Annex D: Encoding Examples (Non-Normative)

Extracts of the following examples were used in the body of the document. The current Annex includes the complete examples in their original metadata format and in the proposed encodings.

The following tools were very useful to improve readability and check the examples:

- XMLSpy (http://www.altova.com)
- http://json-ld.org/playground/
- http://rdf-translator.appspot.com/
- http://geojsonlint.com/
- http://jsonpath.com/

D.1 Metadata Examples

D.1.1 Example 1: Seasat (Radar)

D.1.1.1 OGC 10-157r4

```xml
<?xml version="1.0" encoding="UTF-8"?>
<ogc:EarthObservation xmlns:ogc="http://www.opengis.net/ogc/2.0"
xmlns:sar="http://www.opengis.net/sar/2.0"
xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:eop="http://www.opengis.net/eop/2.0"
xmlns:om="http://www.opengis.net/om/2.0"
xmlns:ows="http://www.opengis.net/ows/2.0"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
gml:id="ID_64dd0a6f-72bd-40c9-a8cd-10fe33c6516b"
xsi:schemaLocation="http://www.opengis.net/sar/2.0
https://svn.opengeospatial.org/ogc-
projects/cite/scripts/wcseo/1.0/tags/1/resources/omeo/sar.xsd">
<om:phenomenonTime>
<gml:TimePeriod gml:id="tp_64dd0a6f-72bd-40c9-a8cd-10fe33c6516b">
<gml:beginPosition>1978-09-27T01:04:30Z</gml:beginPosition>
<gml:endPosition>1978-09-27T01:04:45Z</gml:endPosition>
</gml:TimePeriod>
</om:phenomenonTime>
<om:resultTime>
<gml:TimeInstant gml:id="archivingdate_64dd0a6f-72bd-40c9-a8cd-10fe33c6516b">
<gml:timePosition>2014-10-04T04:19:17Z</gml:timePosition>
</gml:TimeInstant>
</om:resultTime>
<om:procedure>
<eop:EarthObservationEquipment gml:id="eoe_64dd0a6f-72bd-40c9-a8cd-10fe33c6516b">
<eop:Platform>
<eop:Platform>
<eop:shortName>Seasat</eop:shortName>
<eop:serialIdentifier>1</eop:serialIdentifier>
</eop:Platform>
</eop:Platform>
<eop:Instrument>
<eop:Instrument>
<eop:shortName>SAR</eop:shortName>
</eop:Instrument>
</eop:Instrument>
<eop:sensor>
<eop:sensor>
<eop:sensorType>RADAR</eop:sensorType>
<eop:operationalMode>IM</eop:operationalMode>
</eop:sensor>
</eop:sensor>
<eop:acquisitionParameters>
<sar:Acquisition>
<eop:orbitNumber>1316</eop:orbitNumber>
```
<eop:orbitDirection>DESCENDING</eop:orbitDirection>

<sr:polarisationMode>S</sr:polarisationMode>

<sr:polarisationChannels>HH</sr:polarisationChannels>

<sr:antennaLookDirection>RIGHT</sr:antennaLookDirection>

<sr:minimumIncidenceAngle uom="°">19.6</sr:minimumIncidenceAngle>

<sr:maximumIncidenceAngle uom="°">9.6</sr:maximumIncidenceAngle>

<sr:incidenceAngleVariation uom="°">9.6</sr:incidenceAngleVariation>

</sr:Acquisition>
</eop:acquisitionParameters>
</eop:EarthObservationEquipment>
</om:procedure>
<om:observedProperty nilReason="inapplicable"/>
<om:featureOfInterest>
<eop:Footprint gml:id="fp_64dd0a6f-72bd-40c9-a8cd-10fe33c6516b">
<eop:multiExtentOf>
<gml:MultiSurface gml:id="ms_64dd0a6f-72bd-40c9-a8cd-10fe33c6516b" srsName="EPSG:4326">
<gml:surfaceMembers>
<gml:Polygon gml:id="fppoly_64dd0a6f-72bd-40c9-a8cd-10fe33c6516b">
<gml:exterior>
<gml:LinearRing>
<gml:posList>63.261372 -2.682513 61.997604 -2.695740 61.965195 0.005087 63.227173 0.135472 63.261372 -2.682513</gml:posList>
</gml:LinearRing>
</gml:exterior>
</gml:Polygon>
</gml:surfaceMembers>
</gml:MultiSurface>
</eop:multiExtentOf>
</eop:Footprint>
</om:featureOfInterest>
<om:result>
<eop:EarthObservationResult gml:id="eor_64dd0a6f-72bd-40c9-a8cd-10fe33c6516b">
<eop:browse>
<eop:BrowseInformation>
<eop:type>QUICKLOOK</eop:type>
<eop:referenceSystemIdentifier codeSpace="EPSG">epsg:4326</eop:referenceSystemIdentifier>
<ows:RequestMessage/>
</ows:ServiceReference>
</eop:BrowseInformation>
</eop:browse>
<eop:product>
<eop:ProductInformation>
<ows:RequestMessage xlink:href="http://www.opengis.net/ows/2.0/">
</ows:ServiceReference>
<ows:RequestMessage xlink:href="http://www.opengis.net/ows/2.0/">
</ows:ServiceReference>
</ows:ServiceReference>
</ows:RequestMessage>
</ows:RequestMessage>
</ows:RequestMessage>
</eop:ProductInformation>
</eop:product>
</eop:EarthObservationResult>
</om:result>
<om:metaDataProperty>
<eop:EarthObservationMetaData>
<eop:identifier>SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F</eop:identifier>
<eop:parentIdentifier>SEA_GEC_1P</eop:parentIdentifier>
<eop:acquisitionType>NOMINAL</eop:acquisitionType>
<eop:acquisitionSubType>DEFAULT</eop:acquisitionSubType>
<eop:productType>SEA_GEC_1P</eop:productType>
<eop:status>ARCHIVED</eop:status>
</eop:EarthObservationMetaData>
</om:metaDataProperty>
D.1.1.2 GeoJSON

```json
{
  "type": "Feature",
  "id": "http://fedeo.esa.int/opensearch/request/?parentIdentifier=SEA_GEC_1P&uid=SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F",
  "bbox": [
    -2.69574, 61.965195, 0.135472, 63.261372
  ],
  "geometry": {
    "coordinates": [
      [
        [-2.682513, 63.261372],
        [-2.69574, 61.997604],
        [0.005087, 61.965195],
        [0.135472, 63.227173],
        [-2.682513, 63.261372]
      ]
    ],
    "type": "Polygon"
  },
  "properties": {
    "status": "ARCHIVED",
    "parentIdentifier": "SEA_GEC_1P",
    "title": "SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F",
    "identifier": "SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F",
    "doi": "10.15489/mf87c2zjgo59",
    "date": "2016-07-02T18:13:41.34Z/2016-07-02T18:14:06.34Z",
    "updated": "2017-01-26T11:30:18Z",
    "links": {
      "data": [
        {"href": "http://tpm-ds.eo.esa.int/products/SEA_GEC_1P/1978/09/27/SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F.ZIP", "type": "application/binary", "title": "Download"}
      ]
    },
    "previews": [
      {
        "href": "http://tpm-ds.eo.esa.int/products/SEA_GEC_1P/1978/09/27/SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F.ZIP",
        "type": "application/binary",
        "title": "Download"
      }
    ]
  }
}```
D.1.1.3 JSON-LD (Compacted)

