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INTERNATIONAL CIVIL AVIATION ORGANIZATION

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Implementing MET Personnel Competency Framework



Implementing the MET Personnel Competency Framework

Uganda CAA, PTC MET 4 Project

Introduction

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

WMO No. 1205

Understanding MET Personnel
Competency requirements

WMO No. 1209

AMP Comptency
Assessment

Annex 3 Section §2.1.5

Qualifications Education and
training Requirements and
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WMO No. 1205

Guidance to States in
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competence process

WMO-No.1205

Continuous Comptency 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



ICAO

DOC 7475/2



WMO

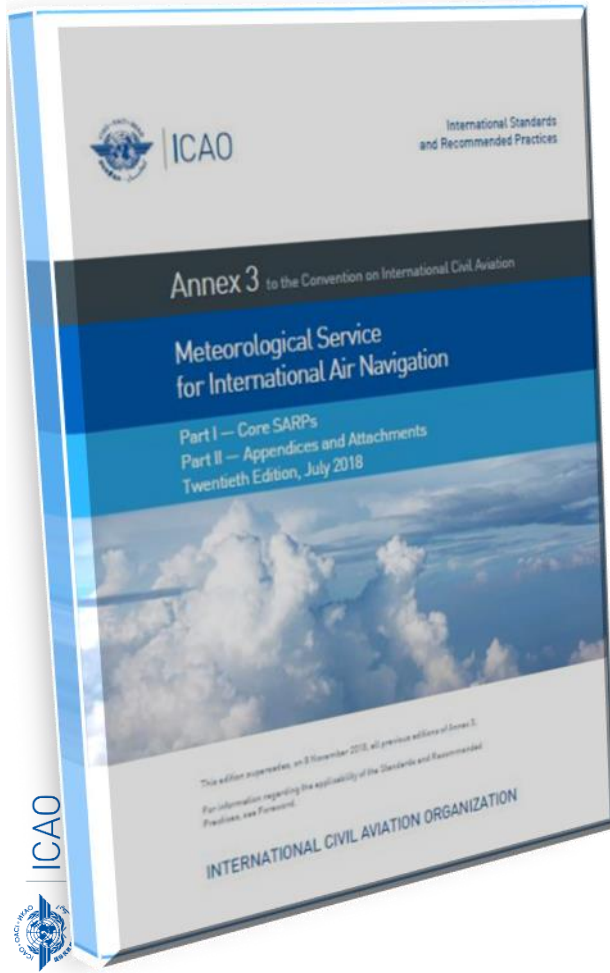
ICAO is responsible for defining and encouraging the provision of the services which civil aviation requires for safe, regular and efficient operation and for recommending where, in what forms and at what times such services shall be rendered....

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

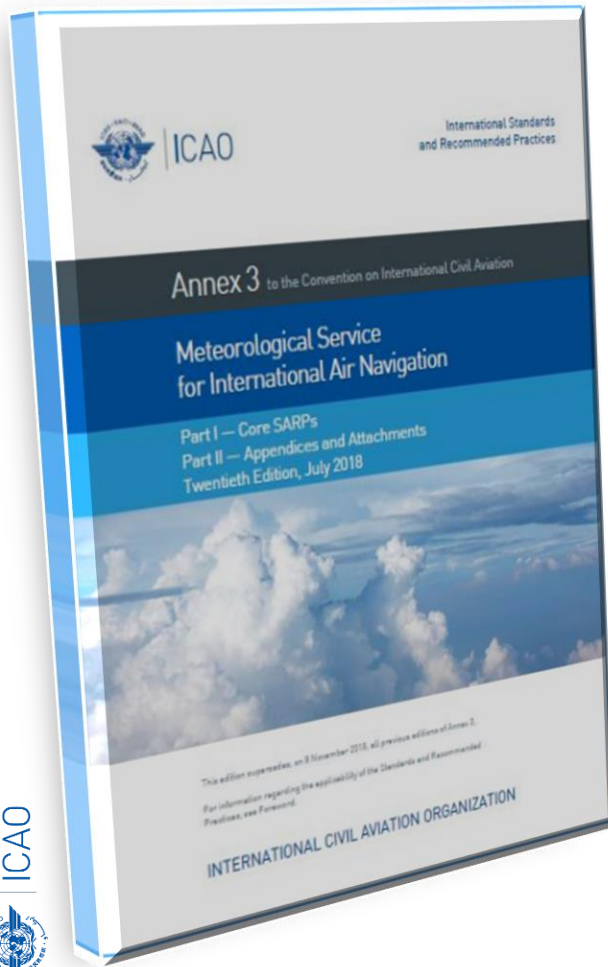
- WMO will be responsible for specifying the requirements for meteorological knowledge of meteorological personnel engaged in the provision of meteorological service for international air navigation,
- The definition of the requirements for non-meteorological operation knowledge that should be met by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

