current terminologies and is not complete)	Methods / Techniques (examples)	Definitions
1. TRADITIONAL CLASSROOM LEARNING (theoretical face-to-face training, not necessarily include practical training) Traditional Classroom Learning is where a teacher moderates and regulates the flow of information and knowledge. A traditional classroom involves a standard curriculum delivered by a teacher in-person	Lecture Exercises/case study Workshop/working groups Game based training Role playing Group discussions	Workshop is a period of discussion or practical work on a particular subject in which a group of people share their knowledge or experience.
2. PRACTICAL LEARNING (face-to-face training in an operational and/or simulated environment)	Exercises Workshop/working groups Game based training Role playing Group discussions	Workshop is a period of discussion or practical work on a particular subject in which a group of people share their knowledge or experience.
3. DISTANCE / REMOTE LEARNING (different locations) Distance Education/Learning • The teacher and students are separated by distance (this distance could mean different classrooms in the same school or different locations thousands of miles apart). • The instruction is delivered via print, voice, video, or computer • The communication is interactive in that the student receives support and feedback from the teacher. The feedback may be immediate or delayed. Distance Learning can be roughly divided into synchronous or asynchronous delivery types.	1. E-Learning	E-Learning (short for electronic learning) is an umbrella term that refers to all types of training, education and instruction that occurs on a digital medium, like a computer or mobile phone.
	2. Internet-Based Training	Internet-based Training delivered primarily by WLAN network technologies such as email, newsgroups, and so forth. Although the term is often used synonymously with Web-based training, Internet based training is not necessarily delivered over the World Wide Web, and may not use the HTTP and HTML technologies that make Web-based training possible.
	3. Online Learning	Online learning is often used synonymously with eLearning. It is an umbrella term that includes any type of learning accomplished on a computer and usually over the Internet.

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3.1.Synchronous (real-time interaction) Synchronous means that the teacher and the student interact with each other in "real time." For example, with two-way videoconferences, students interact with "live" video of an instructor. **3.2.Asynchronous (without real-time interaction)** Asynchronous delivery does not take place simultaneously. In this case, the teacher may deliver the instruction via video, computer, or other means, and the students respond at a later time. For example, instruction may be delivered via the Web or videotapes, and the feedback could be sent via e-mail messages.	4. Virtual Classroom	<u>Virtual classroom</u> refers to a digital classroom-learning environment that takes place over the Internet rather than in a physical classroom. It is implemented through software that allows an instructor and students to interact.
	5. Web-Based Training (WBT)	<u>WBT</u> refers to all types of digital instruction in which the learning material is presented via the Internet.
	6. Webinar	<u>Webinar</u> is a seminar or workshop in which the facilitator and participants view the same screen at the same time. Usually the webinar has an audio component that the facilitator controls and functionality that allows participants to chat by entering text, answering polls, raising their hands and asking questions.
4. SELF-LEARNING <u>Self-Learning</u> the study of something by oneself, as through books, records, etc., without direct supervision or attendance in a class	1. E-Learning	<u>E-Learning</u> (short for electronic learning) is an umbrella term that refers to all types of training, education and instruction that occurs on a digital medium, like a computer or mobile phone.
	2. Computer-Based Training (CBT) 3. Computer Based Learning (CBL)	<u>CBT/CBL</u> refers to any type of course that runs on a computer, either on a CD, on a person's hard drive or on the Internet. The distinguishing point is that computer-based training does not involve an instructor or facilitator who is physically present. Now that most computer-based training occurs via the Internet, the term is used infrequently. More terms that are common are online learning, eLearning and Web-based Training (WBT).
	4. Internet-Based Training	<u>Internet-based Training</u> delivered primarily by network technologies such as email, newsgroups, and so forth. Although the term is often used synonymously with Web-based training, Internet based training is not necessarily delivered over the World Wide Web, and may not use the HTTP and HTML

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		technologies that make Web-based training possible.
	5. Online Learning	Online learning is often used synonymously with eLearning. It is an umbrella term that includes any type of learning accomplished on a computer and usually over the Internet.
	6. Web-Based Training (WBT)	Web-based training is an internet browser-based learning, which is also available on local intranet. WBT technologies include streaming audio/video, webinars, forums and instant messaging. WBT has many aliases such as e-learning, Internet-based training (IBT) and distance learning.
5. BLENDED LEARNING (combination of several types 1-4) Blended learning is an instructional approach that includes a combination of online and in-person learning activities. For example, students can complete online self-paced assignments by a certain date and then meet on-site or online for additional learning activities	(All methods apply)	

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Appendix 9: List of functions, training needs and training formats

