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Understanding the regulatory framework of Aeronautical Meteorological Personnel Competency Standards

Khalid Y. MUWEMBE

Principal ANS Inspector – MET

Uganda Civil Aviation Authority

Introduction

Article 28 of Chicago Convention and
Working Arrangements between ICAO and
WMO

WMO No. 49

WMO Competency requirements

WMO No. 49 Vol I Part V

Competency Standards for MET
Forecasters and Observers

Annex 3 Section §2.1.5

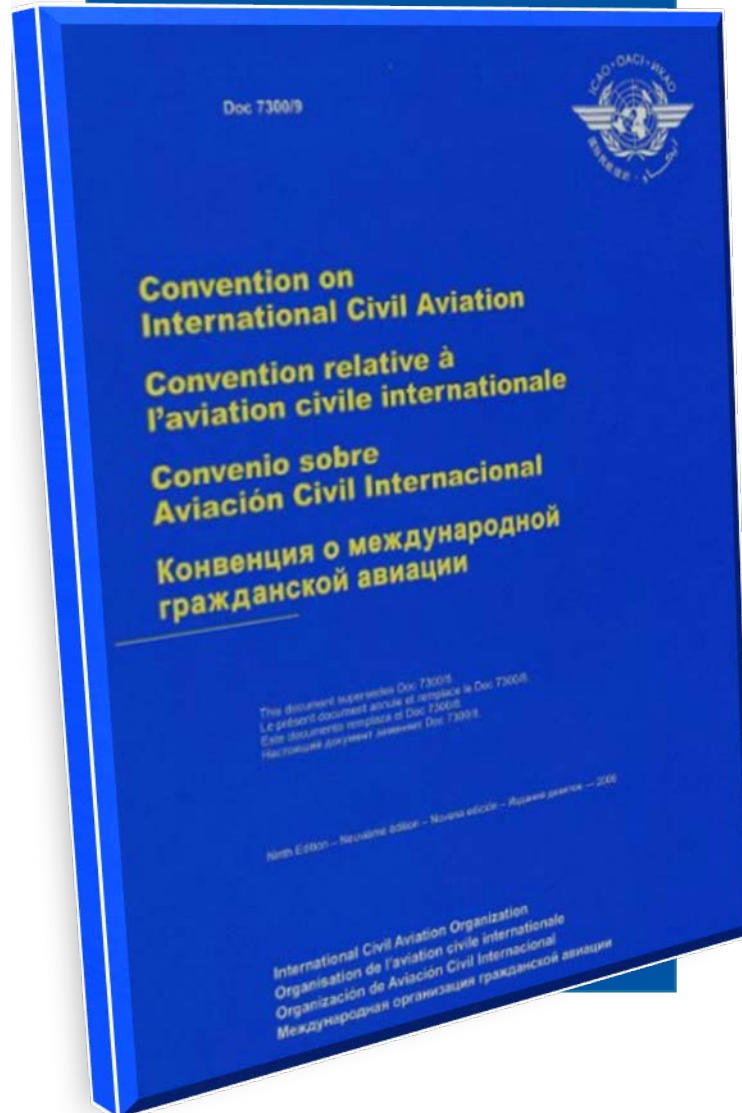
Qualifications Education and training
Requirements