```json
{
  "@context": "http://schemas.opengis.net/eo-geojson/1.0/eo-geojson.jsonld",
  "type": "Feature",
  "id": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/geo%2Bjson&parentIdentifier=EOP:EIA:OADS:SEA_GEC_1P&uid=SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F",
  "geometry": {
    "type": "Image/png",
    "title": "Quicklook",
    "category": "QUICKLOOK",
    "expression": "sample",
    "conformsTo": "http://www.opengis.net:def/crs/EPSG/0/4326"
  },
  "alternates": [
    {
      "href": "http://tpm-ds.eo.esa.int/metadata/SEA_GEC_1P/1978/09/27/SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F.BI.PNG",
      "type": "Image/png",
      "title": "Quicklook",
      "category": "QUICKLOOK",
      "expression": "sample",
      "conformsTo": "http://www.opengis.net:def/crs/EPSG/0/4326"
    },
    {
      "href": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/atom%2Bxml&parentIdentif
      er=SEA_GEC_1P(uid=SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F")",
      "type": "application/atom+xml",
      "title": "Atom format"
    }
  ],
  "acquisitionInformation": {
    "platform": {
      "id": "http://gcmdservices.gsfc.nasa.gov/kms/concept/1bffe898-f4a2-458e-92c5-cd7c9c1cd5f0",
      "platformShortName": "Seasat",
      "platformSerialIdentifier": "1"
    },
    "instrument": {
      "id": "http://gcmdservices.gsfc.nasa.gov/kms/concept/a37282d4-322c-4dd0-8edc-36099b9b586c",
      "sensorType": "RADAR",
      "instrumentShortName": "SAR"
    },
    "acquisitionParameters": {
      "operationalMode": "IM",
      "polarisationMode": "S",
      "polarisationChannels": "HH",
      "beginningDateTime": "1978-09-27T01:04:30Z",
      "endingDateTime": "1978-09-27T01:04:45Z",
      "acquisitionType": "NOMINAL",
      "acquisitionSubType": "DEFAULT",
      "orbitNumber": 1316,
      "orbitDirection": "DESCENDING",
      "antennaLookDirection": "RIGHT",
      "acquisitionAngles": {
        "minimumIncidenceAngle": 19.6,
        "maximumIncidenceAngle": 9.6,
        "incidenceAngleVariation": 9.6
      }
    },
    "productInformation": {
      "productType": "SEA_GEC_1P",
      "size": 255211520,
      "availabilityTime": "1978-09-27T01:04:45Z"
    }
  }
}
```
"type": "Polygon",
"coordinates": [
  [
    -2.682513, 63.261372
  ],
  [
    -2.69574, 61.997604
  ],
  [
    0.005087, 61.965195
  ],
  [
    0.135472, 63.227173
  ],
  [-2.682513, 63.261372]
],

"properties": {
  "status": "ARCHIVED",
  "parentIdentifier": "SEA_GEC_1P",
  "title": "SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F",
  "identifier": "SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F",
  "date": "1978-09-27T01:04:30Z/1978-09-27T01:04:45Z",
  "updated": "2017-04-11T13:36:16Z",
  "links": {
    "alternates": [
      {
        "href": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/atom%2Bxml&parentIdentifier=EOP:ESA:OADS:SEA_GEC_1P&uid=SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F&recordSchema=server-choice",
        "type": "application/atom+xml",
        "title": "Atom format"
      },
      {
        "href": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/gml%2Bxml&parentIdentifier=EOP:ESA:OADS:SEA_GEC_1P&uid=SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F&recordSchema=om10",
        "type": "application/gml+xml;profile=http://www.opengis.net/spec/EOMPOM/1.0",
        "title": "O&M metadata"
      },
      {
        "href": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/gml%2Bxml&parentIdentifier=EOP:ESA:OADS:SEA_GEC_1P&uid=SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F&recordSchema=om",
        "type": "application/gml+xml;profile=http://www.opengis.net/spec/EOMPOM/1.1",
        "title": "O&M 1.1 metadata"
      },
      {
        "href": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/rdf%2Bxml&parentIdentifier=EOP:ESA:OADS:SEA_GEC_1P&uid=SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F&recordSchema=server-choice",
        "type": "application/rdf+xml",
        "title": "RDF/XML format"
      }
    ]
  }
}
"identifier": "EOP:ESA:OADS:SEA_GEC_1P&uid=SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F&recordSchema=server-choice",
"type": "application/ld+json",
"title": "JSON-LD format"
},
{
"href": "http://fedeo.esa.int/opensearch/request/?httpAccept=text/turtle&parentIdentifier=EOP:
ESA:OADS:SEA_GEC_1P&uid=SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F&recordSchema=server-choice",
"type": "text/turtle",
"title": "Turtle format"
}
],
"data": [
{
"href": "http://tpm-
ds.esa.int/products/SEA_GEC_1P/1978/09/27/SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F.ZIP",
"type": "application/x-binary",
"title": "Download"
}
],
"previews": [
{
"href": "http://tpm-
ds.esa.int/metadata/SEA_GEC_1P/1978/09/27/SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F.BI.PNG",
"type": "image/png",
"title": "Quicklook",
"category": "QUICKLOOK",
"expression": "sample",
"conformsTo": "http://www.opengis.net:def/crs/EPSG/0/4326"
}
],
"up": [
{
"href": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/atom%2Bxml&uid=SEA_GEC_1P&recordSchema=iso",
"type": "application/atom+xml",
"title": "Up"
}
]
},
"acquisitionInformation": {
"platform": {
"@id": "http://gcmdservices.gsfc.nasa.gov/kms/concept/1bffe898-f4a2-458e-92c5-cd7c9c1cd5f0",
"platform": "Seasat",
"platformSerialIdentifier": "1"
},
"instrument": {
"@id": "http://gcmdservices.gsfc.nasa.gov/kms/concept/a37282d4-322c-4dd0-8edc-36099b9b586c",
"instrumentShortName": "SAR",
"sensorType": "RADAR"
},
"acquisitionParameters": {
"operationalMode": "IM",
"polarisationMode": "S",
"polarisationChannels": "HH",
"beginningDateTime": "1978-09-27T01:04:30Z",
"endingDateTime": "1978-09-27T01:04:45Z",
"orbitDirection": "DESCENDING",
"orbitNumber": 1316,
"acquisitionType": "NOMINAL",
"acquisitionSubType": "DEFAULT",
"wrsLongitudeGrid": 0,
"antennaLookDirection": "RIGHT",
"acquisitionAngles": {
"minimumIncidenceAngle": 19.6,
"maximumIncidenceAngle": 29.2,
"incidenceAngleVariation": 9.6
D.1.1.4 JSON-LD (Expanded)

```json
{
    "@context": {
        "eop": "http://www.opengis.net/ont/eo-geojson/1.0/",
        "xsd": "http://www.w3.org/2001/XMLSchema#",
        "dct": "http://purl.org/dc/terms/",
        "atom": "http://www.w3.org/2005/Atom/",
        "iana": "http://www.iana.org/assignments/relation/",
        "owc": "http://www.opengis.net/ont/owc/1.0/",
        "gj": "https://purl.org/geojson/vocab#",
        "gsp": "http://www.opengis.net/ont/geosparql#",
        "ical": "http://www.w3.org/2002/12/cal/ical#",
        "media": "http://search.yahoo.com/mrss/"
    },
    "@id": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/geo%2Bjson&parentIden
tifier=EOP:ESA:OADS:SEA_GEC_1P&uid=SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445
_001316_0000_2267_9B4F",
    "@type": [
        "gj:Feature",
        "gsp:Feature",
        "eop:EarthObservation"
    ],
    "gj:bbox": {
        "@list": [
            -2.69574,
            61.965195,
            0.135472,
            63.261372
        ]
    },
    "gsp:hasGeometry": {
        "gsp:asWKT": "Polygon((-2.682513, 63.261372, -2.695740, 61.997604, 0.005087, 61.965195, 0.135472, 63.227173, -2.682513, 63.261372))",
        "@type": "gsp:Geometry"
    },
    "gj:geometry": {
        "@type": "gj:Polygon",
        "gj:coordinates": [
            -2.682513,
            63.261372,
            -2.69574,
            61.997604,
            0.005087,
            61.965195,
            0.135472,
            63.227173,
            -2.682513,
            63.261372
        ]
    },
    "gj:properties": {
        "@type": "gj:Properties",
        "dct:date": "1978-09-27T01:04:30Z/1978-09-27T01:04:45Z",
        "dct:modified": "2017-04-11T13:36:16Z",
        "dct:title": "SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F"
    }
}
```
« dct :identifier » :
« SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F »,
« eop :acquisitionInformation » : {  
  « @type » : « eop :AcquisitionInformation »,  
  "eop:acquisitionParameters": {  
    "@type": "eop:AcquisitionParameters",
    "eop:operationalMode": "IM",
    « eop :polarisationChannels » : {  
      « @id » : « eop :PolarisationChannels/HH »
    },
    « eop :polarisationMode » : {  
      « @id » : « eop :PolarisationMode/S »
    },
    « eop :acquisitionAngles » : {  
      « @type » : « eop :AcquisitionAngles »,
      « eop :incidenceAngleVariation » : 9.6,
      « eop :maximumIncidenceAngle » : 29.2,
      « eop :minimumIncidenceAngle » : 19.6
    },
    « eop :acquisitionSubType » : « DEFAULT »,
    « eop :acquisitionType » : {  
      « @id » : « eop :AcquisitionType/NOMINAL »
    },
    "eop:antennaLookDirection": {  
      "@id": "eop:RIGHT"
    },
    "eop:orbitDirection": {  
      "@id": "eop:DESCENDING"
    },
    « eop :orbitNumber » : 1316,
    "eop:wrsLongitudeGrid": "0",
    "ical:dtend": "1978-09-27T01:04:45Z",
    "ical:dtstart": "1978-09-27T01:04:30Z"
  },
  "eop:instrument": {  
    "@id": "http://gcmdservices.gsfc.nasa.gov/kms/concept/a37282d4-322c-4dd0-8edc-36099b9b586c",
    "@type": "eop:Instrument",
    "eop:instrumentShortName": "SAR",
    "eop:sensorType": {  
      "@id": "eop:RADAR"
    }
  },
  "eop:platform": {  
    "@id": "http://gcmdservices.gsfc.nasa.gov/kms/concept/1bffe898-f4a2-458e-92c5-cd7c9c1cd5f0",
    "@type": "eop:Platform",
    "eop:platform": "Seasat",
    "eop:platformSerialIdentifier": "1"
  },
  "eop:parentIdentifier": "SEA_GEC_1P",
  "eop:productInformation": {  
    "@type": "eop:ProductInformation",
    "eop:availabilityTime": "2014-10-04T04:19:17Z",
    "eop:productType": "SEA_GEC_1P",
    "eop:size": 285211520
  },
  "eop:status": {  
    "@id": "eop:ARCHIVED"
  },
  "owc:links": {  
    "@type": "owc:Links",
    "iana:alternate": {  
      "@id": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/atom%2Bxml&parentIdentifier=EOP:ESA:OADS:SEA_GEC_1P&uid=SE1_OPER_SEA_GEC_1P_19780927T010430_19780927T010445_001316_0000_2267_9B4F&recordSchema=server-choice",
      "@type": "atom:link",
      "dct:title": "Atom format",
      "atom:type": "application/atom+xml"
    }
  }
}
D.1.2 Example 2: Landsat (Optical)

D.1.2.1 OGC 10-157r4

