JSON Message Specifications for WMO Common Dashboard of WIS Monitoring

# General Guidelines

1. WCD (WMO Common Dashboard) consists of main dashboard and calendar pages. The calendar page shows GISCs’ events such as maintenance.
2. WCD fetches three types of JSON files from each GISC on a regular basis.
	1. Monitor JSON file (mandatory)
	 - including information and metrics of the GISC, which are displayed on the main dashboard.
	2. Centre JSON file (optional)
	 - including metrics of Centres in the GISC's area of responsibility, which are displayed on the main dashboard.
	3. Event JSON file (optional)
	 - including GISC’s events such as maintenance, which are displayed on the calendar page.
3. Monitor JSON and Centre JSON formats are designed for easy consumption and automation by computers. Reported values are required to be consistent to enable automatic aggregation across multiple centres. The Event JSON file is designed for easy manipulation by hand.
4. Only mandatory fields are required to present in JSON files. If a child field is mandatory, all of its ascendant fields are mandatory as well.
5. There are a few ways to indicate missing values for optional fields:
	1. A “null” can be used to indicate a missing value.
	2. Fields can simply be skipped in the JSON file.
	3. If all child fields are optional and skipped, the parent field can be set to “null” or empty object, i.e. “{}”, or skipped as well.

All above ways to indicate missing values are considered to have the same semantic meanings to applications consuming the JSON file.

# Monitor JSON file (monitor.json)

## An Example of the Monitor JSON file

Here is an example of the Monitor JSON file. Note that mandatory elements are shown in bold font.

{

 "**wmo\_wis\_monitoring**": "1.0",

 "**centre**": "GISC Tokyo",

 "**timestamp**": "2014-11-10T00:00:00Z",

 "**gisc\_properties**": {

 "**catalogue\_url**": "http://www.wis-jma.go.jp/cms/",

 "monitor\_url": "http://www.wis-jma.go.jp/monitor",

 "**oai\_url**": "http://www.wis-jma.go.jp/meta/oaiprovider.jsp",

 "events\_url": "http://www.wis-jma.go.jp/json/events.json",

 "centres\_inAoR\_url": "http://www.wis-jma.go.jp/json/centres.json",

 "backup\_giscs": [

 "beijing",

 "melbourne",

 "offenbach"

 ],

 "contact\_info": {

 "voice": "+869348987397",

 "email": "email@operation.jp"

 }

 },

 "**metrics**": {

 "rmdcn": "http://rmdcn.ecmwf.int/p/techinfo/\_cricket/png/CPE-JAPM1-IPVPN-145033/",

 "metadata\_catalogue": {

 "number\_of\_records\_at00UTC": 150000,

 "number\_of\_changes\_insert\_modify": 200,

 "number\_of\_changes\_delete": 100

 },

 "cache\_24h": {

 "number\_of\_products\_all": 310000,

 "number\_of\_products\_without\_metadata": 3100,

 "bytes\_of\_cache\_all": 1300000000,

 "bytes\_of\_cache\_without\_metadata": 1300000,

 "number\_of\_unique\_products\_without\_metadata\_AMDCN": 1,

 "number\_of\_unique\_products\_without\_metadata\_all": 1000

 },

 "**services**": {

 "**oai\_pmh**": {

 "**status**": true

 },

 "**catalogue**": {

 "**status**": true

 },

 "**distribution\_system**": {

 "**status**": false

 }

 }

 },

 "remarks": "Any additional text message"

}

## Fields of the Monitor JSON file

Here we describe each field that serve as metadata, except for GISC’s properties ("**gisc\_properties**") and actual metrics ("**metrics**").