Annex 3 Section §2.2.2

Quality Management System
Requirements

WMO-No.1205

Continuous Competency Process and Benefits
of adopting Competency Framework

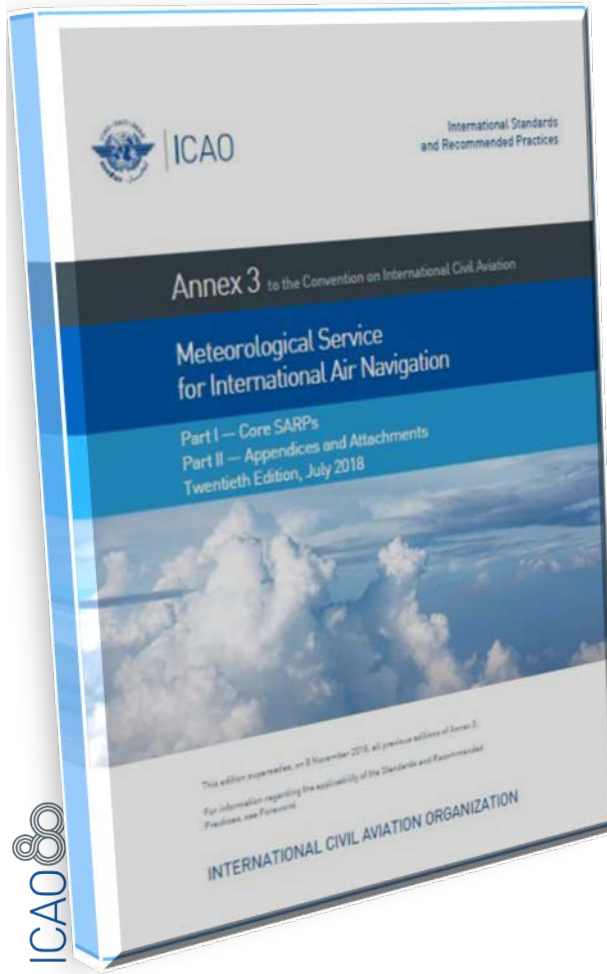


Article 28: Air navigation facilities and standard systems

Each Contracting State undertakes to provide in its territory, airports, essential air navigation services including Aeronautical Meteorology Services to facilitate international air navigation.... and this should be done in accordance with the standards and recommended practices

Annex 3 SARPS on Qualification and Training

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§ 2.1.5 Each Contracting State shall ensure that the designated meteorological authority complies with the requirements of the World Meteorological Organization in respect of qualifications and training of meteorological personnel providing service for international air navigation.

Note, - Requirements concerning the qualifications and training of meteorological personnel in aeronautical meteorology are given in the Technical Regulations (WMO-No. 49), Volume I – General Meteorological Standards and Recommended Practices,

WMO No.49 Part V — Qualifications and Competencies of Personnel Involved in the Provision of Meteorological (Weather and Climate) and Hydrological Services, Part VI – Education and Training of Meteorological Personnel.....



ICAO

DOC 7475/2



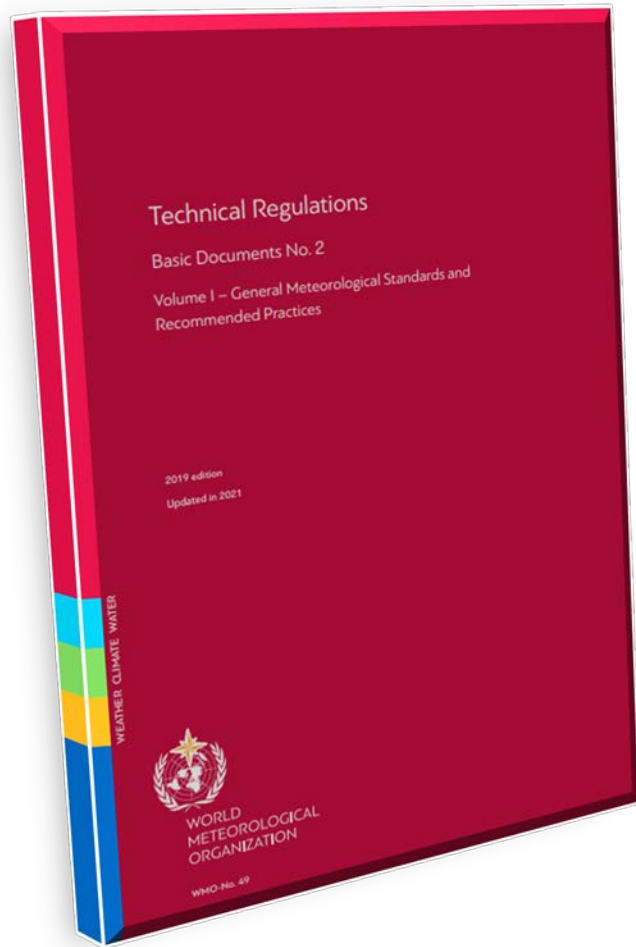
WMO

ICAO is responsible for defining and encouraging the provision of the services which civil aviation requires for safe, regular and efficient operation and for recommending where, in what forms and at what times such services shall be rendered....