```xml
<?xml version="1.0" encoding="UTF-8"?>
<opt:EarthObservation xmlns:opt="http://www.opengis.net/opt/2.1"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:alt="http://www.opengis.net/alt/2.1"
xmlns:lb="http://www.opengis.net/lb/2.1" xmlns:om="http://www.opengis.net/om/2.0"
xmlns:opensc="http://a9.com/-/spec/opensc/1.1/"
xmlns:ows="http://www.opengis.net/ows/2.0" xmlns:sar="http://www.opengis.net/sar/2.1"
xmlns:ssp="http://www.opengis.net/ssp/2.1"
xmlns:swe="http://www.opengis.net/swe/1.0"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
gml:id="ID_73e3e096-6446-4bc1-bc0e-12528b96d85a">
<om:phenomenonTime>
<gml:TimePeriod gml:id="tp_73e3e096-6446-4bc1-bc0e-12528b96d85a">
</gml:TimePeriod>
</om:phenomenonTime>
<om:resultTime>
<gml:TimeInstant gml:id="archivingdate_73e3e096-6446-4bc1-bc0e-12528b96d85a">
</gml:TimeInstant>
</om:resultTime>
<om:procedure>
<eop:EarthObservationEquipment gml:id="eoe_73e3e096-6446-4bc1-bc0e-12528b96d85a">
<eop:platform>
<eop:Platform>
<eop:shortName>Landsat</eop:shortName>
<eop:serialIdentifier>7</eop:serialIdentifier>
</eop:Platform>
</eop:platform>
<eop:instrument>
<eop:Instrument>
<eop:shortName>ETM</eop:shortName>
</eop:Instrument>
</eop:instrument>
<eop:sensor>
<eop:Sensor>
<eop:sensorType>OPTICAL</eop:sensorType>
<eop:operationalMode codeSpace="urn:eop:PHR:sensorMode">IM</eop:operationalMode>
</eop:sensor>
</eop:sensor>
<eop:acquisitionParameters>
<eop:Acquisition>
<eop:orbitNumber>3886</eop:orbitNumber>
<eop:orbitDirection>DESCENDING</eop:orbitDirection>
<eop:wrsLongitudeGrid codeSpace="EPSG">205</eop:wrsLongitudeGrid>
<eop:wrsLatitudeGrid codeSpace="EPSG">31</eop:wrsLatitudeGrid>
<eop:illuminationAzimuthAngle uom="deg">157.128</eop:illuminationAzimuthAngle>
<eop:illuminationZenithAngle uom="deg">67.5922</eop:illuminationZenithAngle>
<eop:illuminationElevationAngle uom="deg">22.4078</eop:illuminationElevationAngle>
</eop:Acquisition>
</eop:acquisitionParameters>
</eop:EarthObservationEquipment>
</om:procedure>
</om:featureOfInterest>
</opt:EarthObservation>
</xml>
```
<eop:Footprint gml:id="fp_73e3e096-6446-4bc1-bc0e-12528b96d85a">
  <gml:MultiSurface gml:id="ms_73e3e096-6446-4bc1-bc0e-12528b96d85a">
    <gml:surfaceMembers>
      <gml:Polygon gml:id="fppoly_73e3e096-6446-4bc1-bc0e-12528b96d85a">
        <gml:exterior>
          <gml:LinearRing>
            <gml:posList>42.7054 -10.9168 42.7186 -8.19013 40.7994 -8.21391 40.7871 -10.8605 42.7054 -10.9168</gml:posList>
          </gml:LinearRing>
        </gml:exterior>
      </gml:Polygon>
    </gml:surfaceMembers>
  </gml:MultiSurface>
</eop:Footprint>

<om:result>
  <opt:EarthObservationResult gml:id="eor_73e3e096-6446-4bc1-bc0e-12528b96d85a">
    <eop:browse>
      <eop:BrowseInformation>
        <eop:type>QUICKLOOK</eop:type>
        <eop:referenceSystemIdentifier codeSpace="EPSG">epsg:4326</eop:referenceSystemIdentifier>
        <eop:fileName>
            <ows:RequestMessage/>
          </ows:ServiceReference>
        </eop:fileName>
      </eop:BrowseInformation>
    </eop:browse>
    <eop:browse>
      <eop:BrowseInformation>
        <eop:type>THUMBNAIL</eop:type>
        <eop:referenceSystemIdentifier codeSpace="EPSG">epsg:4326</eop:referenceSystemIdentifier>
        <eop:fileName>
            <ows:RequestMessage/>
          </ows:ServiceReference>
        </eop:fileName>
      </eop:BrowseInformation>
    </eop:browse>
    <eop:product>
      <eop:ProductInformation>
        <eop:fileName>
            <ows:RequestMessage/>
          </ows:ServiceReference>
        </eop:fileName>
        <eop:version>1.0</eop:version>
        <eop:size uom="kb">165773162</eop:size>
      </eop:ProductInformation>
      <eop:product>
        <eop:cloudCoverPercentage uom="%">0</eop:cloudCoverPercentage>
      </eop:product>
    </eop:product>
  </opt:EarthObservationResult>
</om:result>

<eop:metaDataProperty>
  <eop:EarthObservationMetaData>
    <eop:identifier>LS07_RMPS_ETM_GTC_1P_20000107T111229_20000107T111258_003886_0205_0031_9261</eop:identifier>
  </eop:EarthObservationMetaData>
</eop:metaDataProperty>
D.1.2.2 GeoJSON

```json
{
  "type": "Feature",
  "bbox": [[-10.9168, 40.7871, -8.19013, 42.7186]],
  "geometry": {
    "type": "Polygon",
    "coordinates": [
      [[-10.9168, 42.7054],
       [-10.8605, 40.7871],
       [-8.21391, 40.7994],
       [-8.19013, 42.7186],
       [-10.9168, 42.7054]]
    ]
  },
  "properties": {
    "status": "ARCHIVED",
    "parentIdentifier": "LANDSAT.ETM.GTC",
    "title": "LS07_RMPS_ETM_GTC_1P_20000107T111229_20000107T111258_003886_0205_0031_9261",
    "identifier": "LS07_RMPS_ETM_GTC_1P_20000107T111229_20000107T111258_003886_0205_0031_9261",
    "updated": "2017-04-11T11:21:45Z",
    "links": {
      "alternates": [
        {
          "type": "application/atom+xml",
          "title": "Atom format"
        }
      ]
    }
  }
}
```
D.1.2.3 JSON-LD (Compacted)

