Supporting the Global Observing Systems Design and Evolution:

An Approach to Account for the Prioritization Concept in the WMO RRR Process

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Prioritization for the WMO RRR (Why?)

- There is value in including the notion of prioritization in the RRR process
- Implicitly, if no priority is given, it means we are conveying all are equal
- The observations users community is more adept to estimate these priorities than the designers of the obs. systems and networks
- Knowing these priorities immensely help the obs. systems/networks designers by letting them know where emphasis should be put
- This could help the Coordinators of the new Earth System Application Categories in the new RRR process to develop their Statements of Guidance
- This could help the Application Area Points of Contact to do the gap analysis with focus on the critical variables to be observed
- This could contribute to identifying core and recommended WIGOS data in the WMO Unified Data Policy.
- The priorities are meant for (could be set to equal weight by default):
  - The observables weights themselves *(does an application value more temp. than moisture for instance?)*
  - Their observables attributes weights *(When an application requires T, does it value more the spatial resolution than the precision/accuracy for instance?)*

Mechanism to Prioritize the Requirements:

- The mechanism calls for associating priorities for all requirements that get generated through the RRR process and archived in the OSCAR system. The priorities are meant for:

  (1) The Requirement itself e.g., does an application value more the near surface temp. than moisture for instance?

  (2) The attributes of the Requirement e.g., for a given Requirement, does the application area value one attribute more than another, e.g. does it value more the spatial resolution than vertical resolution or/and than the uncertainty?

- We call these priorities the Application-dependent Technical Priorities (ATP) and should be defined to convey, for a given application area, the relative importance between the requirements and, for a given requirement, the relative importance between the attributes. These priorities (or weights) should be a numerical value between 0 and 1, that can be used for optimizing network design purposes. They should be defined with a minimum level of granularity i.e., enough to be useful but not too complex to assign.

- We provide definitions for guiding these priorities (see concept paper for details) .

Example for Illustration: Prioritization of Requirements and Associated Attributes

ID	Requirement definition				Requirement attributes						
	User	Observational datastream			Priority=red. Performance level: blue=goal; green=breakthrough; orange=threshold						
No. Pr.	Application Area	Variable	Vertical Layer/s	Horizontal Coverage	Layer/s quality	Coverage quality	Uncertainty	Horizontal Resolution	Vertical Resolution	Obs. Cycle	Timeliness
255	GNWP	T	FT	Global	100 % 70 % 30% 1.0	100 % 80 % 40% 1.0	0.5 K 1 K 3 K 1.0	15 km 100 km 500 km 1.0	0.3 km 0.5 km 1 km 1.0	60 min 6 h 24 h 1.0	6 min 30 min 6 h 1.0
256	GNWP	T	UTLS	Global	100 % 70 % 30% 1.0	100 % 80 % 50% 1.0	0.5 K 1 K 3 K 1.0	15 km 100 km 500 km 1.0	0.3 km 1 km 3 km 1.0	60 min 6 h 24 h 1.0	6 min 30 min 6 h 1.0