Annex 3 SARPS on Qualification and Training



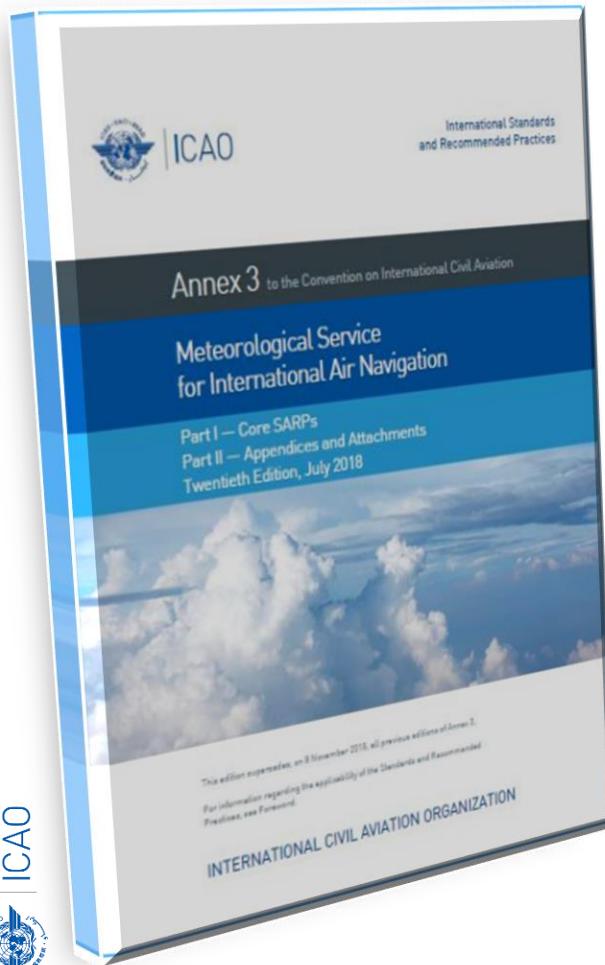
§ 2.1.5 Each Contracting State shall ensure that the designated meteorological authority complies with the requirements of the World Meteorological Organization in respect of qualifications and training of meteorological personnel providing service for international air navigation.

Note, - Requirements concerning the qualifications and training of meteorological personnel in aeronautical meteorology are given in the Basic Instruction Package (BIP) for MET Personnel



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

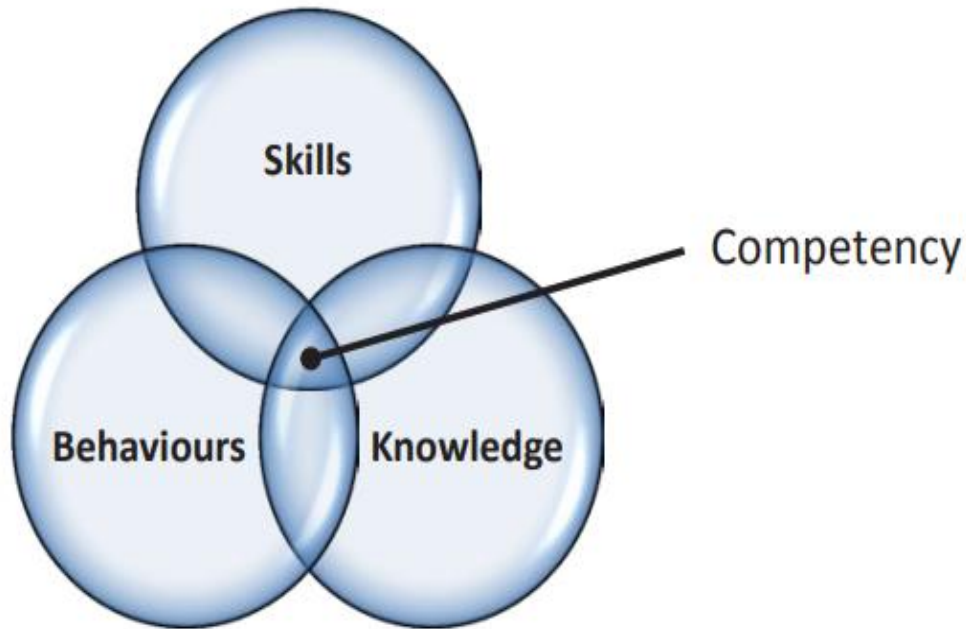


ISO 9001:2015, § 7.2 Personnel Competence

The Organization implementing ISO 9001 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**