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Field** | **Description** | **Type** | **Mandatory** | **Example** | **Remarks** |
| wmo\_wis\_monitoring | The version of the Spec that the JSON file conforms. | string | Yes | “1.0” | As WIS monitoring progresses, data for new metrics can be added to the JSON file and the version number is updated accordingly. This enables backward compatibility. |
| centre | The name of Centre that issues the JSON file | string | Yes | “GISC Tokyo” |  |
| timestamp | The UTC timestamp when the JSON file is created  | string (RFC 3339) | Yes | “2014-11-10T00:00:00Z” |  |
| remarks | Any additional message that the issuing Centre wants to share. | string | No | “Any additional text message” | This message is shown literally on WCD’s GISC page. |

Here we describe GISC’s properties ("**gisc\_properties**") and actual metrics ("**metrics**") as below."**gisc\_properties**" includes semi-static basic information of the GISC, as below.

* **"catalogue\_url"** (mandatory)
 URL of GISC's portal web site (catalogue)
* "monitor\_url" (optional)
 URL of GISC's own monitoring web page
* **"oai\_url"** (mandatory)
 URL of GISC's OAI provider
* "events\_url" (optional)
 URL of Events JSON file including GISCs’ events such as maintenance, which are displayed on the calendar page
* "centres\_inAoR\_url" (optional)
 URL of the Centre JSON file including the metrics of Centres in the GISC's area of responsibility
* "backup\_giscs" (optional)
 Array of backup GISCs of the GISC
* "contact\_info" (optional)
 Contact information including phone number and e-mail address

"**metrics**" includes several monitoring metrics, as below.

Note: Metrics are values for the time period from 00:00:00 to 23:59:59UTC of the previous day, unless otherwise specified. For example, "number\_of\_records\_at00UTC" is the *snapshot* number of metadata records at 00UTC, while "number\_of\_changes\_delete" is the number of records which were deleted in the time period of 00:00:00 to 23:59:59.

* "**services**" (mandatory)
 The status of each service which are OAI-provider (“**oai\_pmh**”), portal web site ("**catalogue**"), and distribution system ("**distribution\_system**") .
* “rmdcn” (optional)
 URL of the GISC’s RMDCN statistics published to the ECMWF web
* "metadata\_catalogue" (optional)
	+ "number\_of\_records\_at00UTC" (optional)
	 Snapshot number of active records in the metadata catalogue (WIS-CATALOGUE set if exists) at 00UTC. Deleted records are not counted.
	+ "number\_of\_changes\_insert\_modify" (optional)
	 Number of metadata records which have been inserted and/or modified from 00:00:00 to 23:59:59. Count only once even if they are inserted and/or modified more than once in the 24 hours.
	+ "number\_of\_changes\_delete" (optional)
	 Number of metadata records which have been deleted from 00:00:00 to 23:59:59
* "cache\_24h" (optional)
	+ "number\_of\_products\_all" (optional)
	 Number of data and products that were stored in the GISC cache from 00:00:00 to 23:59:59. For example SMDL01EDZW is issued at 00:00, 06:00, 12:00 and 18:00 (if no corrections exist); in this case they are counted as 4.
	+ "number\_of\_products\_without\_metadata" (optional)
	 Number of data and products that were received from 00:00:00 to 23:59:59 and did not have an associated metadata. These products may or may not be stored in the GISC cache. For example a bulletin which does not have an associated metadata is issued at 00:00, 06:00, 12:00 and 18:00; in this case they are counted as 4.
	+ "bytes\_of\_cache\_all" (optional)
	 Size of data and products that were stored in the GISC cache from 00:00:00 to 23:59:59
	+ "bytes\_of\_cache\_without\_metadata" (optional)
	 Size of data and products that were received from 00:00:00 to 23:59:59 and did not have an associated metadata
	+ "number\_of\_unique\_products\_without\_metadata\_AMDCN" (optional)
	 Number of unique products (e.g. abbreviated headings of GTS bulletins) which were received but not made available through metadata catalogue because of lack of associated metadata. Count only products that were received from Centres in the GISC’s own AMDCN. Count only once even if products were received more than once during the 24 hours. For example a bulletin which does not have an associated metadata is issued at 00:00, 06:00, 12:00 and 18:00; in this case they are counted as 1 (cf. "number\_of\_products\_without\_metadata" is counted as 4).
	+ "number\_of\_unique\_products\_without\_metadata\_all" (optional)
	 Number of unique products (e.g. abbreviated headings of GTS bulletins) which were received but not made available through metadata catalogue because of lack of associated metadata. Count all products received from Centres in the GISC’s own AMDCN and from other areas. Count only once even if products were received more than once during the 24 hours. For example a bulletin which does not have an associated metadata is issued at 00:00, 06:00, 12:00 and 18:00; in this case they are counted as 1 (cf. "number\_of\_products\_without\_metadata" is counted as 4).