```json
{
"@context": "http://schemas.opengis.net/eo-geojson/1.0/eo-geojson.jsonld",
"type": "Feature",
"geometry": {
"type": "Polygon",
"coordinates": [
[[-10.9168, 42.7054],
[-10.8605, 40.7871],
[-8.21391, 40.7994],
[-8.19013, 42.7186],
[-10.9168, 42.7054]]
]
"properties": {
"status": "ARCHIVED",
"parentIdentifier": "LANDSAT.ETM.GTC",
"title": "LS07_RMPS_ETM_GTC_1P_20000107T111229_20000107T111258_003886_0205_0031_9261",
"acquisitionParameters": {
"beginningDateTime": "2000-01-07T11:12:29Z",
"endingDateTime": "2000-01-07T11:12:58Z",
"orbitDirection": "DESCENDING",
"orbitNumber": 3886,
"acquisitionSubType": "DEFAULT",
"wrsLongitudeGrid": "205",
"wrsLatitudeGrid": "31"
},
"productInformation": {
"productType": "ETM_GTC_1P",
"size": 165773162,
"availabilityTime": "2000-01-07T11:12:58Z",
"referenceSystemIdentifier": "epsg:4326",
"cloudCover": 0
}
}
}
```
« identifier » :
  « LS07_RMPS_ETM_GTC_1P_20000107T111229_20000107T111258_003886_0205_0031_9261 »,
« date » :
« updated » :
  « 2017-04-11T11:21:45Z »,
"links": [
  "alternates": [
    "type": "application/atom+xml",
    "title": "Atom format"
  ],
    "type": "application/gml+xml;profile=http://www.opengis.net/spec/EOMPOM/1.0",
    "title": "O&M metadata"
  ],
    "type": "application/gml+xml;profile=http://www.opengis.net/spec/EOMPOM/1.1",
    "title": "O&M 1.1 metadata"
  ],
    "type": "application/rdf+xml",
    "title": "RDF/XML format"
  ],
    "type": "application/ld+json",
    "title": "JSON-LD format"
  ],
    "type": "text/turtle",
    "title": "Turtle format"
  ],
  "data": [
    "href": "http://landsat-ds.esa.int/products/LANDSAT_ETM/2000/01/07/LS07_RMPS_ETM_GTC_1P_20000107T111229_20000107T111258_003886_0205_0031_9261.ZIP",
    "type": "application/x-binary",
    "title": "Download"
  ],
  "previews": [
    "href": "http://landsat-ds.esa.int/metadata/LANDSAT_ETM/2000/01/07/LS07_RMPS_ETM_GTC_1P_20000107T111229_20000107T111258_003886_0205_0031_9261.BP.PNG",
    "type": "image/png",
    "title": "Quicklook"
  ]
]
D.1.2.4 JSON-LD (Expanded)
"@type": "gj:Polygon",
"gj:coordinates": [
  [-8.19013, 42.7186],
  [-8.21391, 40.7994],
  [-10.8605, 40.7871],
  [-10.9168, 42.7054],
  [-10.9168, 42.7054]
],
"gj:properties": {
  "@type": "gj:Properties",
  "dct:modified": "2017-04-11T11:21:45Z",
  "dct:title": "LS07_RMPS_ETM_GTC_1P_20000107T111229_20000107T111258_003886_0205_0031_9261",
  "dct:identifier": "LS07_RMPS_ETM_GTC_1P_20000107T111229_20000107T111258_003886_0205_0031_9261",
  "eop:acquisitionInformation": {
    "@type": "eop:AcquisitionInformation",
    "eop:acquisitionParameters": {
      "eop:operationalMode": "IM",
      "eop:acquisitionSubType": "DEFAULT",
      "eop:acquisitionType": {
        "@id": "eop:AcquisitionType/NOMINAL"
      }
    },
    "eop:wrsLatitudeGrid": "31",
    "eop:orbitDirection": {
      "@id": "eop:DESCENDING"
    },
    "eop:orbitNumber": 3886,
    "eop:wrsLongitudeGrid": "205",
    "ical:dtend": "2000-01-07T11:12:58Z",
    "ical:dtstart": "2000-01-07T11:12:29Z"
  },
  "eop:instrument": {
    "@id": "http://gcmdservices.gsfc.nasa.gov/kms/concept/4dbe7764-a2ea-4a19-b754-696c35ac3205",
    "@type": "eop:Instrument",
    "eop:instrumentShortName": "ETM",
    "eop:sensorType": {
      "@id": "eop:OPTICAL"
    }
  },
  "eop:platform": {
    "@id": "http://gcmdservices.gsfc.nasa.gov/kms/concept/c7a09e9f-3c99-4b31-a521-313c379ba2b4",
    "@type": "eop:Platform",
    "eop:platform": "Landsat",
    "eop:platformSerialIdentifier": "7"
  },
  "eop:parentIdentifier": "LANDSAT.ETM.GTC",
  "eop:productInformation": {
    "@type": "eop:ProductInformation",
    "eop:availabilityTime": "2000-01-07T11:12:58Z",
    "eop:productType": "ETM_GTC_1P",
    "eop:size": 165773162,
    "eop:cloudCover": 0
  },
  "eop:status": {
    "@id": "eop:ARCHIVED"
  },
  "owc:links": {
    "@type": "owc:Links",
    "iana:alternate": [
    ]
  }
}
D.1.3 Example 3: Cryosat-2 (Altimetric)

D.1.3.1 OGC 10-157r4

```xml
<?xml version="1.0" encoding="UTF-8"?>
<alt:EarthObservation xmlns:alt="http://www.opengis.net/alt/2.1"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:atom="http://www.w3.org/2005/Atom"
xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:eo="http://www.opengis.net/eop/2.1"
xmlns:gml:atom="http://www.opengis.net/atom/2.0" xmlns:ows="http://www.opengis.net/ows/2.0"
xmlns:semantic="http://a9.com/-/opensearch/extensions/semantic/1.0/"
xmlns:sru="http://a9.com/-/opensearch/extensions/sru/2.0/"
xmlns:swe="http://www.opengis.net/swe/1.0" xmlns:time="http://a9.com/-/opensearch/extensions/time/1.0/"
xmlns:xlink="http://www.w3.org/2001/XMLSchema-instance"
gml:id="CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001_1">
  <om:phenomenonTime>
    <gml:TimePeriod gml:id="CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001_2">
      <gml:beginPosition>2010-07-22T12:05:23Z</gml:beginPosition>
      <gml:endPosition>2010-07-22T13:44:36Z</gml:endPosition>
    </gml:TimePeriod>
  </om:phenomenonTime>
  <om:resultTime>
    <gml:TimeInstant gml:id="CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001_3">
      <gml:timePosition>2016-03-09T16:39:40Z</gml:timePosition>
    </gml:TimeInstant>
  </om:resultTime>
  <om:procedure>
    <alt:EarthObservationEquipment gml:id="CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001_4">
      <eop:Platform>
        <eop:shortName>Cryosat</eop:shortName>
        <eop:serialIdentifier>2</eop:serialIdentifier>
      </eop:Platform>
      <eop:Instrument>
        <eop:shortName>SIRAL</eop:shortName>
      </eop:Instrument>
      <eop:Sensor>
        <eop:sensorType>ALTIMETRIC</eop:sensorType>
      </eop:Sensor>
      <eop:acquisitionParameters>
        <alt:Acquisition>
          <eop:orbitNumber>001523</eop:orbitNumber>
          <eop:lastOrbitNumber>001523</eop:lastOrbitNumber>
          <eop:orbitDirection>ASCENDING</eop:orbitDirection>
        </alt:Acquisition>
      </eop:acquisitionParameters>
    </alt:EarthObservationEquipment>
    </om:procedure>
</alt:EarthObservation>
```
D.1.3.2 GeoJSON

```json
{
  "type": "Feature",
  "bbox": [
    -0.004573,
    -169.106794,
    0.046332,
    166.040236
  ],
  "geometry": {
    "type": "LineString",
    "coordinates": [
      -169.106794,
      0.046332,
      166.040236,
      -0.004573
    ]
  },
  "properties": {
    "status": "ARCHIVED",
    "parentIdentifier": "CR2_SIR",
    "title": "CS LTA__SIR GDR 2__20100722T120449_20100722T134403_C001",
    "identifier": "CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001",
    "updated": "2017-04-11T14:37:41Z",
    "links": [
      "alternates": [
        "type": "application/atom+xml",
        "title": "Atom format"
      ],
      "type": "application/gml+xml;profile=http://www.opengis.net/spec/EOMPOM/1.0",
      "title": "O&M metadata"
    ],
    "hhref": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/gml%2Bxml&parentIdenti"}
```
D.1.3.3 JSON-LD (Compacted)

```json
{
  "@context": "http://schemas.opengis.net/geojson/1.0/geojson.jsonld",
  "type": "Feature",
  "id": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/geo%2Bjson&parentIdentifier=EOP:ESA:CRYOSAT:C2_SIR&uid=CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001",
  "bbox": [-0.004573, -169.106794, 0.046332, 166.040236],
  "geometry": {
    "type": "LineString",
    "coordinates": [
      [-169.106794, 0.046332],
      [166.040236, -0.004573]
    ]
  },
  "properties": {
    "status": "ARCHIVED",
    "parentIdentifier": "C2_SIR",
    "title": "CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001",
    "identifier": "CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001",
    "updated": "2017-04-11T14:37:41Z",
    "links": {
      "alternates": [
        "http://fedeo.esa.int/opensearch/request/?httpAccept=application/atom%2Bxml&parentIdentifier=EOP:ESA:CRYOSAT:C2_SIR&uid=CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001"
      ]
    }
  }
}
```
D.1.3.4 JSON-LD (Expanded)