- APIRG25 adopted **Decision 25/17** on establishment of **IIM MET Project 4: Implementation of Aeronautical Meteorological Personnel Competency Standards in the AFI Region under the Information and Infrastructure Management Sub-Group (IIMSG).** The main objectives:
 - a) **Complying with the requirements of the World Meteorological Organization (WMO) in respect of qualifications, competencies, education and training of meteorological personnel providing service for international air navigation.**
 - b) **Implementing a competency assessment process for Aeronautical Meteorological Forecasters (AMF) and Aeronautical Meteorological Observers (AMO).**
- Uganda is the Project-Team Coordinator (PTC) and Project Team Members (PTM) nominated by the AFI States are from Benin, Equatorial Guinea, Senegal, Togo, ASECNA, Mauritania, Rwanda, Tanzania and Uganda.



WMO Guidance to competency, (*WMO No. 1205*), defines competency as the **knowledge, skills and behaviours required** to perform specific tasks in the fulfilment of a job responsibility.

Acquiring competency in a specific area will require **ongoing job-specific education and training throughout an individual's career; Well Stated in Organizational Competency statement.**

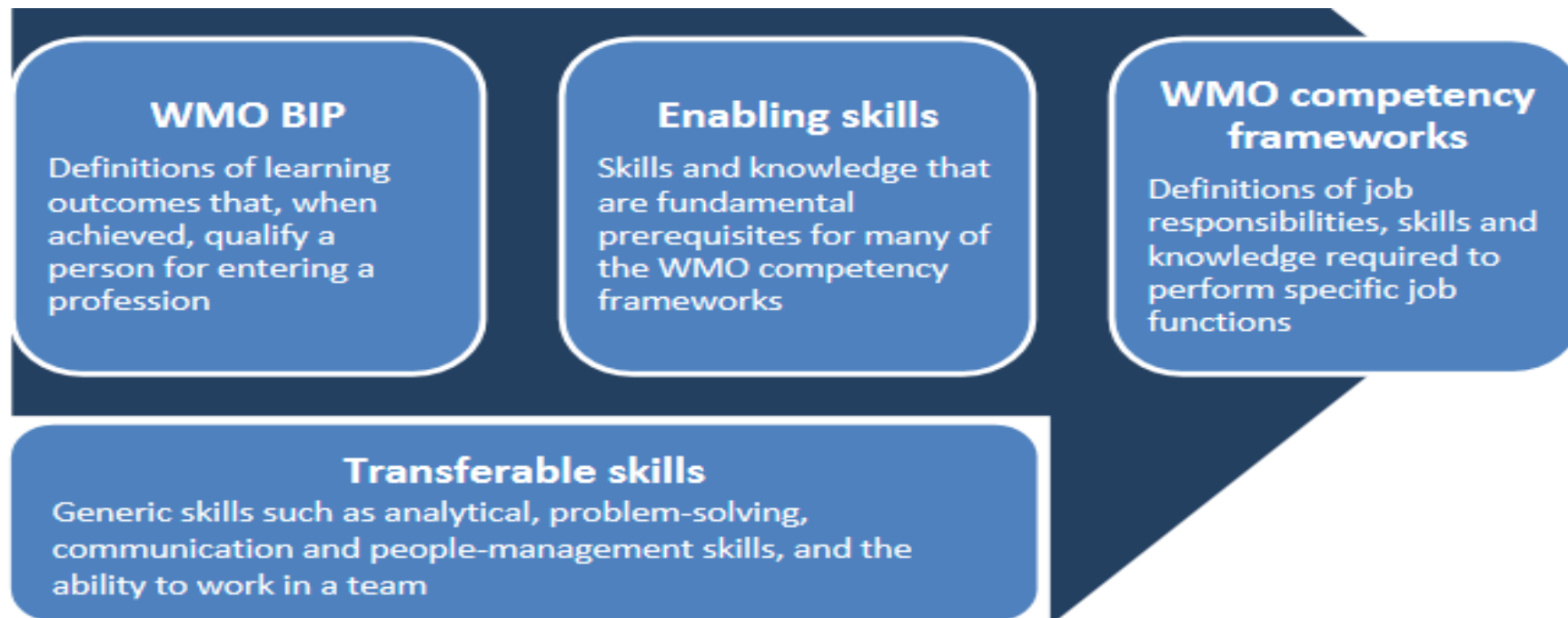
Competency statement describes **what should be done** and **how to do it** and as such, the statement should contain detail technical and institutional aspects.