Functions	Operator approved For DG transport?	Training needs	Type of training
With reference to ICAO Tis Part 1 Chapter 4.1.1, the following list reflects the functions identified potentially involved in DG transport. This list may not be exhaustive. *Note:* *In the logic of Doc. 10147 (ICAO DG CBT guidance), a role can be understood as a former job-title.* *A role can consist of several functions.* *For 2 different entities, the same role/job-title can refer to different functions.* *A function is a set of tasks, sub-tasks and activities.*		1) The objectives of training are defined in accordance with ICAO TIs, Part 1, 4.2 Objective of dangerous goods training: a) **general awareness/familiarization** Personnel are trained to be familiar with the general provisions; b) **function-specific** Personnel are trained to perform competently any function for which they are responsible; and c) **safety** Personnel are trained on how to recognize the hazards presented by dangerous goods, on the safe handling of dangerous goods, and on emergency response procedures. 2) For the functions aimed at ensuring that DG are transported in accordance with the Technical Instructions, a full training (= a+b+c) is mandatory 3) For the same function, training requirements may differ from one entity to the other, depending on its organization. 4) The analysis is based on commercial air transport (CAT) and specialized operations (SPO)	Remark: Following type, definitions and the respective Methods/Techniques are found in appendix 7. Minimum = mandatory type of training, which can be combined with any other type of training **1 - Traditional classroom learning** (theoretical face-to-face training, not necessarily include practical training) **2 - Practical learning** (face-to-face training in an operational and/or simulated environment) **3 - Distance learning** (different locations) 3.1 - Synchronous (real-time interaction) 3.2 - Asynchronous (without real-time interaction) **4 - Self-learning** **5 - Blended learning** (combination of several types 1-4)

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OPERATORS (including entities carrying out some or all of the functions of an operator)					
		Objective of DG training (a b c)	Mandatory (M) Recommended (R)	Minimum type of DG training Initial (*all allowed)	Minimum type of DG training Recurrent (*all allowed)
Management/Organisation personnel					
Nominated persons (as defined in ORO.AOC.135 a)	Y	a	R	*	*
	N	if no DG operational point of contact: a / c	R	*	*
		if DG operational point of contact: n/a	n/a	n/a	n/a
Operational point of contact for DG (including DG coordinators abroad)	Y	a / b / c	M	1 or 3.1	1 or 3
	N	if designated: a / b / c	R	*	*
Personnel in charge of the development of DG training program	Y	a	M	1 or 3	1 or 3
	N	a	M	1 or 3	1 or 3
Personnel in charge of auditing DG topics/supervising	Y	a / b* / c *See remark 3	M	1 or 3.1	1 or 3
	N	Where applicable: a	Where applicable: R	Where applicable: *	Where applicable: *
Personnel in charge of auditing / supervising (not DG related)	Y/N	a	R	*	*
Personnel in charge of collecting safety data	Y	a	R	*	*
	N	a	R	*	*
Preparing COMAT shipment (not subcontracted)	Y	a / b / c	M	(1 or 3.1) and 2	1 or 3
	N	a / b / c	M	(1 or 3.1) and 2	1 or 3

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Organizing DG transport					
Personnel responsible for the planning of aircraft loading (such as loadmasters…)	Y	a / b / c	M	(1 or 3.1) and 2	1 or 3
	N	a / c	M	*	*
Flight operations officers and flight dispatchers	Y	a / b / c	M	(1 or 3.1) and 2	1 or 3
	N	a	M	*	*
Customer service desk					
Personnel in charge of passengers' and/or cargo booking/selling, answering questions, handling claims, etc.	Y/N	a / b	M	1 or 3.1	1 or 3
Accepting passenger and crew baggage (check-in), managing aircraft boarding areas and other tasks involving direct passenger contact at an airport	Y/N	a / b / c	M	1 or 3.1	1 or 3
Accepting goods (cargo)					
Accepting dangerous goods consignments	Y	a / b / c	M	(1 or 3.1) and 2	(1 or 3) and 2
Accepting goods presented as general cargo	N	a / b / c	M	(1 or 3) and 2	(1 or 3) and 2

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Handling					
In a warehouse	Y	a / b / c	M	(1 or 3.1) and 2	(1 or 3) and 2
	N (only G^{al} cargo)	a / b / c	M	*	*
Loading and unloading unit load devices and/or aircraft cargo compartments	Y	a / b / c	M	(1 or 3.1) and 2	(1 or 3) and 2
	N	a / b / c	M	*	*
Managing DG in-flight					
Flight crew	Y	a / b / c	M	(1 or 3.1) and 2	* and 2
	N	a / b / c	M	*	*
Cabin crew	Y/N	a / b / c	M	(1 or 3.1) and 2	(1 or 3) and 2
Personnel with a function related to the cargo	Y	a / b / c	M	(1 or 3.1) and 2	(1 or 3) and 2
	N	a / c	R	*	*
Task specialists (SPO)	Y	a / b / c	M	(1 or 3.1) and 2	(1 or 3) and 2
	N	a	R	*	*
Training and assessment staff					
developing the training and assessment content	/	See dedicated chapter in this guidance.			
Conducting the training (instructors)	/				
Conducting assessment	/				

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Appendix 10: Summary matrix

The summary matrix is available in Excel format by the following link:

https://www.ecologie.gouv.fr/guides-exploitants-daeronefs

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Appendix 11: Simple example from A to Z - Use of the summary matrix

To illustrate the creation of a competency-based training program, this appendix will examine the case of a <u>flight crew</u> on a medium-range aircraft, who is also in charge of loading/unloading passenger hold baggage.