## Schema of the Monitor JSON file

The schema of Monitor JSON file is created using version 3 of the draft from json-schema.org (http://json-schema.org/)

{

 "type":"object",

 "$schema": "http://json-schema.org/draft-03/schema",

 "id": "http://jsonschema.net",

 "required":false,

 "properties":{

 "centre": {

 "type":"string",

 "id": "http://jsonschema.net/centre",

 "required":true

 },

 "gisc\_properties": {

 "type":"object",

 "id": "http://jsonschema.net/gisc\_properties",

 "required":true,

 "properties":{

 "backup\_giscs": {

 "type":"array",

 "id": "http://jsonschema.net/gisc\_properties/backup\_giscs",

 "required":false,

 "items":

 {

 "type":"string",

 "id": "http://jsonschema.net/gisc\_properties/backup\_giscs/0",

 "required":false

 }

 },

 "catalogue\_url": {

 "type":"string",

 "id": "http://jsonschema.net/gisc\_properties/catalogue\_url",

 "required":true

 },

 "contact\_info": {

 "type":"object",

 "id": "http://jsonschema.net/gisc\_properties/contact\_info",

 "required":false,

 "properties":{

 "email": {

 "type":"string",

 "id": "http://jsonschema.net/gisc\_properties/contact\_info/email",

 "required":false

 },

 "voice": {

 "type":"string",

 "id": "http://jsonschema.net/gisc\_properties/contact\_info/voice",

 "required":false

 }

 }

 },

 "events\_url": {

 "type":"string",

 "id": "http://jsonschema.net/gisc\_properties/events\_url",

 "required":false

 },

 "centres\_inAoR\_url": {

 "type":"string",

 "id": "http://jsonschema.net/gisc\_properties/centres\_url",

 "required":false

 },

 "monitor\_url": {

 "type":"string",

 "id": "http://jsonschema.net/gisc\_properties/monitor\_url",

 "required":false

 },

 "oai\_url": {

 "type":"string",

 "id": "http://jsonschema.net/gisc\_properties/oai\_url",

 "required":true

 }

 }

 },

 "metrics": {

 "type":"object",

 "id": "http://jsonschema.net/metrics",

 "required":true,

 "properties":{

 "cache\_24h": {

 "type":"object",

 "id": "http://jsonschema.net/metrics/cache\_24h",

 "required":false,

 "properties":{

 "bytes\_of\_cache\_all": {

 "type":"number",

 "id": "http://jsonschema.net/metrics/cache\_24h/bytes\_of\_cache\_all",

 "required":false

 },

 "bytes\_of\_cache\_without\_metadata": {

 "type":"number",

 "id": "http://jsonschema.net/metrics/cache\_24h/bytes\_of\_cache\_without\_metadata",

 "required":false

 },

 "number\_of\_products\_all": {

 "type":"number",

 "id": "http://jsonschema.net/metrics/cache\_24h/number\_of\_products\_all",

 "required":false

 },

 "number\_of\_products\_without\_metadata": {

 "type":"number",

 "id": "http://jsonschema.net/metrics/cache\_24h/number\_of\_products\_without\_metadata",

 "required":false

 },

 "number\_of\_unique\_products\_without\_metadata\_AMDCN": {

 "type":"number",

 "id": "http://jsonschema.net/metrics/cache\_24h/number\_of\_unique\_products\_without\_metadata\_AMDCN",

 "required":false

 },

 "number\_of\_unique\_products\_without\_metadata\_all": {

 "type":"number",

 "id": "http://jsonschema.net/metrics/cache\_24h/number\_of\_unique\_products\_without\_metadata\_all",