The statement should **designate an action to be accomplished** by the individuals or groups/teams.

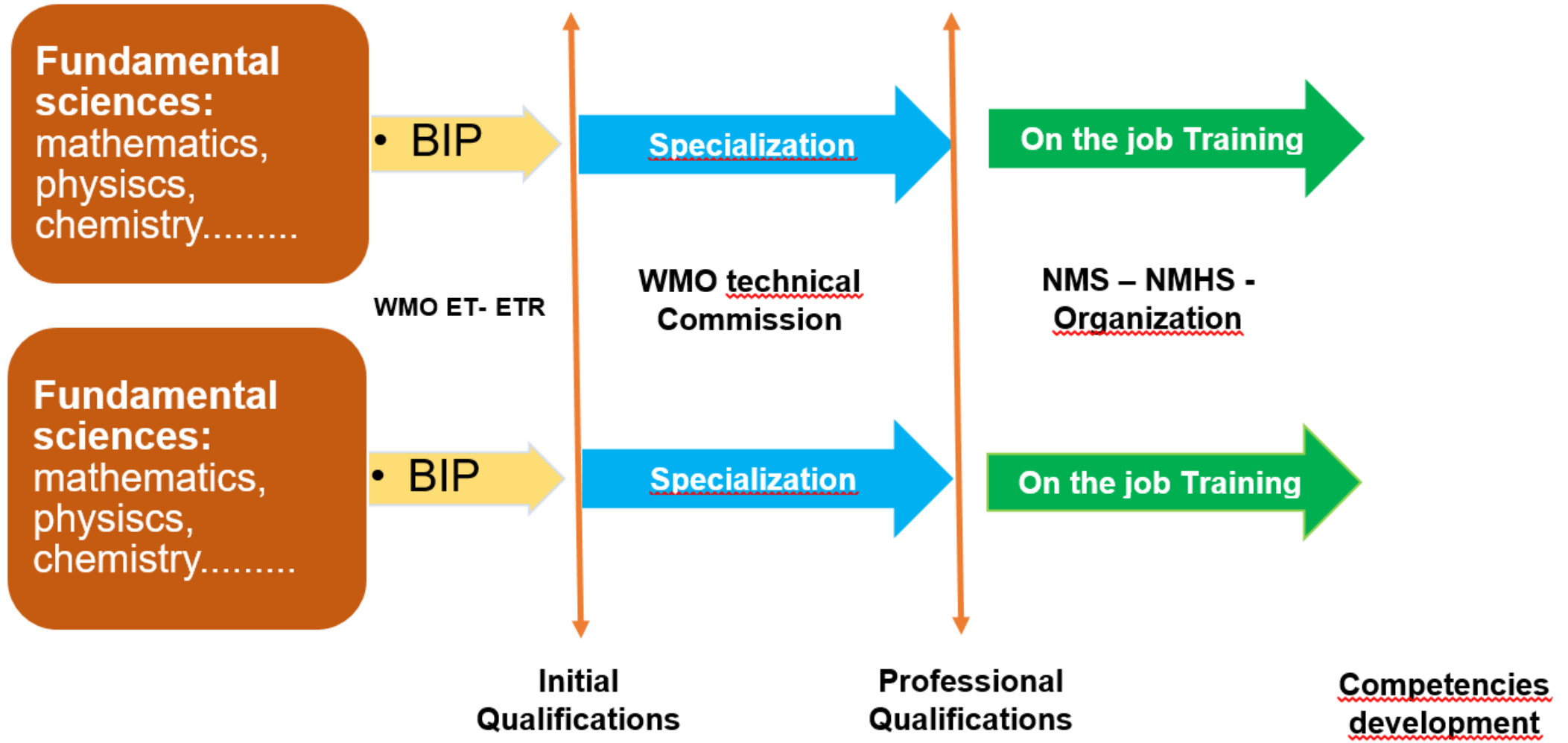
Types of competencies and their relationship

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

• **The relationship between core qualifications, technical skills, behavioral skills is depicted below;**



Qualifications – Competencies



Competencies standard of Meteorology Personnel

Anatomy of a WMO competency framework

Top-level competencies

- Statements that represent the overarching competency to be demonstrated by the individuals or groups/teams
- These statements are sometimes referred to as units of competency
- Top-level competencies are included as international regulations in *Technical Regulations* (WMO No.1205).