1. Function definition

Start by adapting the summary matrix by removing unnecessary roles:

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2. Tasks, sub-tasks and skills list

In its list of "well-defined roles", ICAO has already defined the tasks and sub-tasks related to the function of flight-crew.

Delete the columns corresponding to the unselected tasks

Now delete the lines concerning skills that are now blank:

Skills	
6.2.1	Detect presence of dangerous goods not permitted in baggage
6.2.2	Interpret NOTOC
6.2.3	Apply procedures in the event of an emergency
6.2.4	Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency
6.2.5	Inform emergency services of the dangerous goods on board in the event of an emergency
7.1	Report dangerous goods accidents
7.2	Report dangerous goods incidents
7.3	Report undeclared/misdeclared DG

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3. Theoretical knowledge required

In order to continue the personalization of this matrix, define the necessary theoretical notions.
The principle is still to keep only the notions that concern exploitation.

By default, ICAO has shaded the cells corresponding to the subtasks for which the corresponding theoretical notions are not necessary.

Knowledges				
Scope and applicability				
Limitation of dangerous goods on aircraft				
Definitions				
Training				
DG security				
General provisions concerning radioactive material				
Reporting of DG accidents, incidents and other occurrences				
Classification - General				
Classification - Classes**				
DG list - General				
DG list - Arrangement				
Special provisions				
DG in limited quantities				
DG in excepted quantities				
Packing Instructions - General				
Packing Instructions - Classes **				
Preparing DG shipment - General				
Markings				
Labelling				
Documentation				
Packaging applicability, nomenclature and codes				
Marking of packagings other than inner packagings				
Requirements for packagings				
Packaging performance tests				
Packaging ...				
Acceptance procedure				
Storage and loading				
Inspection and decontamination				
Provision of information				
Provisions concerning passengers and crew				
Provisions to aid recognition of undeclared DG				
Helicopter operations				

→

Knowledges				
Scope and applicability	X			
Limitation of dangerous goods on aircraft	X			
Definitions	X			
Training	X			
DG security	X			
General provisions concerning radioactive material				
Reporting of DG accidents, incidents and other occurrences	X	X	X	X
Classification - General	X			
Classification - Classes**				
DG list - General				
DG list - Arrangement				
Special provisions				
DG in limited quantities				
DG in excepted quantities				
Packing Instructions - General				
Packing Instructions - Classes **				
Preparing DG shipment - General				
Markings	X			
Labelling	X			
Documentation				
Packaging applicability, nomenclature and codes				
Marking of packagings other than inner packagings				
Requirements for packagings				
Packaging performance tests				
Packaging ...				
Acceptance procedure				
Storage and loading	X	X	X	
Inspection and decontamination	X	X	X	
Provision of information	X	X	X	X
Provisions concerning passengers and crew	X	X	X	X
Provisions to aid recognition of undeclared DG	X			X
Helicopter operations				

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Now delete unnecessary lines:

Left table:

Knowledges				
Scope and applicability	X			
Limitation of dangerous goods on aircraft	X			
Definitions	X			
Training	X			
DG security	X			
General provisions concerning radioactive material				
Reporting of DG accidents, incidents and other occurrences	X	X	X	X
Classification - General	X			
Classification - Classes**				
DG list - General				
DG list - Arrangement				
Special provisions				
DG in limited quantities				
DG in excepted quantities				
Packing Instructions - General				
Packing Instructions - Classes **				
Preparing DG shipment - General				
Markings	X			
Labelling	X			
Documentation				
Packaging applicability, nomenclature and codes				
Marking of packagings other than inner packagings				
Requirements for packagings				
Packaging performance tests				
Packaging				
Acceptance procedure				
Storage and loading	X	X	X	
Inspection and decontamination	X	X	X	
Provision of information	X	X	X	X
Provisions concerning passengers and crew	X	X	X	X
Provisions to aid recognition of undeclared DG	X			X
Helicopter operations				

→

Right table:

Knowledges				
Scope and applicability	X			
Limitation of dangerous goods on aircraft	X			
Definitions	X			
Training	X			
DG security	X			
Reporting of DG accidents, incidents and other occurrences	X	x	x	x
Classification - General	X			
Markings	X			
Labelling	X			
Storage and loading	X	X	X	
Inspection and decontamination	X	X	X	
Provision of information	X	X	X	X
Provisions concerning passengers and crew	X	X	X	X
Provisions to aid recognition of undeclared DG	X			X

4. Attitudes

Last step in customizing the matrix: for each skill, select the required attitudes by checking the corresponding boxes and then removing unnecessary columns.