```json
{
    "@context": {
        "eop": "http://www.opengis.net/ont/eo-geojson/1.0/",
        "xsd": "http://www.w3.org/2001/XMLSchema#",
        "dct": "http://purl.org/dc/terms/",
        "atom": "http://www.w3.org/2005/Atom/",
        "iana": "http://www.iana.org/assignments/relation/",
        "owc": "http://www.opengis.net/ont/owl/1.0/",
        "gj": "https://purl.org/geojson/vocab#",
        "gsp": "http://www.opengis.net/ont/geosparql#",
        "ical": "http://www.w3.org/2002/12/cal/ical#",
        "media": "http://search.yahoo.com/mrss/"
    },
    "@type": ["gj:Feature", "eop:EarthObservation"
    ],
    "gj:bbox": [ ]
}
```
{
  "gj:geometry": {
    "@type": "gj:LineString",
    "gj:coordinates": [
      -169.106794,
      0.046332,
      166.040236,
      -0.004573
    ]
  },
  "gj:properties": {
    "@type": "gj:Properties",
    "dct:identifier": "CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001",
    "dct:title": "CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001",
    "dct:modified": "2017-04-11T14:37:41Z",
    "eop:acquisitionInformation": {
      "@type": "eop:AcquisitionInformation",
      "@id": "eop:AcquisitionInformation",
      "acquisitionParameters": {
        "@type": "eop:AcquisitionParameters",
        "operationalMode": 
      }
      "acquisitionStation": "KS",
      "acquisitionType": {
        "@id": "eop:AcquisitionType/NOMINAL"
      }
      "ascendingNodeDate": "2010-07-22T12:04:49Z",
      "ascendingNodeLongitude": -169.101978,
      "completionTimeFromAscendingNode": "5953.440918",
      "lastOrbitNumber": 1523,
      "orbitDirection": {
        "@id": "eop:ASCENDING"
      }
      "orbitNumber": 1523,
      "startTimeFromAscendingNode": "0000.761548",
      "dtend": "2010-07-22T13:44:36Z",
      "dtstart": "2010-07-22T12:05:23Z"
    }
    "instrument": {
      "@type": "eop:Instrument",
      "@id": "https://gcmdservices.gsfc.nasa.gov/kms/concept/30787b9f-a407-47a5-b69b-5b9e1d1b1144",
      "instrumentShortName": "SIRAL",
      "sensorType": {
        "@id": "eop:ALTIMETRIC"
      }
    }
    "platform": {
      "@id": "http://gcmdservices.gsfc.nasa.gov/kms/concept/a915ab2f-46c5-493b-9f18-aeb3383ee72b",
      "@type": "eop:Platform",
      "platformShortName": "Cryosat",
      "platformSerialIdentifier": "2"
    }
    "parentIdentifier": "CR2_SIR",
    "productInformation": {
      "@type": "eop:ProductInformation",
      "availabilityTime": "2016-03-09T16:39:40Z",
      "processingCenter": "PDS",
      "processingDate": "2016-03-09T16:39:40Z",
      "processorVersion": "3.1",
      "productType": "SIR_GDR_2",
      "qualityInformation": {
        "status": "DEGRADED"
      },
      "size": 8612306,
      "version": "C001"
    },
    "status": {
      "identifier": "CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001",
      "title": "CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001"
    }
  }
}
"@id": "eop:ARCHIVED"
],
"owc:links": {
  "@type": "owc:Links",
  "iana:alternate": [{
    "@type": "atom:link",
    "dct:title": "Atom format",
    "atom:type": "application/atom+xml"
  },
  {
    "@type": "atom:link",
    "dct:title": "O&M metadata",
    "atom:type": "application/gml+xml;profile=http://www.opengis.net/spec/EOMPOM/1.0"
  },
  {
    "@type": "atom:link",
    "dct:title": "O&M 1.1 metadata",
    "atom:type": "application/gml+xml;profile=http://www.opengis.net/spec/EOMPOM/1.1"
  },
  {
    "@type": "atom:link",
    "dct:title": "RDF/XML format",
    "atom:type": "application/rdf+xml"
  },
  {
    "@type": "atom:link",
    "dct:title": "JSON-LD format",
    "atom:type": "application/ld+json"
  },
  {
    "@type": "atom:link",
    "dct:title": "Turtle format",
    "atom:type": "text/turtle"
  }],
  "iana:enclosure": { 
  "@id": "ftp://science-pds.cryosat.esa.int/SIR_GDR/2010/07/CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001.DBL",
  "@type": "atom:link",
  "dct:title": "Download",
  "atom:type": "application/x-binary"
  },
  "iana:up": {
    "@id": "http://fedeo.esa.int/opensearch/request/?httpAccept=application/atom%2Bxml&uid=CR2_SIR&recordSchema=iso",
    "@type": "atom:link",
    "dct:title": "ISO format",
    "atom:type": "application/atom+xml"
  }
]
"dct:title": "Up",
"atom:type": "application/atom+xml"
},

"iana:via": [
  
  "@id": "ftp://science-pds.cryosat.esa.int//SIR_GDR/2010/07/CS_LTA__SIR_GDR_2__20100722T120449_20100722T134403_C001.HDR",
  "@type": "atom:link",
  "dct:title": "Via",
  "atom:type": "application/xml"
]}
Annex E: GeoJSON SCHEMAS (NORMATIVE)

E.1 Schemas for EO GeoJSON validation

JSON Schema [OR18] representation (Draft 04) is used to define the schemas. This specification is supported by several tools (including Altova XML Spy 2016, JSONBuddy 3.5 and also Web-based tools[^21]) and is also used to define data types in the OpenAPI specification[^22]. It does not allow to easily model composition of schemas or inheritance without relaxing the schemas. Therefore, the property “additionalProperties” is set to true in some schema definitions to allow using the “allOf” operator to model inheritance. A future version v5 of JSON Schema is expected to propose a $merge operator to better support this. Other schema languages (e.g., SJOT[^23]) have better support for this, but have less tool support.

The schemas below assume that numbers are not surrounded by double quotes as per the JSON Style Guidelines [OR16].

The file is available at http://schemas.opengis.net/geo-geojson/1.0/geo-geojson-schema.json (See Annex E:).

```json
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "title": "GeoJSON encoding of OGC 17-003 Earth Observation Metadata",
  "description": "Definition of EO Dataset document. Note that numbers in the instance should not be surrounded by double-quotes to validate against this schema.",
  "$ref": "#/definitions/EarthObservation",
  "definitions": {
    "MetadataInformation": {
      "description": "Subset of Properties",
      "type": "object",
      "properties": {
        "lang": {
          "description": "RFC3066",
          "type": "string",
          "minLength": 2,
          "maxLength": 3
        },
        "updated": {
          "type": "string",
          "pattern": "^\[0-9\]{4}-\[0-9\]{2}-\[0-9\]{2}T\[0-9\]{2}:\[0-9\]{2}:\[0-9\]{2}(\.[0-9]+)?(Z|\[\+\-\][0-9\]{2}:\[0-9\]{2})$",
          "format": "date-time"
        },
        "published": {
          "type": "string",
          "format": "date-time"
        },
        "creationDate": {
          "type": "string",
          "format": "date-time"
        }
      }
    },
    "required": [
      "updated"
    ]
  }
}
```

[^21]: E.g., https://jsonschemalint.com/#/version/draft-04/markup/json or http://www.jsonschemavalidator.net/

[^22]: https://www.openapis.org/specification/repo

E.1.2 Definitions/DataIdentification

```
"DataIdentification": {
  "description": "Subset of Properties",
  "type": "object",
  "properties": {
    "parentIdentifier": {
      "type": "string"
    },
    "doi": {
      "type": "string"
    },
    "title": {
      "type": "string"
    },
    "identifier": {
      "type": "string"
    },
    "date": {
      "type": "string"
    },
    "created": {
      "type": "string",
      "format": "date-time"
    },
    "available": {
      "type": "string"
    },
    "additionalAttributes": {
      "type": "object",
      "minProperties": 1
    }
  },
  "required": [
    "title",
    "identifier",
    "date"
  ]
},
```

E.1.3 Definitions/ProcessingInformation

```
"ProcessingInformation": {
  "description": "Subset of ProductInformation",
  "type": "object",
  "properties": {
    "processingLevel": {
      "type": "string",
      "enum": [
        "1A",
        "1B",
        "2",
        "3"
      ]
    },
    "processorName": {
      "type": "string"
    },
    "processorVersion": {
      "type": "string"
    },
    "processingCenter": {
      "description": "Codelist",
      "type": "string"
    },
    "processingDate": {
      "type": "string",
      "format": "date-time"
    }
  }
},
```
E.1.4 Definitions/Links

"Links": {
  "title": "Links",
  "description": "Objects with Links grouped by \"relation\" (i.e., Atom \"rel\" attribute).",
  "type": "object",
  "properties": {
    "type": {
      "type": "string",
      "enum": [
        "Links"
      ]
    },
    "qualityReport": {
      "type": "array",
      "items": {
        "$ref": "#/definitions/Link"
      }
    },
    "previews": {
      "type": "array",
      "items": {
        "$ref": "#/definitions/Link"
      }
    },
    "via": {
      "type": "array",
      "items": {
        "$ref": "#/definitions/Link"
      }
    },
    "data": {
      "type": "array",
      "items": {
        "$ref": "#/definitions/Link"
      }
    },
    "up": {
      "type": "array",
      "items": {
        "$ref": "#/definitions/Link"
      }
    },
    "related": {
      "type": "array",
      "items": {
        "$ref": "#/definitions/Link"
      }
    },
    "alternates": {
      "$ref": "#/definitions/Link"
    }
  }
}
E.1.5 Definitions/Properties

"Properties": {
  "title": "Properties",
  "type": "object",
  "allOf": [ {
    "type": "object",
    "properties": {
      "type": { "type": "string",
                 "enum": [ "Properties" ]}
    },
    "status": { "type": "string",
                 "enum": [ "ARCHIVED",
                           "PLANNED",
                           "ACQUIRED",
                           "CANCELLED",
                           "FAILED",
                           "POTENTIAL",
                           "REJECTED",
                           "QUALITYDEGRADED" ]}
  },
  "acquisitionInformation": { "type": "array",
                               "items": { "$ref": "#/definitions/AcquisitionInformation" }},
  "productInformation": { "$ref": "#/definitions/ProductInformation" },
  "links": { "$ref": "#/definitions/Links" },
  "offerings": { "description": "OGC 14-055r2",
                 "type": "array",
                 "items": { "$ref": "http://schemas.opengis.net/eo-geojson/1.0/owc-geojson-schema.json#/definitions/Offering" }},
  "required": [ "status",
                 "acquisitionInformation",
                 "links" ]
}]
E.1.6 Definitions/EarthObservation