Competency description and Performance criteria

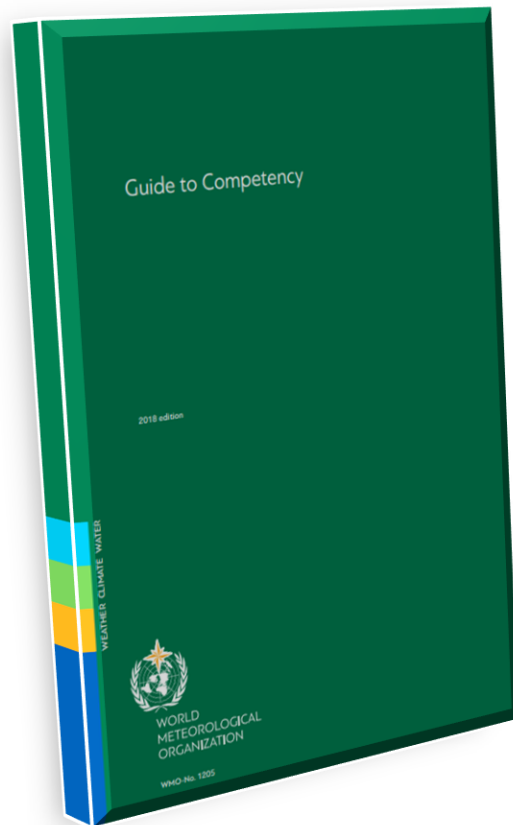
- It further elaborates on the Top-level statement by providing more complete information.
- Performance criteria are also called performance components

Knowledge and skills

- The requisite background knowledge and skills for the competency

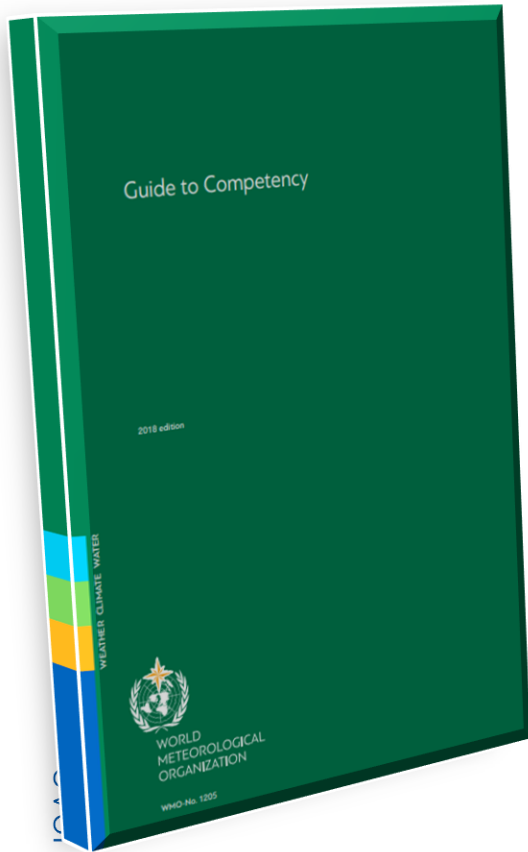
To be customized according to regional and local variations

Guidance to States in implementing AMP Competencies (WMO-No.1205)



- The top-level competencies represent internationally agreed WMO regulations, they are mandatory and should not be customized.
- When implementing AMP competencies, the second-level competencies and the performance criteria should be reviewed and customized to meet specific circumstances, taking into account institutional structures and responsibilities, technology, staffing, service levels, and weather phenomena that impact the country or area of responsibility.
- The support of upper-level management is essential to ensure the successful implementation and ongoing management of the competency framework.

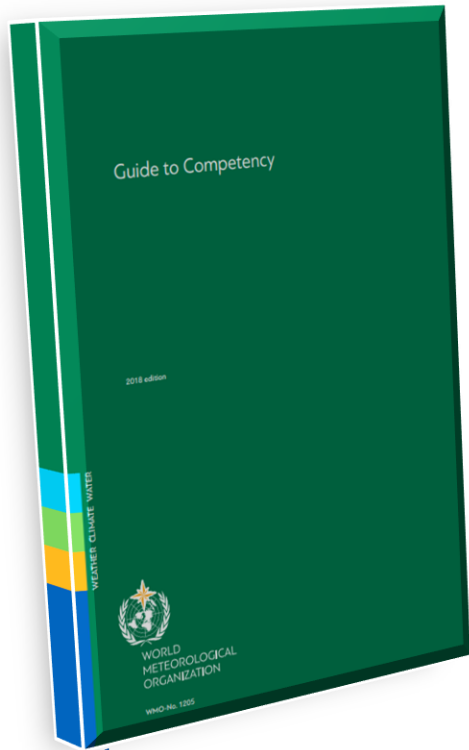
Guidance to States in implementing AMP Competencies (WMO-No.1205)