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5. Consolidated summary matrix, phase 1

At the end, the summary matrix consolidates all the requirements for the defined function:
- One function with associated tasks and subtasks;
- related requirements:
  - Know (knowledge);
  - Know how to do (skills);
  - Know how to be (attitudes).

DANGEROUS GOODS TASK LIST

Tasks	Tâche 6 Transporting cargo/baggage	Tâche 7 Collecting safety data		
Subtasks	ST 6.2 Manage dangerous goods pre- and during flight	ST 7.1 Report dangerous goods accidents	ST 7.2 Report dangerous goods incidents	ST 7.3 Report undeclared/m isdeclared dangerous goods
Specifications for certain well-defined rules				
Flight crew	X	X	X	X

Knowledges

	ST 6.2	ST 7.1	ST 7.2	ST 7.3
Scope and applicability	X			
Limitation of dangerous goods on aircraft	X			
Definitions	X			
Training	X			
DG security	X			
Reporting of DG accidents, incidents and other occurrences	X	X	X	X
Classification - General	X			
Marking	X			
Labelling	X			
Storage and loading	X	X	X	
Inspection and decontamination	X	X	X	
Provision of information	X	X	X	X
Provisions concerning passengers and crew	X	X	X	X
Provisions to aid recognition of undeclared DG	X			X

Skills

6.2.1	Detect presence of dangerous goods not permitted in baggage	
6.2.2	Interpret NOTOC	
6.2.3	Apply procedures in the event of an emergency	
6.2.4	Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency	
6.2.5	Inform emergency services of the dangerous goods on board in the event of an emergency	
7.1	Report dangerous goods accidents	
7.2	Report dangerous goods incidents	
7.3	Report undeclared/misdeclared DG	

We now have a global vision of the requirements for a given function.
The first phase has now been completed.

The second phase of the establishment of our training plan will consist of defining the appropriate training and assessment methods.

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6. Definitions of the levels of proficiency

To do this, use the consolidated matrix and assign a score between 1 and 4 for each competency selected, depending on their degree of importance (levels of proficiency):

Basic	Functional	Advanced	Mastery
1	**2**	**3**	**4**
General knowledge or understanding of basic techniques and concepts	Simple, most of it routine and predictable work activities. The assistance of an executive supervisor or expert may be required from time to time	Complex and/or critical work activities, non-routine context. The employee is able to solve problems without assistance.	Fully autonomous in complex and interdependent contexts. The employee is able to provide advice and answer to questions.

Knowledge:

DANGEROUS GOODS TASK LIST				
Tasks	Tâches 6 Transporting cargo/baggage	Tâches 7 Collecting safety data		
Subtasks	ST 6.2 Manage dangerous goods pre- and during flight	ST 7.1 Report dangerous goods accidents	ST 7.2 Report dangerous goods incidents	ST 7.3 Report undeclared/misdeclared dangerous goods
Specifications for certain well-defined roles				
Flight crew	X	X	X	X

Knowledges					
Scope and applicability	1				1
Limitation of dangerous goods on aircraft	1				1
Definitions	1				1
Training	1				1
DG security	1				1
Reporting of DG accidents, incidents and other occurrences	2	2	2	2	2
Classification - General	2				2
Markings	1				1
Labelling	1				1
Storage and loading	1	2	2		2
Inspection and decontamination	1	2	2		2
Provision of information	3	3	3	2	3
Provisions concerning passengers and crew	2	2	2	2	2
Provisions to aid recognition of undeclared DG	1			2	2

1) For each subtask, definition of the expected level of knowledge.

2) For each knowledge a final level of proficiency depending on the highest expected level.

3) Identification of the knowledge that will need to be boosted and those that only require a basic approach.

Skills and Attitudes:

1) For each skill, definition of the expected level of attitudes.

2) For each attitude a final level of proficiency depending on the highest expected level.

3) For each skill a final level of proficiency depending on the highest expected level.