```
"EarthObservation": {
  "description": "GeoJSON Feature",
  "type": "object",
  "properties": {
    "@context": { 
      "type": "string"
    },
    "type": { 
      "title": "type",
      "type": "string",
      "enum": [
        "Feature"
      ]
    },
    "id": { 
      "type": "string",
      "format": "uri"
    },
    "geometry": { 
      "$ref": "http://schemas.opengis.net/eo-geojson/1.0/owc-geojson-schema.json#/definitions/Geometry"
    },
    "properties": { 
      "$ref": "#/definitions/Properties"
    },
    "bbox": { 
      "type": "array",
      "minItems": 4,
      "maxItems": 4,
      "items": { 
        "type": "number"
      }
    }
  }
},
"required": [ 
  "type",
  "id",
  "geometry",
  "properties"
],
"additionalProperties": false
},
```

E.1.7 Definitions/Platform

```
"Platform": {
  "type": "object",
  "minProperties": 1,
  "properties": {
    "type": { 
      "type": "string",
      "enum": [
        "Platform"
      ]
    },
    "id": { 
      "type": "string",
      "format": "uri"
    },
    "platformShortName": { 
      "type": "string"
    },
    "platformSerialIdentifier": {
```

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E.1.8 Definitions/Instrument

```json
"Instrument": {
  "type": "object",
  "properties": {
    "type": {
      "type": "string",
      "enum": [
        "Instrument"
      ]
    },
    "id": {
      "type": "string",
      "format": "uri"
    },
    "sensorType": {
      "type": "string",
      "enum": [
        "OPTICAL",
        "RADAR",
        "ATMOSPHERIC",
        "ALTIMETRIC",
        "LIMB"
      ]
    },
    "instrumentShortName": {
      "type": "string"
    },
    "description": {
      "type": "string"
    }
  },
  "required": [
    "instrumentShortName"
  ],
  "additionalProperties": false
},
```

E.1.9 Definitions/AcquisitionParameters

```json
"AcquisitionParameters": {
  "type": "object",
  "allOf": [
    {
      "type": "object",
      "properties": {
        "acquisitionType": {
          "type": "string",
          "enum": [
            "NOMINAL",
            "CALIBRATION",
            "OTHER"
          ]
        },
        "acquisitionSubType": {
          "type": "string"
        }
      },
      "required": [
        "acquisitionSubType"
      ],
      "additionalProperties": false
    }
  ]
},
```
"type": "string",

"startTimeFromAscendingNode": {
  "type": "integer",
  "minimum": 0
},

"completionTimeFromAscendingNode": {
  "type": "integer",
  "minimum": 0
},

"relativeOrbitNumber": {
  "type": "integer"
},

"wrsLongitude": {
  "type": "string"
},

"wrsLatitude": {
  "type": "string"
},

"tileId": {
  "type": "string"
},

"groundTrackUncertainty": {
  "type": "number"
},

"cycleNumber": {
  "type": "integer",
  "minimum": 0
},

"antennaLookDirection": {
  "type": "string",
  "enum": [
    "LEFT",
    "RIGHT"
  ]
},

"acquisitionStation": {
  "type": "string"
},

"acquisitionAngles": {
  "$ref": "#/definitions/AcquisitionAngles"
},

"operationalMode": {
  "type": "string"
},

"swathIdentifier": {
  "type": "string"
},

"polarisationMode": {
  "description": "Sar",
  "type": "string",
  "enum": [
    "S",
    "D",
    "T",
    "Q",
    "UNDEFINED"
  ]
},

"polarisationChannels": {
  "description": "Sar",
  "type": "string"
},

"resolution": {
  "type": "number"
},

"verticalResolution": {
  "description": "Atm, Lmb",
  "type": "number"
},

"waveLengths": {
  "type": "array",
  "minItems": 1,
  "items": {
    "$ref": "#/definitions/WavelengthInformation"
  }
}
E.1.10 Definitions/Link

"link": {
  "type": "object",
  "properties": {
    "href": {
      "type": "string",
      "format": "uri"
    },
    "type": {
      "type": "string"
    },
    "title": {
      "type": "string"
    },
    "length": {
      "type": "integer",
      "minimum": 0
    },
    "category": {
      "description": "Media category property defined by MediaRSS.",
      "type": "string",
      "enum": [
        "THUMBNAIL",
        "QUICKLOOK",
        "ALBUM",
        "CLOUD",
        "SNOW",
        "QUALITY"
      ]
    },
    "expression": {
      "type": "string"
    }
  }
}
E.1.11 Definitions/ProductInformation

"ProductInformation": {
    "type": "object",
    "allOf": [
        {"type": "object",
            "properties": {
                "type": {"type": "string",
                    "enum": ["ProductInformation"]
                },
                "productType": {"type": "string"},
                "size": {"type": "integer"},
                "productVersion": {"type": "string"},
                "statusSubType": {"type": "string",
                    "enum": ["ON-LINE", "OFF-LINE"]
                },
                "qualityInformation": {
                    "$ref": "#/definitions/QualityInformation"
                },
                "statusDetail": {"type": "string"},
                "availabilityTime": {"type": "string",
                    "format": "date-time"},
                "timeliness": {"type": "string"},
                "productGroupId": {"type": "string"},
                "archivingCenter": {"type": "string"},
                "referenceSystemIdentifier": {"type": "string"},
                "archivingDate": {"type": "string",
                    "format": "date-time"}
            }
        }
    ],
    "required": ["href"],
    "additionalProperties": false
};
E.1.12 Definitions/AcquisitionAngles

"AcquisitionAngles": {
  "type": "object",
  "properties": {
    "illuminationAzimuthAngle": {
      "type": "number"
    },
    "illuminationZenithAngle": {
      "type": "number"
    },
    "illuminationElevationAngle": {
      "type": "number"
    },
    "incidenceAngle": {
      "type": "number"
    },
    "minimumIncidenceAngle": {
      "type": "number"
    },
    "maximumIncidenceAngle": {
      "type": "number"
    },
    "incidenceAngleVariation": {
      "type": "number"
    },
    "acrossTrackIncidenceAngle": {
      "type": "number"
    },
    "alongTrackIncidenceAngle": {
      "type": "number"
    },
    "instrumentAzimuthAngle": {
      "type": "number"
    },
    "instrumentZenithAngle": {
      "type": "number"
    },
    "instrumentElevationAngle": {
      "type": "number"
    },
    "pitch": {
      "type": "number"
    },
    "roll": {
      "type": "number"
    },
    "yaw": {
      "type": "number"
    }
  },
  "additionalProperties": false
},

E.1.13 Definitions/QualityInformation
"QualityInformation": {
  "type": "object",
  "properties": {
    "qualityStatus": {
      "type": "string",
      "enum": [
        "NOMINAL",
        "DEGRADED"
      ]
    },
    "qualityDegradation": {
      "description": "Percentage",
      "type": "number"
    },
    "qualityDegradationTag": {
      "type": "string"
    },
    "qualityDegradationQuotationMode": {
      "type": "string",
      "enum": [
        "AUTOMATIC",
        "MANUAL"
      ]
    }
  },
  "additionalProperties": true
},

E.1.14 Definitions/CoverageDescription

"CoverageDescription": {
  "description": "Subset of ProductInformation",
  "type": "object",
  "properties": {
    "cloudCover": {
      "type": "number"
    },
    "snowCover": {
      "type": "number"
    }
  }
},

E.1.15 Definitions/FeatureCollection

"FeatureCollection": {
  "description": "GeoJSON FeatureCollection",
  "type": "object",
  "properties": {
    "type": {
      "type": "string",
      "enum": [
        "FeatureCollection"
      ]
    },
    "bbox": {
      "type": "array"
    },
    "features": {
      "type": "array",
      "minItems": 0,
      "items": {
        "$ref": "#/definitions/EarthObservation"
      }
    }
  },
  "required": [
    "type",
    "features"
  ]
},
E.1.16 Definitions/WavelengthInformation