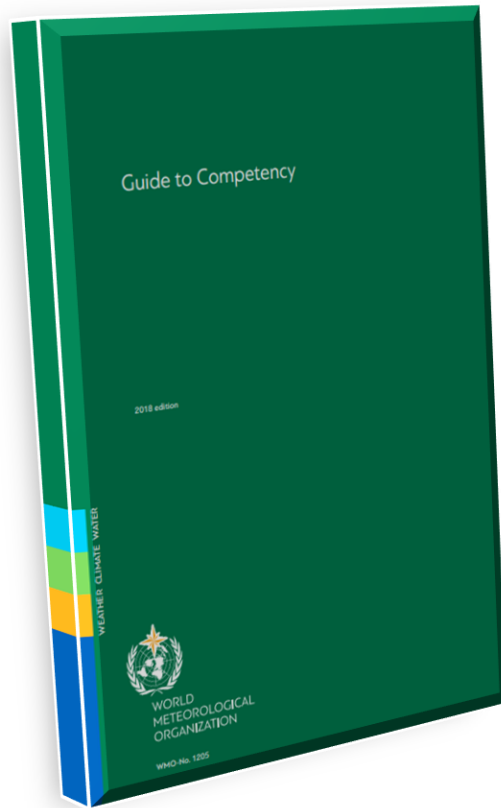
- All the performance criteria and background skills and knowledge developed in WMO competency framework may not be uniform to all States – **customization is key.**
- States may need to elaborate on or add to the second – level competency information or remove some of the performance criteria that **are not relevant to their circumstances.**



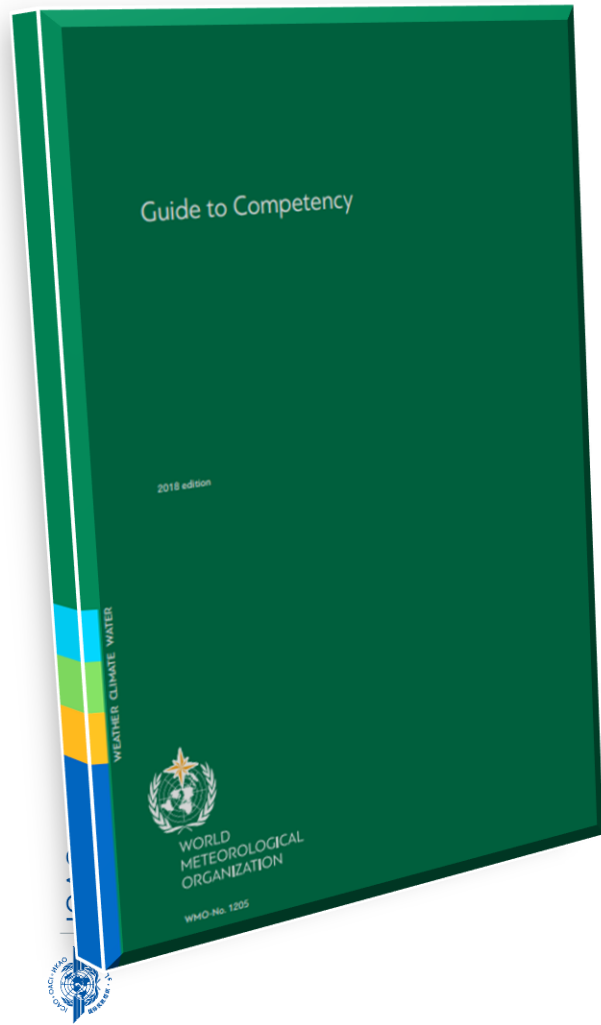
Factors on which customization of WMO competency framework depends (WMO-No.1205)