Skills	Attitudes → Application of procedures and compliance with regulations — Identifies and applies appropriate procedures in accordance with published operating instructions and in compliance with applicable regulations			Communication — Communicates through appropriate means in the work environment, in both normal and nonnormal situations								Leadership, teamwork and self-management — Demonstrates effective leadership, teamwork and self-management				Problem solving and decision making — Identifies problem precursors and resolves actual problems using decision-making techniques, in a timely manner			Workload Management — Maintains available workload capacity by prioritising and distributing tasks using appropriate resources			Final
	Identifies where to find procedures and regulations	Follows relevant procedures in a timely manner	Complies with applicable regulations	Ensures the recipient is ready and able to receive information	Selects appropriately what, when, how and with whom to communicate	Conveys messages clearly, accurately and concisely	Confirms that the recipient correctly understands important information	Listens actively and demonstrates understanding when receiving information	Asks relevant and effective questions	Completes accurate reports as required by operating procedures	Announces deviations from normal or intended conditions	Admits mistakes and takes responsibility for own performance, detecting and resolving own errors	Carries out instructions when directed and applies effective intervention strategies when necessary	Confidently intervenes when important for safety	Self-evaluates the effectiveness of actions	Identifies, assesses and manages risks and threats to safety effectively	When an event conducive to startle is encountered, recognizes and manages the situation	Exercises self-control in all situations	Monitors, reviews and cross-checks actions conscientiously	Verifies that tasks are completed prior to the expected outcome	Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks	
6.2.1 Detect presence of dangerous goods not permitted in baggage	1		2						1							1				2		2
6.2.2 Interpret NOTOC	3		3						2							3			2	2		3
6.2.3 Apply procedures in the event of an emergency	3	3											2	2	2		3	3			2	3
6.2.4 Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency		2		2		2	2	2	2							2			3			3
6.2.5 Inform emergency services of the dangerous goods on board in the event of an emergency						2		2											3			2
7.1 Report dangerous goods accidents										1	2	2										2
7.2 Report dangerous goods incidents										1	2	2										2
7.3 Report undeclared/misdeclared DG										1	1											1
Final	3	3	3	2	2	2	2	2	2	1	2	2	2	2	2	3	3	3	2	2	2	

7. Consolidated summary matrix, phase 2

The summary matrix, in addition to consolidating and defining the requirements necessary for a function, now identifies the competencies that require:

1. basic knowledge;
2. a functional level;
3. an advanced level; or
4. a proven mastery (in case of function involving instruction or supervision).

Consolidated summary matrix showing the DANGEROUS GOODS TASK LIST with Tasks, Subtasks, Specifications for certain well-defined roles, Knowledges, Skills, and Attitudes mapped against competency areas (Application of procedures and compliance with regulations; Communication; Leadership, teamwork and self-management; Problem solving and decision making; Workload Management).

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8. Adapted competency model

The knowledge part of the matrix, distinguishing between major and more basic knowledge, will be used to define the content of the theoretical courses by identifying the points which particular attention should be paid to.

Let's look at the skill/attitude matrix and how it will help us define training and assessment modalities. This phase will be based on the adapted competency model as defined by ICAO (see appendix 5).

We will first fill in the fields corresponding to our matrix:

1) create a table for each skill

Skill n°1

Adapted competency	Description	Performance criteria		
		Observable behavior	Competency assessment	
Adapted competency 1	Description 1	OB1	Final competency standard	Conditions
		OB2	"	"
		OBn	"	"
Adapted competency 2	Description 2	OB1	"	"
		OBn	"	"

2) renseigner le type de comportement et la description inhérente

3) reporter les comportements observables retenus pour cette activité

Dans le cadre de cette étude de cas, nous allons nous concentrer sur les activités

- « Détecter la présence dans les bagages de marchandises dangereuses non autorisées » ;
- « Interpréter la NOTOC » ;
- « Appliquer les procédures en cas d'urgence » ;
- et « Informer le contrôle de la C.A. en cas d'urgence ».

La logique étant exactement la même pour les autres activités.

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Our adapted competency model is "therefore" completed as follows:

Detect presence of dangerous goods not permitted in baggage

Adapted competency	Description	Performance criteria		
		Observable behavior	**Competency assessment**	
Application of procedures and compliance with regulations	…	Identifies where to find procedures and regulations		
		Complies with applicable regulations		
Communication	…	Asks relevant and effective questions		
Problem solving and decision making	…	Identifies, assesses and manages risks and threats to safety effectively		
Workload Management	…	Verifies that tasks are completed to the expected outcome		

Interpret NOTOC

Adapted competency	Description	Performance criteria		
		Observable behavior	**Competency assessment**	
Application of procedures and compliance with regulations	…	Identifies where to find procedures and regulations		
		Complies with applicable regulations		
Communication	…	Asks relevant and effective questions		
Problem solving and decision making	…	Identifies, assesses and manages risks and threats to safety effectively		
Workload Management	…	Monitors, reviews and cross-checks actions conscientiously		
		Verifies that tasks are completed to the expected outcome		

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Apply procedures in the event of an emergency