```
"WavelengthInformation": {
  "type": "object",
  "minProperties": 1,
  "properties": {
    "type": {
      "type": "string",
      "enum": [
        "WavelengthInformation"
      ]
    },
    "discreteWavelengths": {
      "type": "array",
      "minItems": 1,
      "items": {
        "type": "number",
        "minimum": 0,
        "exclusiveMinimum": true
      }
    },
    "endWavelength": {
      "type": "number",
      "minimum": 0,
      "exclusiveMinimum": true
    },
    "spectralRange": {
      "type": "string",
      "enum": [
        "INFRARED",
        "NIR",
        "SWIR",
        "MWIR",
        "LWIR",
        "FIR",
        "UV",
        "VISIBLE",
        "MICROWAVE",
        "OTHER"
      ]
    },
    "startWavelength": {
      "type": "number",
      "minimum": 0,
      "exclusiveMinimum": true
    },
    "wavelengthResolution": {
      "type": "number"
    }
  }
},
"additionalProperties": false
}
```

E.1.17 Definitions/VerticalSpatialDomain

```
"VerticalSpatialDomain": {
  "description": "Subset of AcquisitionParameters",
  "type": "object",
  "properties": {
    "highestLocation": {
      "type": "string"
    },
    "lowestLocation": {
      "type": "string"
    },
    "locationUnit": {
      "type": "string",
      "enum": [
        "bar",
        "m"
      ]
    }
  }
}
```
E.1.18 Definitions/TemporalInformation

"TemporalInformation": {
    "description": "Subset of AcquisitionParameters",
    "type": "object",
    "properties": {
        "beginningDateTime": {
            "type": "string",
            "format": "date-time"
        },
        "endingDateTime": {
            "type": "string",
            "format": "date-time"
        }
    },
    "required": [
        "beginningDateTime",
        "endingDateTime"
    ]
},

E.1.19 Definitions/AcquisitionInformation

"AcquisitionInformation": {
    "type": "object",
    "properties": {
        "type": {
            "type": "string",
            "enum": [
                "AcquisitionInformation"
            ]
        },
        "platform": {
            "$ref": "#/definitions/Platform"
        },
        "instrument": {
            "$ref": "#/definitions/Instrument"
        },
        "acquisitionParameters": {
            "$ref": "#/definitions/AcquisitionParameters"
        }
    }
},

E.1.20 Definitions/OrbitParameters

"OrbitParameters": {
    "description": "Subset of AcquisitionParameters",
    "type": "object",
    "properties": {
        "orbitDirection": {
            "type": "string",
            "enum": [
                "ASCENDING",
                "DESCENDING"
            ]
        },
        "lastOrbitDirection": {
            "type": "string",
            "enum": [
                "ASCENDING",
                "DESCENDING"
            ]
        },
        "orbitDuration": {
            "type": "number"
        }
    }
}
The JSON schema definitions in the current section are “imported” by the schemas presented in the previous section. They represent a JSON Schema encoding of selected OGC 14-055r2 resources which are reused by the OGC 17-003 GeoJSON encoding without modification.

The file is available at http://schemas.opengis.net/geo-geojson/1.0/owc-geojson-schema.json (See Annex E:).

E.2.1 Definitions/Point (GeoJSON)

```
"Point": {
  "title": "Point",
  "type": "object",
  "properties": {
    "coordinates": {
      "title": "gj:coordinates",
      "description": "One position (longitude, latitude)",
      "type": "array",
      "minItems": 2,
      "maxItems": 2,
      "items": {
        "type": "number"
      }
    },
    "type": {
      "type": "string",
      "enum": ["Point"]
    }
  },
  "required": ["coordinates", "type"],
  "additionalProperties": false
}
```
E.2.2 Definitions/MultiPoint (GeoJSON)

```
"MultiPoint": {
  "title": "point",
  "type": "object",
  "properties": {
    "coordinates": {
      "title": "gj:coordinates",
      "description": "Array of positions",
      "type": "array",
      "minItems": 1,
      "items": {
        "description": "One position",
        "type": "array",
        "minItems": 2,
        "maxItems": 2,
        "items": {
          "type": "number"
        }
      }
    },
    "type": "string",
    "enum": ["MultiPoint"
    ]
  }
},
"required": ["coordinates",
  "type"],
"additionalProperties": false
},
```

E.2.3 Definitions/LineString (GeoJSON)

```
"LineString": {
  "title": "LineString",
  "type": "object",
  "properties": {
    "coordinates": {
      "title": "coordinates",
      "description": "Array of positions",
      "type": "array",
      "minItems": 2,
      "items": {
        "description": "One position",
        "type": "array",
        "minItems": 2,
        "maxItems": 2,
        "items": {
          "type": "number"
        }
      }
    },
    "type": "string",
    "enum": ["LineString"
    ]
  }
},
"required": ["coordinates",
  "type"],
"additionalProperties": false
},
```
E.2.4 Definitions/MultiLineString (GeoJSON)

"MultiLineString": {
  "title": "MultiLineString",
  "type": "object",
  "properties": {
    "coordinates": {
      "title": "coordinates",
      "description": "Array of linestring",
      "type": "array",
      "minItems": 1,
      "items": {
        "description": "Linestring, i.e., array of positions",
        "type": "array",
        "minItems": 2,
        "items": {
          "description": "Position (longitude, latitude)",
          "type": "array",
          "minItems": 2,
          "maxItems": 2,
          "items": {
            "type": "number"
          }
        }
      }
    },
    "type": {
      "type": "string",
      "enum": ["MultiLineString"]
    }
  },
  "required": ["coordinates", "type"],
  "additionalProperties": false
},

E.2.5 Definitions/Polygon (GeoJSON)

"Polygon": {
  "title": "Polygon",
  "type": "object",
  "properties": {
    "coordinates": {
      "title": "coordinates",
      "description": "Array of linestrings",
      "type": "array",
      "minItems": 1,
      "items": {
        "description": "Linear ring, i.e., linestring or array of positions",
        "type": "array",
        "minItems": 1,
        "items": {
          "description": "One position",
          "type": "array",
          "minItems": 2,
          "maxItems": 2,
          "items": {
            "type": "number"
          }
        }
      }
    },
    "type": {
      "type": "string",
      "enum": ["Polygon"]
    }
  },
  "required": ["coordinates", "type"],
  "additionalProperties": false
}
E.2.6 Definitions/MultiPolygon (GeoJSON)

```
"MultiPolygon": {
  "title": "MultiPolygon",
  "type": "object",
  "properties": {
    "coordinates": {
      "title": "coordinates",
      "description": "Array of Polygons",
      "type": "array",
      "minItems": 1,
      "items": {
        "description": "Array of linestrings",
        "type": "array",
        "minItems": 1,
        "items": {
          "description": "Linear ring, i.e., linestring or array of positions",
          "type": "array",
          "items": {
            "description": "One position",
            "type": "array",
            "minItems": 2,
            "maxItems": 2,
            "items": {
              "type": "number"
            }
          }
        }
      }
    },
    "type": {
      "type": "string",
      "enum": ["MultiPolygon"
    ]
  },
  "required": ["coordinates",
                "type"
  ],
  "additionalProperties": false
}
```

E.2.7 Definitions/Geometry (GeoJSON)