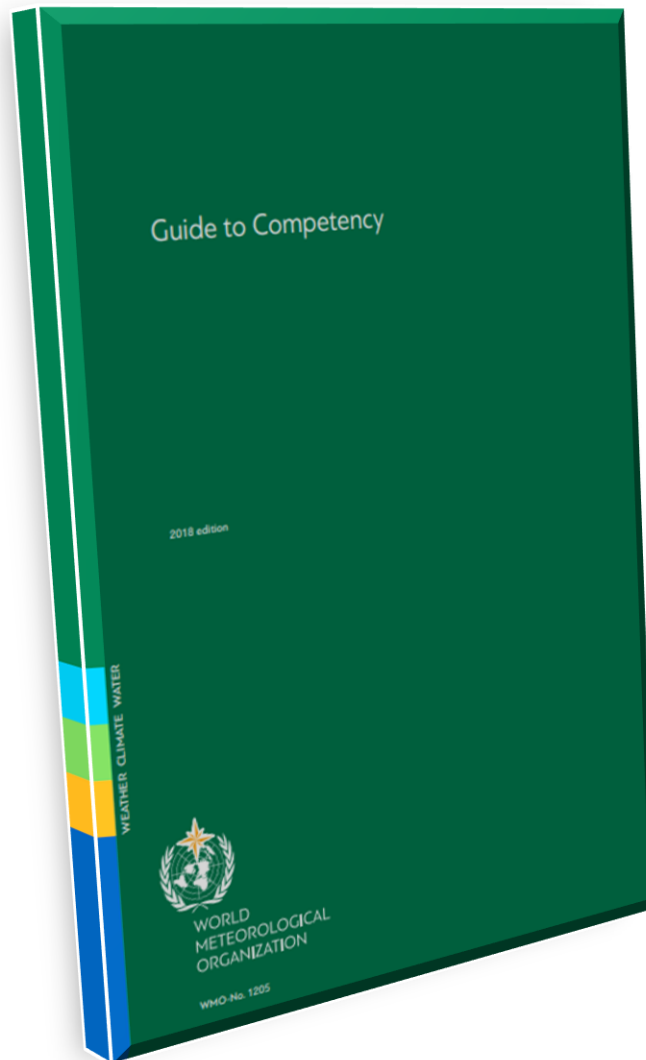
- The organization structure, which determines who in the organization **require technical competency**;
- Whether an individual or group needs to demonstrate competency over multiple service areas (aviation, marine, public weather services);
- Whether an individual or group performs all the functions, some of the functions, or more than the functions described in the second-level competency information;
- Whether the competencies are internationally regulated or are recommended practices;
- What resources the organization possesses to manage a competency development programme, including training, competency assessment and quality management.



- Competency assessment is conducted to determine if someone can perform the job to the level of skill and knowledge required.
- It is a critical element in implementing competency requirements.
- Competency assessment is required for competency frameworks that are internationally regulated (AMP for instance).
- It is a recommended practice for all other competency frameworks.



- Competency assessment should be conducted on a regular basis and documented in the **Organization's QMS**.
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- Competency – Based Training should be developed
- Its goal is to focus on specific competencies that an individual or group must attain or enhance.
- Evidence of change in behaviour and performance following a training should be documented at all times.

Regional variations

AMF Personnel Competency standard

- 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;
- Designated offices responsible for advice on volcanic ash, tropical cyclones and other phenomena;
- Regional and local regulations;
- Boundaries of forecast areas;
- Extent, scope and exclusions of quality management system implementation;
- Communication language(s);
- Communication technology for forecast and warning transmission, and for weather briefing

AMO Competency standard

- The range of significant weather phenomena;
- Extent of automation of observing and sensing systems;
- Thresholds for significant weather changes;
- Local climatology;
- Extent, scope and exclusions of quality management system implementation;
- Regional regulations;
- Communication language (s);
- Available communication technologies.