WMO is responsible for specifying the technical methods and recommended practices for use in providing required meteorological services, and for encouraging the application of meteorology to human activities including aviation

Doc 7475 §4 Qualification of Meteorological Personnel engaged in the provision of Meteorological Services for International Air Navigation

- WMO will be responsible for specifying the requirements for meteorological knowledge of meteorological personnel engaged in the provision of meteorological service for international air navigation,
- The definition of the requirements for non-meteorological operation knowledge that should be met by such personnel will be undertaken by ICAO and will be transmitted to WMO in the form of recommendations



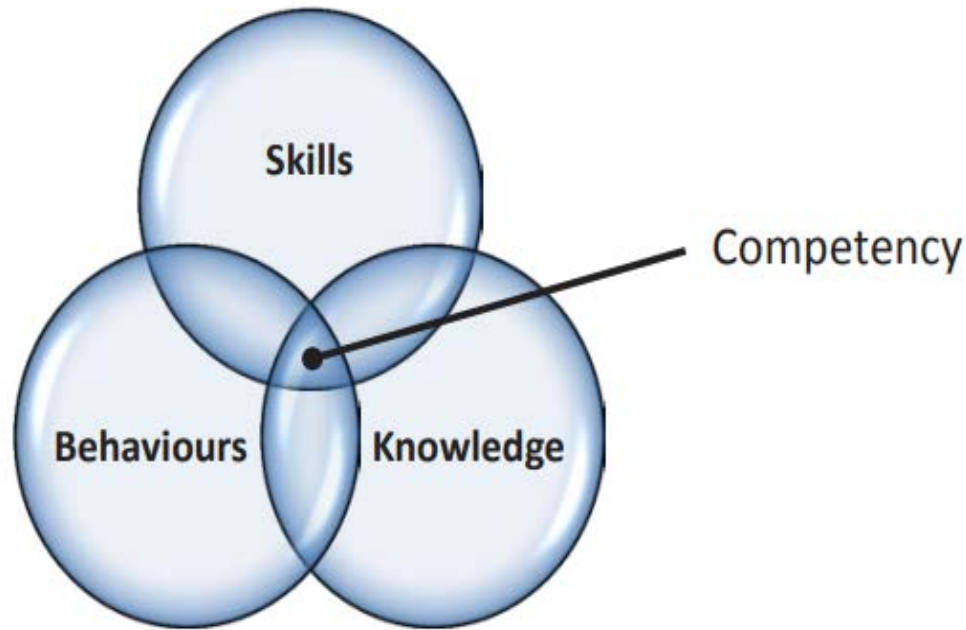
1.2.1.1 (*Part V*) Members States shall ensure that aeronautical meteorological forecasters/observers have successfully completed the Basic Instruction Package for Meteorologists (BIP-MT) with regard to qualifications and training requirements.

.....The contents of the Basic Instruction Packages are given in detail in WMO-No.49 Appendix A

1.1.2 (*Part V*) Member States should keep records of the qualifications of all personnel involved in the provision of meteorological services.....

Understanding Competency

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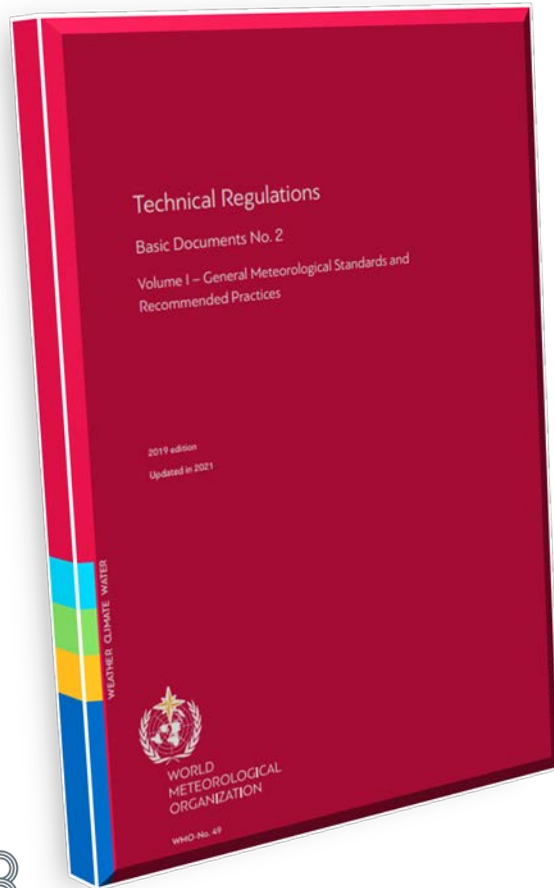