 "required":false

 }

 }

 },

 "metadata\_catalogue": {

 "type":"object",

 "id": "http://jsonschema.net/metrics/metadata\_catalogue",

 "required":false,

 "properties":{

 "number\_of\_changes\_delete": {

 "type":"number",

 "id": "http://jsonschema.net/metrics/metadata\_catalogue/number\_of\_changes\_delete",

 "required":false

 },

 "number\_of\_changes\_insert\_modify": {

 "type":"number",

 "id": "http://jsonschema.net/metrics/metadata\_catalogue/number\_of\_changes\_insert\_modify",

 "required":false

 },

 "number\_of\_records\_at00UTC": {

 "type":"number",

 "id": "http://jsonschema.net/metrics/metadata\_catalogue/number\_of\_records\_at00UTC",

 "required":false

 }

 }

 },

 "rmdcn": {

 "type":"string",

 "id": "http://jsonschema.net/metrics/rmdcn",

 "required":false

 },

 "services": {

 "type":"object",

 "id": "http://jsonschema.net/metrics/services",

 "required":true,

 "properties":{

 "catalogue": {

 "type":"object",

 "id": "http://jsonschema.net/metrics/services/catalogue",

 "required":true,

 "properties":{

 "status": {

 "type":"boolean",

 "id": "http://jsonschema.net/metrics/services/catalogue/status",

 "required":true

 }

 }

 },

 "distribution\_system": {

 "type":"object",

 "id": "http://jsonschema.net/metrics/services/distribution\_system",

 "required":true,

 "properties":{

 "status": {

 "type":"boolean",

 "id": "http://jsonschema.net/metrics/services/distribution\_system/status",

 "required":true

 }

 }

 },

 "oai\_pmh": {

 "type":"object",

 "id": "http://jsonschema.net/metrics/services/oai\_pmh",

 "required":true,

 "properties":{

 "status": {

 "type":"boolean",

 "id": "http://jsonschema.net/metrics/services/oai\_pmh/status",

 "required":true

 }

 }

 }

 }

 }

 }

 },

 "remarks": {

 "type":"string",

 "id": "http://jsonschema.net/remarks",

 "required":false

 },

 "timestamp": {

 "type":"string",

 "id": "http://jsonschema.net/timestamp",

 "required":true

 },

 "wmo\_wis\_monitoring": {

 "type":"string",

 "id": "http://jsonschema.net/wmo\_wis\_monitoring",

 "required":true

 }

 }

}

## A minimum example of Monitor JSON file

Each GISC only needs to describe the mandatory fields in the JSON file as per the schema. Here is a minimum example of Monitor JSON file.

{

 "**wmo\_wis\_monitoring**": "1.0",

 "**centre**": "GISC Tokyo",

 "**timestamp**": "2014-11-10T00:00:00Z",

 "**gisc\_properties**": {

 "**catalogue\_url**": "http://www.wis-jma.go.jp/cms/",

 "**oai\_url**": "http://www.wis-jma.go.jp/meta/oaiprovider.jsp"

 },

 "**metrics**": {

 "**services**": {

 "**oai\_pmh**": {

 "**status**": true

 },

 "**catalogue**": {

 "**status**": true

 },

 "**distribution\_system**": {

 "**status**": false

 }

 }

 }

}

# Centre JSON file (centres.json)

## An Example of Centre JSON file

Here is an example of Centre JSON file.

{

 "wmo\_wis\_monitoring": "1.0",

 "centre": "GISC Offenbach",

 "timestamp": "2014-11-10T00:00:00Z",

 "centres": [

 {

 "centre" : "AT",

 "count" : 7772,

 "volumesize" : 56295410

 },

 {

 "centre" : "ME",

 "count" : 42,

 "volumesize" : 20102

 },

 {

 "centre" : "SR",

 "count" : 150,

 "volumesize" : 120345

 }

 ]

}

Here are descriptions of each field in Centre JSON file.