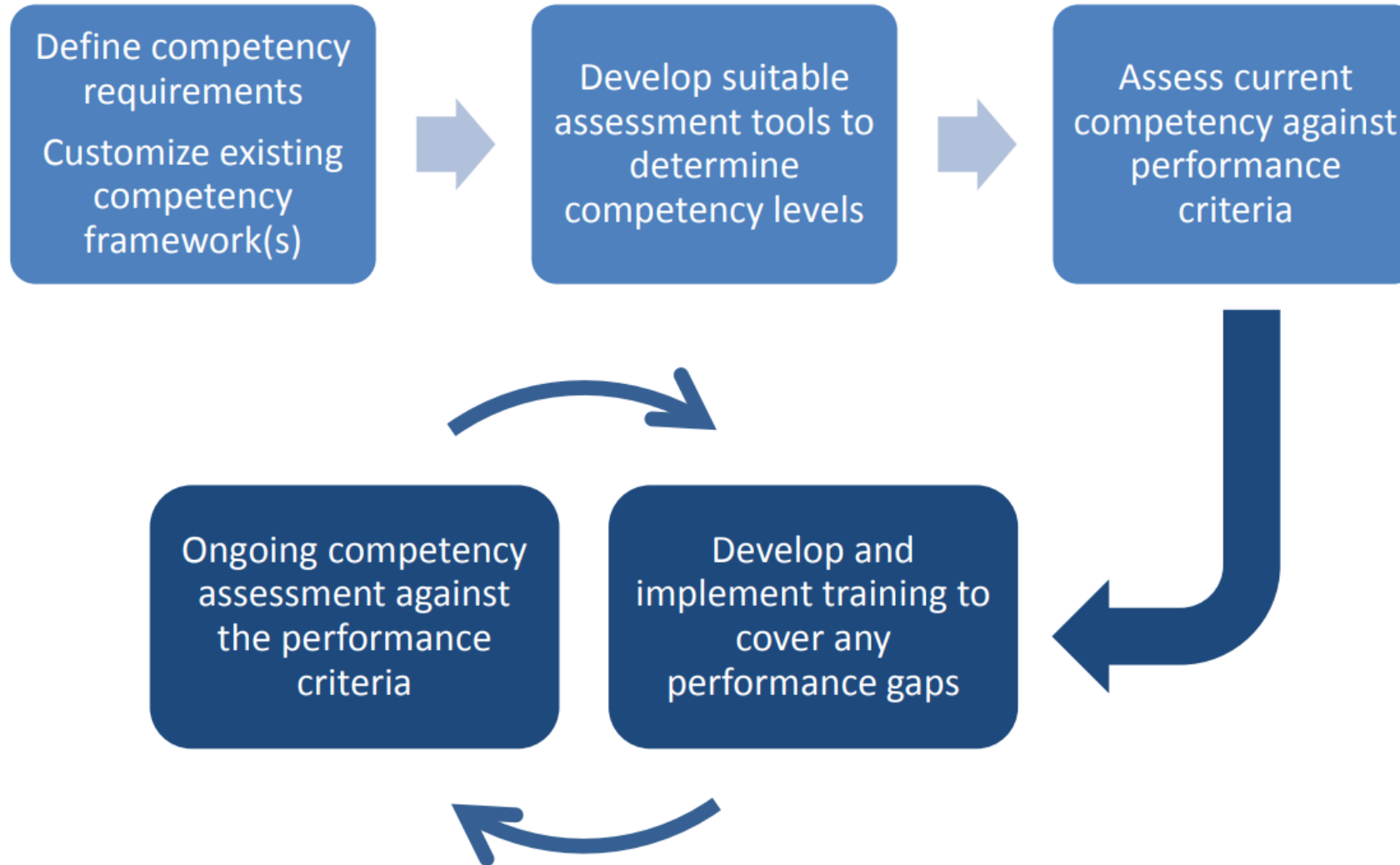
Example of Competency requirement: Analyse and monitor continually the weather situation (WMO No.1209 §2.2.1)

▪ Background knowledge and skills:

- Key characteristics of the troposphere and tropopause;
- Properties of air pressure, temperature, density and water vapour;
- Atmospheric stability and inversions;
- Generation mechanisms of wind flow systems;
- Fog and cloud formation and dissipation;
- Precipitation types and intensity;
- The general circulation of the Earth's atmosphere;
- The International Standard Atmosphere (ISA);
- Meteorological hazards to aviation.....

Criteria for Determining Standard Competency

Job position \Competencies	Top Level Competency	Second Level Competency	Regional variations	Required Knowledge/Skills	Technical documentation
Aeronautical Meteorological Forecaster	√	√	√	√	√
Aeronautical Meteorological Observer	√	√	√	√	√



Sample assessment tools applied to different programme areas

- Example A may be implemented by an organization with high staff numbers and huge area of responsibility;
- Example C may be implemented by a small organization with limited staff and limited area of responsibility,
- Example B might lie somewhere in between

	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 – 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	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

- Once AMP undergo competency assessment, they are deemed either **competent** or **not yet competent** for each competency area assessed.
- If assessed as competent, they are issued with a statement listing the **acquired competencies**, as well as any **constructive feedback**.
- If they are deemed **not yet competent**, they should be given clear and constructive feedback on their performance and be provided with **guidance on future options**, including **training and mentoring**, to achieve competency.
- The feedback from the assessment should be **documented** in the MET Service Provider's QMS covering the competency records.

Competency assessments must be valid, reliable, flexible as well as fair. Assessment decisions **MUST** involve the evaluation of sufficient evidence to enable a fair judgement on competence of candidates.

- **Validity** refers to the extent to which the interpretation and use of an assessment outcome can be supported by evidence.
- **Reliability** refers to the level of consistency and accuracy of the assessment outcomes
- **Flexibility** refers to the opportunity for personnel to negotiate certain aspects of their assessment, (such as timing), with their assessor.
- **Fairness** ensures that assessment does not advantage or disadvantage particular candidates or groups of candidates

- 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.

References



 https://worldweather.wmo.int/tt_cat/philo.php

[Services for Aviation Moodle training portal](#)



Thank You!