WMO *Technical Regulations*, (No. 49 Vol I), defines competency as the **knowledge, skills and behaviours required** to perform specific tasks in the fullfilment of a job responsibility.

Acquiring competency in a specific area require **ongoing job-specific education and training throughout an individual's career.**

Competency requirements describes **what should be done** and **how to do it** and as such, the requirements should contain detailed technical and institutional aspects.

The competency requirements should **designate an action to be accomplished** by the person or the group.



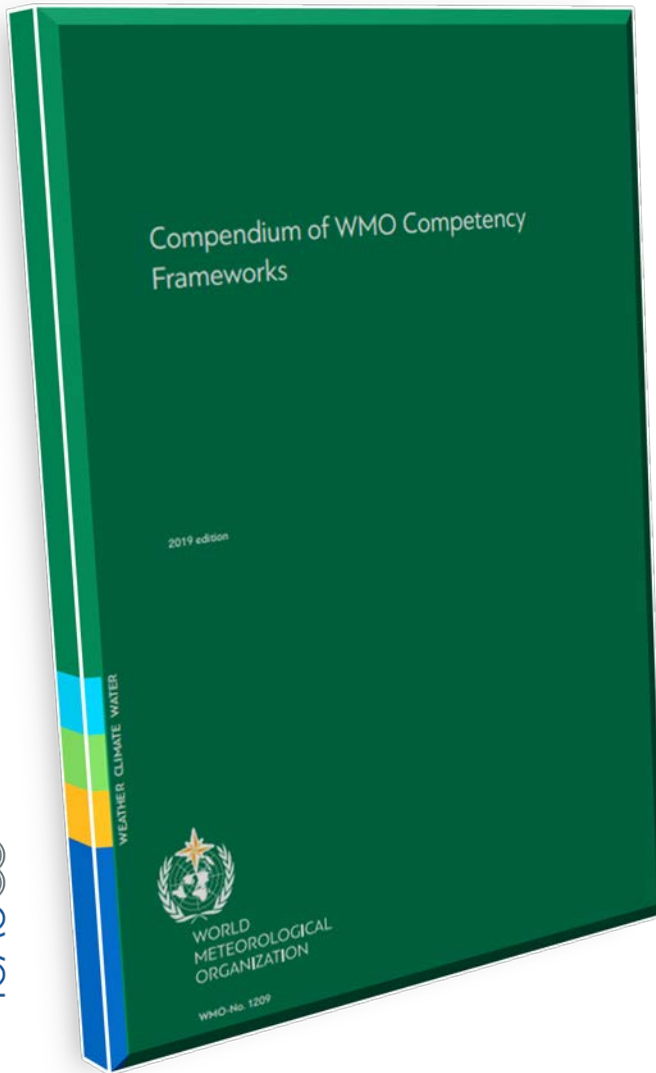
1.1.4 Competency of Member States' personnel should be demonstrated through job performance and assessed through competency assessment procedures, as appropriate.

1.1.5 Member States should establish competency assessment procedures for different categories of operational personnel; competency assessment should be repeated at regular intervals defined by the quality management practice of each State.



1.1.6 Member States should implement WMO competencies for personnel taking due account of their local conditions, regulatory requirements and procedures.

1.1.7 Member States should ensure that their operational personnel undertake continuous professional development to maintain competence.