Adapted competency	Description	Performance criteria		
		Observable behavior	**Competency assessment**	
Application of procedures and compliance with regulations	…	Identifies where to find procedures and regulations		
		Follows relevant procedures in a timely manner		
Leadership, teamwork and self-management	…	Carries out instructions when directed and applies effective intervention strategies when necessary		
		Confidently intervenes when important for safety		
		Self-evaluates the effectiveness of actions		
Problem solving and decision making	…	When an event conducive to startle is encountered, recognizes and manages the situation		
Workload Management	…	Exercises self-control in all situations		
		Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks		

Inform air traffic control in the event of an emergency

Adapted competency	Description	Performance criteria		
		Observable behavior	**Competency assessment**	
Application of procedures and compliance with regulations		Follows relevant procedures in a timely manner		
Communication		Ensures the recipient is ready and able to receive information		
		Selects appropriately what, when, how and with whom to communicate		
		Conveys messages clearly, accurately and concisely		
		Confirms that the recipient correctly understands important information		
		Listens actively and demonstrates understanding when receiving information		
Leadership, teamwork and self-management		Confidently intervenes when important for safety		
Workload Management		Exercises self-control in all situations		

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For each observable behavior, the next step consists of defining the performance criteria (evaluation condition, objective to be achieved) that will define the assessment methods.

SUGGESTION 1:

The final objective of this step is to establish an assessment method to ensure that the employee is capable of performing the activities required of him/her while adopting the appropriate behaviors.

One same skill can be based on several behaviors.
One same behavior may be necessary for the completion of several skills.

	Identi	Folio	Comp	Embar	Selec	Comm	Confir	Lister	Aless	Comp	Anno	Admir reach	Carrie when	Confir	Sele	Identif	Wher	Exerc	Monit	Verifi	Mana effect	
	1		2						1							1				2		**2**
	3		3						2							3			2	2		**3**
	3	3										2	2	2			3	3			2	**3**
ent of an emergency		2		2	2	2	2	2					2				3					**3**
an emergency						2		2									3					**2**
									1	2	2											**2**
									1	2	2											**2**
ared DG									1	1												**1**
	3	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**2**	**2**	**2**	

In order to simplify the assessment process, it is entirely possible to assess a behavior only once (as part of a critical activity) and take it for granted.

In this case, it will suffice to refer to this assessment in the other activities.

In the same logic, an attitude may have already been assessed in a context other than that of dangerous goods. In this case, it will suffice to refer to this assessment.

(For example: for a pilot, it is possible to consider that attitudes related to stress management have already been evaluated during the passing/renewal of the Type Rating)

> *As far as possible, each activity and behavior should be subject to at least one dedicated evaluation.*

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SUGGESTION 2:

Following the previous logics and in order to facilitate the work of analysis and definition of evaluation modalities, it is possible to use an <u>inverted adapted competency model</u>.

In this case, instead of listing the attitudes for each skill, we will list the skills for which the same attitude is required.

Taking the current case study, we would get:

1) Create a table for each attitude

Application of procedures and compliance with regulations

→ Identifies where to find procedures and regulations

Skills	Performance criteria	
	Competency assessment	
6.2.1 Detect presence of dangerous goods not permitted in baggage	Final competency standard 1	Condition 1
6.2.2 Interpret NOTOC	Final competency standard 2	Condition 2
6.2.3 Apply procedures in the event of an emergency	Final competency standard 3	Condition 3

2) Report the skills retained for this attitude.

3) Fill out the assessment conditions…

4) …as well as the associated final competency standards

(…)

Communication

→ Completes accurate reports as required by operating procedures

Skills	Performance criteria	
	Competency assessment	
7.1 Report dangerous goods accidents	Final competency standard 1	Condition 1
7.2 Report dangerous goods incidents	Final competency standard 2	Condition 2
7. Report undeclared/misdeclared DG	Final competency standard 3	Condition 3

(…)

Workload Management

→ Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks

Skills	Performance criteria	
	Competency assessment	
6.2.3 Apply procedures in the event of an emergency	Final competency standard 1	Condition 1

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Let's take the adapted competency model as defined by ICAO.
Below is an example of how it can be filled in:

Detect presence of dangerous goods not permitted in baggage

Adapted competency	Description	Performance criteria		Competency assessment	
		Observable behavior		**Competency assessment**	
Application of procedures and compliance with regulations	…	Identifies where to find procedures and regulations		Subpart "regulations/procedures" Note ≥ 80%	Questions in theoretical test
		Complies with applicable regulations			
Communication	…	Asks relevant and effective questions		Ensure that questions related to the DG have been asked in case of a green tag procedure.	Workshop "simulation"
Problem solving and decision making	…	Identifies, assesses and manages risks and threats to safety effectively			
Workload Management	…	Verifies that tasks are completed to the expected outcome			