* "centre"
 The name of the Centre in the GISC's area of responsibility
* "count"
 Number of data and products received from the Centre and stored in the GISC’s cache from 00:00:00 to 23:59:59
* "volumesize"
 Total size of data and products received from the Centre and stored in the GISC’s cache from 00:00:00 to 23:59:59

## Centre JSON file Schema

Centre JSON file schema is created using version 3 of the draft of json-schema.org (http://json-schema.org/)

{

 "type":"object",

 "$schema": "http://json-schema.org/draft-03/schema",

 "id": "http://jsonschema.net",

 "required":true,

 "properties":{

 "centre": {

 "type":"string",

 "id": "http://jsonschema.net/centre",

 "required":true

 },

 "centres": {

 "type":"array",

 "id": "http://jsonschema.net/centres",

 "required":true,

 "items":

 {

 "type":"object",

 "id": "http://jsonschema.net/centres/0",

 "required":true,

 "properties":{

 "centre": {

 "type":"string",

 "id": "http://jsonschema.net/centres/0/centre",

 "required":true

 },

 "count": {

 "type":"number",

 "id": "http://jsonschema.net/centres/0/count",

 "required":true

 },

 "volumesize": {

 "type":"number",

 "id": "http://jsonschema.net/centres/0/volumesize",

 "required":true

 }

 }

 }

 },

 "timestamp": {

 "type":"string",

 "id": "http://jsonschema.net/timestamp",

 "required":true

 },

 "wmo\_wis\_monitoring": {

 "type":"string",

 "id": "http://jsonschema.net/wmo\_wis\_monitoring",

 "required":true

 }

 }

}

# Event JSON file (events.json)

## An Example of Event JSON file

Here is an example of Event JSON file.

{

 "wmo\_wis\_monitoring": "1.0",

 "centre": "GISC Offenbach",

 "timestamp": "2014-11-10T00:00:00Z",

 "events" :

 [ {

 "id" : 1,

 "title" : "GISC Offenbach @ Maintenance",

 "text" : "Database update, OAI Provider will function while catalogue is down",

 "start" : "2014-11-10T00:00:00Z",

 "end" : "2014-11-10T02:00:00Z"

 },

 {

 "id" : 2,

 "title" : "GISC Offenbach @ Maintenance",

 "text" : "OAI Provider update",

 "start" : "2014-12-10T00:00:00Z",

 "end" : "2014-12-10T02:00:00Z"

 }

 ]

}

Here are descriptions of each field in Event JSON file.

* "id"
 It must be unique in the Event JSON file.
* "title"
 Title of the GISC’s event such as maintenance
* "text"
 Detail explanation of the GISC’s event
* "start"
 Scheduled start time of the event
* "end"
 Scheduled end time of the event

## Event JSON file Schema

Event JSON file schema is created using version 3 of the draft of json-schema.org (http://json-schema.org/)

{

 "type":"object",

 "$schema": "http://json-schema.org/draft-03/schema",

 "id": "http://jsonschema.net",

 "required":false,

 "properties":{

 "centre": {

 "type":"string",

 "id": "http://jsonschema.net/centre",

 "required":true

 },

 "events": {

 "type":"array",

 "id": "http://jsonschema.net/events",

 "required":true,

 "items":

 {

 "type":"object",

 "id": "http://jsonschema.net/events/0",

 "required":true,

 "properties":{

 "end": {

 "type":"string",

 "id": "http://jsonschema.net/events/0/end",

 "required":true

 },

 "id": {

 "type":"number",

 "id": "http://jsonschema.net/events/0/id",

 "required":true

 },

 "start": {

 "type":"string",

 "id": "http://jsonschema.net/events/0/start",

 "required":true

 },

 "text": {

 "type":"string",

 "id": "http://jsonschema.net/events/0/text",

 "required":true

 },

 "title": {

 "type":"string",

 "id": "http://jsonschema.net/events/0/title",

 "required":true

 }

 }

 }

 },

 "timestamp": {

 "type":"string",

 "id": "http://jsonschema.net/timestamp",

 "required":true

 },

 "wmo\_wis\_monitoring": {

 "type":"string",

 "id": "http://jsonschema.net/wmo\_wis\_monitoring",

 "required":true

 }

 }

}