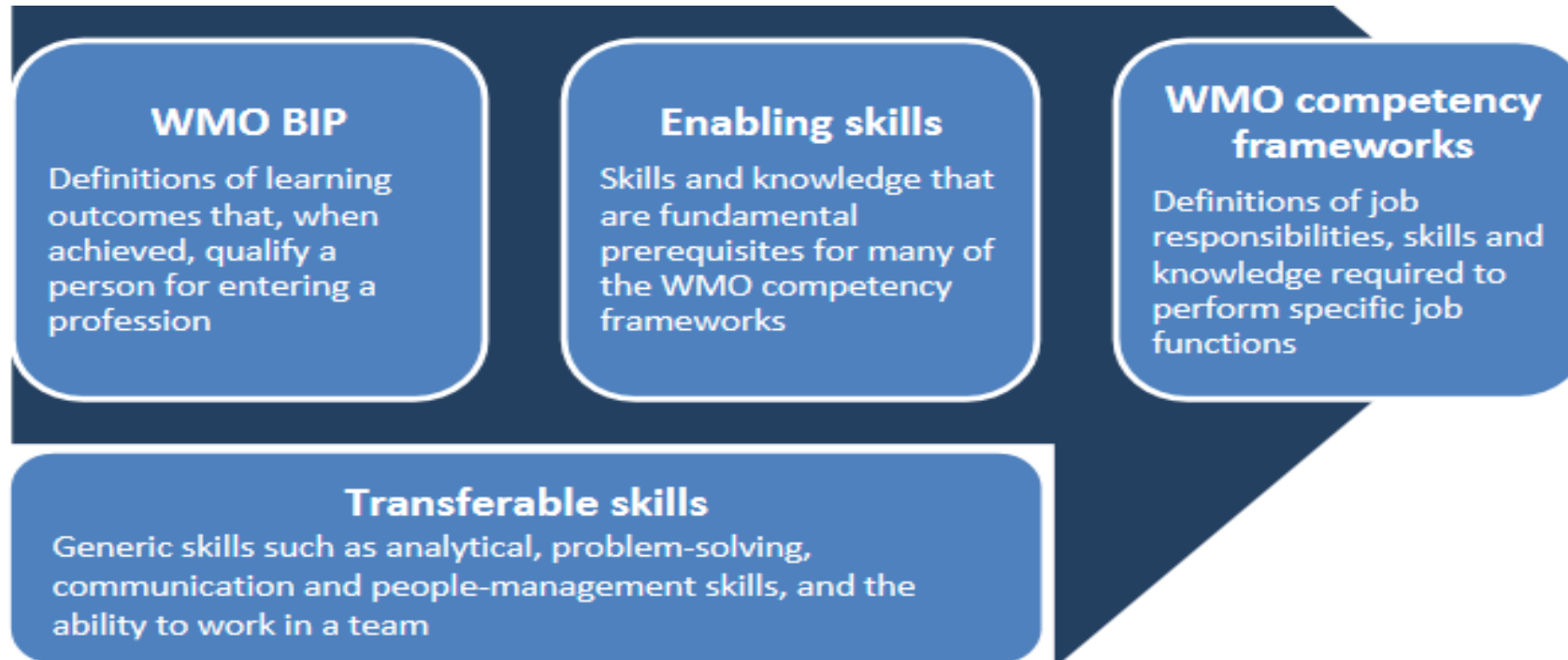
- WMO Competency frameworks established to define the standards and recommended practices on competency requirements.
- WMO No. 1209 describes the critical job skills and knowledge required of MET operational personnel.
- Also provide assessment criteria regarding readiness to perform service delivery tasks, and help training providers offer impactful learning opportunities.
- The first competency requirements implemented were the Aeronautical Meteorological Forecaster competency requirements with effect from 1 December 2013.