Assessment conditions…

… associated final competency standards

Interpret NOTOC

Adapted competency	Description	Performance criteria		Competency assessment	
		Observable behavior		**Competency assessment**	
Application of procedures and compliance with regulations	…	Identifies where to find procedures and regulations		Subpart "regulations/procedures" Note ≥ 80%	Questions in theoretical test
		Complies with applicable regulations		Subpart "NOTOC" Note ≥ 80%	
Communication	…	Asks relevant and effective questions		Inquires about errors in the submitted NOTOC	Workshop "simulation"
Problem solving and decision making	…	Identifies, assesses and manages risks and threats to safety effectively		Subpart "NOTOC" Note ≥ 80%	Questions in theoretical test
Workload Management	…	Monitors, reviews and cross-checks actions conscientiously		Requests and verifies the appropriate corrections	Workshop "simulation"
		Verifies that tasks are completed to the expected outcome			

Apply procedures in the event of an emergency

Adapted competency	Description	Performance criteria		Competency assessment	
		Observable behavior		**Competency assessment**	
Application of procedures and compliance with regulations	…	Identifies where to find procedures and regulations		Subpart "regulations/procedures" Note ≥ 80%	Questions in theoretical test
		Follows relevant procedures in a timely manner		NOTOC analysis + use of Doc 9481	Flight Simulator: Scenario of a fire in a cargo compartment with DG onboard.
Leadership, teamwork and self-management	…	Carries out instructions when directed and applies effective intervention strategies when necessary		Applies emergency instructions from Doc 9481	
		Confidently intervenes when important for safety			
		Self-evaluates the effectiveness of actions			
Problem solving and decision making	…	When an event conducive to startle is encountered, recognizes and manages the situation		NOTOC analysis + use of Doc 9481	
Workload Management	…	Exercises self-control in all situations		See last Type Rating assessment	
		Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks			

Inform air traffic control in the event of an emergency

Adapted competency	Description	Performance criteria		Competency assessment	
		Observable behavior		**Competency assessment**	
Application of procedures and compliance with regulations		Follows relevant procedures in a timely manner		Subpart "regulations/procedures" Note ≥ 80%	Questions in theoretical test
Communication		Ensures the recipient is ready and able to receive information		See last Type Rating assessment	
		Selects appropriately what, when, how and with whom to communicate			
		Conveys messages clearly, accurately and concisely			
		Confirms that the recipient correctly understands important information			
		Listens actively and demonstrates understanding when receiving information			
Leadership, teamwork and self-management		Confidently intervenes when important for safety			
Workload Management		Exercises self-control in all situations			

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9. Training modalities

Finally, the last step is to consolidate the information reported in the adapted competency model.
In doing so, we obtain a summary that will allow us to define the training modalities.

Knowledge test -----------------------------------

Subpart "regulations / procedures"

Plan courses and questions about:

- DG not declared in baggage
- NOTOC
- Emergency procedure
  (including communication with the technical ground operations agent);
- Information to be transmitted to ATC in case of an in-flight emergency.

Criterion: Subpart note ≥ 80%

Subpart "NOTOC"

Plan exercise modification/correction of incorrect NOTOC

Criterion: Subpart note ≥ 80

Practical workshop -----------------------------------

Plan a part with green tag procedure

Criterion: Ensures that DG questions have been answered

Plan to analyse a wrong NOTOC

Criteria:
Inquires about errors in the submitted NOTOC.
Requests and verifies appropriate corrections.
.

Flight simulator -----------------------------------

Plan scenario of a fire in a cargo compartment with DG onboard.

Criteria:
NOTOC analysis + Use of emergency instructions Doc 9481
Applies emergency instructions Doc 9481

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Appendix 12: Example from A to Z with personalization of the competencies

The purpose of this annex is to:

- show the potential level of customization of ICAO tools to establish a training program as close as possible to operational realities; and
- also to be used as a user manual for the CBTool application.

In order to avoid any duplication with the previous appendix, we will only focus on customization possibilities.

In this appendix, we will study the case of a flight crew on a light twin-engine aircraft, operated by two flight crews, without cabin crew. The crew is also in charge of loading/unloading passenger baggage in the cargo compartment.

1. Function definition

Adaptation of the summary matrix by removing unnecessary roles: see Appendix 11.

2. Tasks, sub-tasks and skills lists

Use the list of "well-defined roles" issued by ICAO to adapt it to the specificities of the operation:
- by removing unnecessary notions; and
- by adding/modifying those in accordance to the operation.

<div align="center">FLIGHT CREW</div>

6 Transporting cargo/baggage
    6.1 Load aircraft
        6.1.3 Check for damage and/or leakage
        6.1.4 Apply stowage requirements
    6.2 Manage dangerous goods pre- and during flight
        6.2.1 Detect presence of dangerous goods not permitted in baggage
        6.2.2 Interpret NOTOC
        6.2.3 Apply procedures in the event of an emergency
        6.2.4 Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency
        6.2.5 Inform emergency services of the dangerous goods on board in the event of an emergency
    6.3 Unload aircraft
        6.3.1 Apply specific unloading considerations
        6.3.3 Check for damage and/or leakage
7 Collecting safety data
    7.1 Report dangerous goods accidents and incidents
    ~~7.2 Report dangerous goods incidents~~
    7.2 Report undeclared/misdeclared dangerous goods
    ~~7.4 Report dangerous goods occurrences~~

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Then delete the unnecessary columns (subtasks) as well as the rows corresponding to the now blank skills.