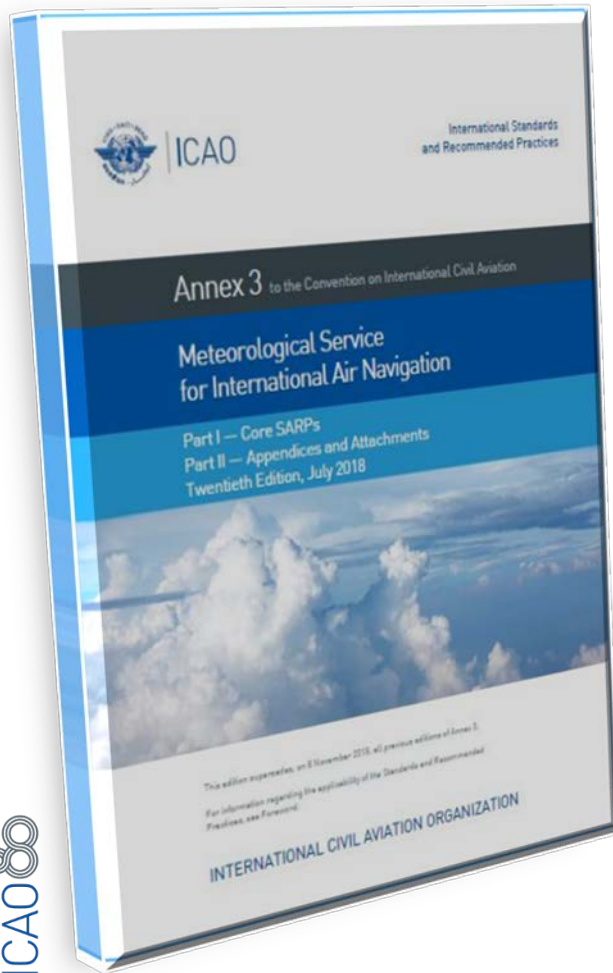
Types of competencies and their relationship

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- i) **Core knowledge** gathered through formal and continuing education
- ii) **Transferable skills** like communication, teamwork, creativity and leadership
- iii) **Enabling/technical skills** like background knowledge and techniques required for the task.

- **The relationship between core qualifications, technical skills, transferable skills is depicted below;**





2.2.2 Each Contracting State shall ensure that the designated meteorological authority establishes and implements a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users listed in 2.1.2.

2.2.3 *Recommendation.*— The quality system established in accordance with 2.2.2 should be in conformity with the International Organization for Standardization (ISO) 9000 series of quality assurance standards and should be certified by an approved organization

ISO 9001:2015, § 7.2 Competence

The Organization shall:

- a) Determine the necessary competence of person(s) doing work under its control that affects the performance and effectiveness of the quality management system;
- b) Ensure that these persons are competent on the basis of appropriate education, training and/or experience;
- c) Where applicable, take actions to acquire the necessary competence and evaluate the effectiveness of the action taken;
- d) Preserve (keep) appropriate documented information as evidence of competence

Top-level Competencies

- Statements that represent the overarching competency to be demonstrated by the individual or group
- These statements are sometimes referred to as units of competency
- Top-level Competencies are included as international regulations in *Technical Regulations* (WMO n° 49), Vol I

Competency description and Performance criteria

- It further elaborates on the Top-level statement by providing more complete information.
- Performance criteria are also called performance components

Knowledge and skills

- The requisite background knowledge and skills for the competency

To be customized according to regional and local variations

AMF Competency standard	AMO Competency standard
<ul style="list-style-type: none">• Locally agreed and documented criteria and thresholds;• The range of weather phenomena;• Risk assessment and estimation of forecast uncertainties;• Types and use of forecast guidance;• Understand designated offices responsible for advice on volcanic ash, tropical cyclones and other phenomena;• Regional and local regulations;• Boundaries of forecast areas (forecast domains);• Extent and scope of quality management system implementation;• Communication language(s) and formats;• Communication technology for forecast and warning transmission, and for weather briefing	<ul style="list-style-type: none">• The range of significant weather phenomena;• Extent of automation of observing and sensing systems;• Thresholds for significant weather changes;• Local climatology;• Extent and scope of quality management system implementation;• Regional regulations;• Communication language(s) and formats;• Available communication technologies.

▪ Member States **shall ensure** that for the area and airspace of responsibility, given the impact of meteorological phenomena and parameters on aviation operations, and in compliance with the aviation user requirements, international regulations and local procedures and priorities, an aeronautical meteorological forecaster is able to:

1. Analyse and monitor continuously the weather situation;
2. Forecasting of aeronautical meteorological phenomena and parameters;
3. Issue warnings of hazardous weather phenomena;
4. Ensure the quality of meteorological information and services;
5. Disseminate meteorological information to internal and external users.

Competency 1: Analyse and monitor continually the weather situation (WMO no.1209 §2.2.1)

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▪ Competency description:

AMF should be able to make observations and forecasts of weather parameters and significant weather phenomena continuously and monitoring these phenomena during hours of operation to determine the need for issuance, cancellation or amendment/update of forecasts, warnings, and alerts according to documented thresholds and regulations.

Competency 1: Analyse and monitor continually the weather situation (WMO no.1209 §2.2.1)

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▪ Performance criteria:

1. Analyse and diagnose the weather situation as required in forecast, warning and alert preparation;
2. Monitor weather parameters and evolving significant weather phenomena, and validate current forecasts, warnings and alerts based on these parameters;
3. Appraise the need for amendments to forecasts and updates of warnings and alerts against documented criteria and thresholds.

▪ Member States **shall ensure** that an aeronautical meteorological observer is able to:

1. Monitor continuously the weather situation;
2. Observe and record aeronautical meteorological phenomena and parameters;
3. Ensure the quality of system performance and meteorological information;
4. Disseminate meteorological information to internal and external users.

▪ Competency description:

Weather phenomena and parameters are continually monitored during hours of operation to identify the significant and evolving weather phenomena that are affecting or will likely affect the area of responsibility (typically the aerodrome and its vicinity).

Competency 1: Analyse and monitor continually the weather situation (WMO n°1209 §2.2.1)

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▪ Performance criteria:

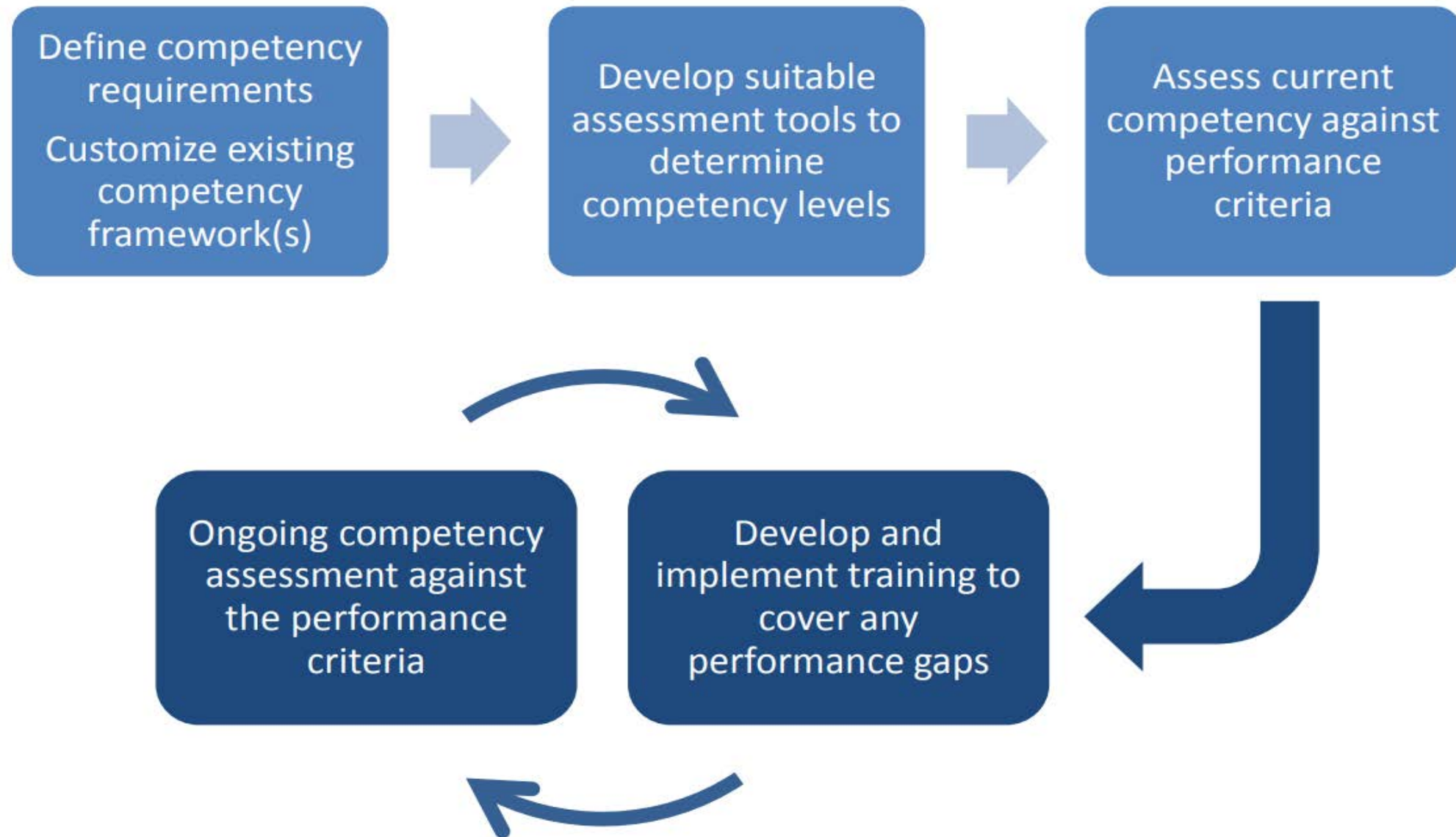
1. Analyse and describe the current local weather conditions.
2. Monitor the evolving weather parameters and any significant changes in the weather phenomena
3. Determine thresholds for significant weather changes observed