Next step: adapt the list of remaining skills:

Skills	
6.1.1	Transport cargo/baggage to aircraft
6.1.2	Check packages for indications of undeclared dangerous goods
6.1.3	Check for damage and/or leakage
6.1.4	Apply stowage requirements (e.g. segregation, separation, orientation, securing and protecting from damage)
6.1.5	Verify that NOTOC reflects against aircraft load
6.1.6	Verify passenger baggage requirements
6.1.7	Inform pilot-in-command and flight operations officer/flight dispatcher
6.2.1	Detect presence of dangerous goods not permitted in baggage
6.2.2	Interpret NOTOC
6.2.3	Apply procedures in the event of an emergency
6.2.4	Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency
6.2.5	Inform emergency services of the dangerous goods on board in the event of an emergency
6.3.1	Apply specific unloading considerations
6.3.2	Check packages for indications of undeclared dangerous goods
6.3.3	Check for damage and/or leakage
6.3.4	Transport cargo/baggage to facility/terminal
7.1	Report dangerous goods accidents
7.3	Report undeclared/misdeclared DG

according to those initially defined (modifications, deletions):

Skills	
6.1.3	Check for damage and/or leakage
6.1.4	Apply stowage requirements (e.g. segregation, separation, orientation, securing and protecting from damage)
6.2.1	Detect presence of dangerous goods not permitted in baggage
6.2.2	Interpret NOTOC
6.2.3	Apply procedures in the event of an emergency
6.2.4	Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency
6.2.5	Inform emergency services of the dangerous goods on board in the event of an emergency
6.3.1	Apply specific unloading considerations
6.3.3	Check for damage and/or leakage
7.1	Report dangerous goods incidents and accidents
7.2	Report undeclared/misdeclared DG

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3. Required knowledge

Definition of the necessary theoretical concepts (see Appendix 11).

When adapting the matrix, it is quite possible to decide to keep certain inputs initially considered not useful (shaded cells).
For example, in our case, we will decide to make a theoretical training on UN 3373 by modifying and reducing the corresponding line:

Classification - Classes**					

Classification - UN3373	X	X	X		

4. Continuation of the process

The rest of the process related to the creation of the training plan is identical to that described in appendix 10, bearing in mind that it is also possible to customize the list of observable behaviors.

Appendix 13: FAQ – Frequently Asked Questions

Will this DG training guide replace the current one?

As long as the two training possibilities "classic" and "CBT" are offered, the following guides will coexist:
- Dangerous Goods Training Programs;
- Training program CBT DG.

Is the use of the generalized/summary matrix mandatory?

No, the matrix presented in the guide is primarily used to illustrate the CBT logics.
It is quite possible to develop a training program in another way. However, the matrix can be used in this context if an operator wishes so.

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Appendix 14: Glossary

Adapted competency model. A group of competencies with their associated description and performance criteria adapted from an ICAO competency framework that an organization uses to develop competency-based training and assessment for a given role

Attitudes. Attitude is a persistent internal mental state or disposition that influences an individual's choice of personal action toward some object, person or event and that can be learned. Attitudes have affective components, cognitive aspects and behavioral consequences. To demonstrate the "right" attitude, a learner needs to "know how to be" in a given context.

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.

Competency framework. A competency framework is a selected group of competencies for a given aviation discipline. Each competency has an associated description and observable behaviors.

Knowledge. Knowledge is specific information required to enable a learner to develop and apply the skills and attitudes to recall facts, identify concepts, apply rules or principles, solve problems, and think creatively in the context of work. Knowledge is an outcome of the learning process, whether learning occurs in formal or informal settings.

Observable behavior. A single role-related behavior that can be observed and may or may not be measurable.

Performance criteria. Statements used to assess whether the required levels of performance have been achieved for a competency. A performance criterion consists of an observable behavior, condition(s) and a competency standard

Skill. A skill is an ability to perform an activity or action. It is often divided into three types: motor, cognitive and metacognitive skills.

A motor skill is an intentional movement, involving a motor or muscular component, that must be learned and voluntarily produced to proficiently perform a goal-oriented task.

A cognitive skill is any mental skill used in the process of acquiring knowledge, such as reasoning, perception and intuition.

A metacognitive skill relates to the ability of learners to monitor and direct their own learning processes ("thinking about thinking"); for example, planning how to approach a given learning task, monitoring comprehension and evaluating progress toward the completion of a task