Competency Assessment

Job position \Competencies	Overaching Competency	Situational Competency	Regional variations	Required Knowledge/Skills	Technical documentation
Aeronautical Meteorological Forecaster	√	√	√	√	√
Aeronautical Meteorological Observer	√	√	√	√	√

Continuous competency process (WMO-No.1205)

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	Example A	Example B	Example C
Aeronautical meteorological forecaster	Comprehensive assessment of individual staff members, using a range of tools, such as: <ul style="list-style-type: none">– Quizzes and Interviews- Performance assessments– Simulations– Workplace observations– Case studies– Portfolio of forecasts	Verification statistics of forecasting skill, with a performance review against competency criteria	Combination of supervisor’s reports, self-assessment and portfolio of forecasts or warnings
Climate service personnel	Comprehensive assessment covering verification statistics, portfolio of climate products and a workplace observation and performance assessments	Portfolio of climate products and supervisor’s reports	Performance appraisal of personnel against the competency criteria
Observing instrument calibration personnel	Logbook or register of the instruments calibrated, plus practical demonstrations of instrument calibration, and tests of troubleshooting.	Practical demonstrations of an instrument being calibrated	Logbook records of calibrations performed, plus copies of calibration certificates

- Improves the quality-of-service provision.
- Promotes national and international consistency.
- Provides clear expectations by defining standards and measures for individuals and teams.
- Assists AMSP meet their operational objectives
- Provides a tool for evaluation by enabling AMSP perform a gap analysis on competency requirements
- Enables effective, efficient and targeted training and development of resources;
- Assists AMSP with career and succession planning.
- Assists AMSP with capacity development and workforce planning.

- The APIRG during the twenty-fifth meeting, adopted APIRG25 Decision 25/17 on establishment of MET Project 4: **Implementation of Aeronautical Meteorological Personnel Competency Standards in the AFI Region** under its Information and Infrastructure Management Sub-Group (IIMSG).
- States nominated **Team Members** for the Project are from Benin, Equatorial Guinea, Mauritania, Senegal, Togo, Rwanda, Uganda and from an Organisation (ASECNA).
- During the Introductory Project meeting facilitated by the Secretariat, **Uganda** was nominated as the Project-Team Coordinator (PTC).

Thank You



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