```
"Geometry": {
  "title": "Geometry",
  "type": "object",
  "I": {
    "$ref": "#/definitions/Point"
  },
  "$ref": "#/definitions/MultiPoint"
}
```
E.2.8 Definitions/Offering (OGC 14-055r2)

"Offering": {
  "title": "Offering",
  "description": "Offering as defined in OGC 14-055r2",
  "type": "object",
  "properties": {
    "code": {
      "type": "string",
      "format": "uri"
    },
    "operations": {
      "type": "array",
      "items": {
        "$ref": "#/definitions/Operation"
      }
    },
    "contents": {
      "type": "array"
    },
    "styles": {
      "type": "array"
    }
  },
  "required": [
    "code"
  ]
},

E.2.9 Definitions/Operation (OGC 14-055r2)

"Operation": {
  "description": "OGC 14-055r2",
  "type": "object",
  "properties": {
    "code": {
      "type": "string",
      "format": "uri"
    },
    "method": {
      "type": "string",
      "enum": ["GET", "POST", "PUT", "HEAD", "PATCH", "DELETE"
    ]
  },
  "type": {
    "description": "Media type",
    "type": "string"
{},
"href": {
  "type": "string",
  "format": "uri"
},
"request": {
  "type": "object"
},
"result": {
  "type": "object"
},
"required": [
  "code",
  "method",
  "href"
]}
}
Annex F: SCHEMAS AND EXAMPLES

The following schema file, vocabulary definitions, context file and selected examples are provided in the OGC schema repository:

- eo-geojson-schema-standalone.json
- eo-geojson-schema.json
- owc-geojson-schema.json
- eo-geojson-vocabulary.owl
- eo-geojson-vocabulary.ttl
- owc-geojson-vocabulary.owl
- eo-geojson.jsonld
- example-1-seasat.json
- example-1-seasat.jsonld
- example-2-landsat.json
- example-2-landsat.jsonld
- example-3-cryosat.json
- example-3-cryosat.jsonld
- example-4-sentinel.json
- example-4-sentinel.jsonld

They are available at http://schemas.opengis.net/eo-geojson/1.0.
### Annex G: Revision History

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<thead>
<tr>
<th>Date</th>
<th>Version</th>
<th>Editor</th>
<th>Sections modified</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/02/2017</td>
<td>0.0.1</td>
<td>Y. Coene</td>
<td>All</td>
<td>Initialised Draft Document.</td>
</tr>
<tr>
<td>28/02/2017</td>
<td>0.0.2</td>
<td>Y. Coene</td>
<td>All</td>
<td>Updated draft version provided to CEOS WGISS members.</td>
</tr>
<tr>
<td>21/04/2017</td>
<td>0.0.3</td>
<td>Y. Coene</td>
<td>All</td>
<td>JSON-LD content removed or moved to annexes.</td>
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<td></td>
<td>Draft D6</td>
<td></td>
<td></td>
<td>7.8 FeatureCollection encoding example added.</td>
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<td>Annex D Original Annex C examples presented as GeoJSON, JSON-LD (Compacted) and JSON-LD (Expanded).</td>
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<td>Draft D7</td>
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<td>Annex B Original Annex D updated with content moved from inside document to this annex. Original section 5.2.2 “[JSON-LD] instance diagrams” removed. This Annex moved as Annex B as info is needed to understand following annexes with JSON-LD examples and properties.</td>
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<tr>
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<td>Draft D8</td>
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<td>All</td>
<td>mediaType property replaced by “type” and local context added to map “type” to “atom:type” in the scope of the “links” object.</td>
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<td>7.1.4 Offering example added for WMS and WCS.</td>
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<td>Table 4</td>
<td>Clarification added that geometry element can be a “null” value according to RFC 7946 to address comment from CWIC team (Eugene Yu and Linjun Kang) dated 17/03/2017.</td>
</tr>
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<td>Table 9</td>
<td>Multiplicity of “title” (Data Identification) corrected as per CWIC team comments 17/03/2017.</td>
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<td>7.1</td>
<td>“properties”: {} replaced by “properties”: {...} and “geometry”: {} replaced by “geometry”: {...} in JSON examples as per CWIC team comments 17/03/2017.</td>
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<td>“spectralRange” removed from Instrument table as included in WavelengthInformation.</td>
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<td>7.4.1.4</td>
<td>JSON schema diagram for LineString corrected.</td>
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<td>5.2.2</td>
<td>Section explaining JSONPath added.</td>
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<td>25/04/2017</td>
<td>0.0.4</td>
<td>Y. Coene</td>
<td>Annex C2</td>
<td>Mapping on UMM improved with inputs from John Taylor.</td>
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<td>7.7.2 Reference to ISO 8601 Duration added for CompositeType property</td>
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<td>Table 7 media:* properties added and examples of quicklook, thumbnail and masks added below.</td>
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<td>24/05/2017</td>
<td>0.0.5</td>
<td>Annex B: Annex D:</td>
<td>Mappings added for media:* properties. Media: namespace added to “expanded” examples.</td>
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<td>Draft D10</td>
<td>Y. Coene</td>
<td>Annex B</td>
<td>Annex C.3 with EO vocabulary definition (RDFS) updated and moved into JSON-LD Annex as B.3. Included in Turtle format as more compact than RDF/XML format.</td>
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<td>1.2 Aligned with modified table of content (Annex C.3 moved to B.3).</td>
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<td>7.1.3 Example of local access link with “file” URI scheme added as per RFC8089.</td>
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<td>7.7 format and archivingDate properties added in tables and figures.</td>
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<td>Annex C</td>
<td>GeoJSON column in Annex C.2 moved to first column of table. All tables from Annex C merged into a single table.</td>
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<td>All Single namespace eop: used instead of opt:, sar:, lmb: etc.</td>
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<td>13/06/2017</td>
<td>0.0.6</td>
<td>Y. Coene</td>
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<td>Figure 3 updated to allow for geometry=null in JSON Schema.</td>
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<td>2.2 Description column filled in table with conformance classes.</td>
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<td>MultiLineString example added.</td>
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<td>Offering example for WPS added.</td>
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<td>7.3</td>
<td>“lang” added to map UMM metadata language information.</td>
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<td>9</td>
<td>typos “Application” corrected into “application”.</td>
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<td>B.2</td>
<td>eop: namespace corrected in JSON-LD context definitions.</td>
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<td>B.3</td>
<td>Vocabulary updated to encode the individuals in a different way using intermediate classes for the enumerations.</td>
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<td>Mapping table completed/corrected for:</td>
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<td>Integration of comments received from CEOS WGISS NASA team (Allan Doyle, Michael Morahan, and Archie Warnock) on draft D12 as agreed during CEOS WGISS SLT teleconference 24/08/2017:</td>
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<td>i Comment AD2 (A. Doyle): “improvement” clarified.</td>
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<td>Comment AD3: reference to definition of compaction added as footnote.</td>
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<td>Comment AD4: added reference to OGC Simple Features.</td>
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<td>Comment AD6: rephrase sentence confirming that CEOS WGISS review comments are taken into account.</td>
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<td>CEOS added to list of submitting organizations in section iv as well.</td>
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<td>Comment AD9: Reference NR4 moved to OR33 to become non-normative.</td>
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<td>Comment AD10: dataset, swath, granule, dataset definitions added or improved.</td>
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<td>Comment AD11: Sentence reworded.</td>
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<td>Comment AD13: title of first column in properties table changed from “GeoJSON Property” into “JSON Property”</td>
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<td>Comment AD15: Remove “(GeoJSON)” from caption of JSON Schema figures except when appropriate.</td>
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<td>Comment AD18: Remove “(GeoJSON)” from caption of examples except where appropriate.</td>
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<td>Comment AD21: Changed {} into {...}.</td>
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<td>Comment AD33: Added remark about line breaks which were added for readability of WPS example.</td>
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<td>Comment AD57: Added missing caption.</td>
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<td>Comment AD80: Made first and last position contain identical values in example.</td>
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<td>22/01/2018</td>
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<td>Y. Coene</td>
<td>B.2.2</td>
<td>JSON-LD 1.1 context updated to allow constants to be interpreted as relative/local URI and be expanded using @base URI.</td>
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<td>atom: replaced by “iana:” to align URI of relations with [NR11] and OGC JSON Best Practice Candidate Alpha version. Added definition of “iana:” namespace.</td>
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<td>JSON Schema for OGC 14-055r2 Operation object added.</td>
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<td>Reference to UMM-C added as [OR04]. Existing OR04 moved to OR13.</td>
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<td>Annex F</td>
<td>Annex with download location for schemas and examples added.</td>
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<td>Table 18, Annex B.3, C.1, E.1.15</td>
<td>Comment OB1 (22/12/2017) addressed: track/frame renamed into wrsLongitudeGrid/wrsLatitudeGrid.</td>
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<td>Table 18, Annex B.3, C.1, E.1.15</td>
<td>Comment OB2 (22/12/2017) addressed: relativePassNumber renamed into relativeOrbitNumber.</td>
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<td>Section 7.1.1</td>
<td>Mandatory “identifier” added in example.</td>
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<td>Section 7.3</td>
<td>“identifier” added in figure. Mandatory “identifier” added in example.</td>
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<td>Annex D</td>
<td>“identifier” and “dct:identifier” property added in all examples.</td>
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<td>Annex E.1.1</td>
<td>“identifier” added in JSON schema fragment.</td>
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<td>Table 9, Table 12, Table 13, Table 20, Table 22</td>
<td>Properties of type DateTime better defined referring to footnote with RFC3339 pattern to be used as discussed via OGC SWG email exchange.</td>
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<td>Table 4</td>
<td>Comment AD37 closed in same way as in OGC 17-047: bbox definition updated reducing dimensions to n=2.</td>
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<td>All and Annex A</td>
<td>Relative URI of requirement classes and requirements updated (“class” removed and “eo-geojson” removed as already part of common part of URI. Core conformance class added as a choice of either a single object or collection of objects.</td>
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<td>Section 2.2 and Annex A</td>
<td>Offering conformance class added.</td>
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<td>Section 7.4.3. Annex B.3 Annex C.1 Annex E.1.</td>
<td>Optional lastOrbitDirection added to close comment JG-01 (NASA).</td>
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<td>Y. Coene</td>
<td>All DateTimes occurrences and footnote 10.</td>
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<td>dateTime format explanation updated as decided in SWG of 31/01/2018. The definition is identical to the definition of dateTime in JSON Schema, i.e., refers to section 5.6 of RFC3339. Non-UTC times are allowed again.</td>
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<td>Integrated comments from OAB and Public Comments:</td>
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<td>- Carl Reed (OAB Review).</td>
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<td>- <a href="http://www.opengis.net/owc/1.0/">http://www.opengis.net/owc/1.0/</a> and <a href="http://www.opengis.net/eo-geojson/1.0/">http://www.opengis.net/eo-geojson/1.0/</a> ontology namespaces renamed into <a href="http://www.opengis.net/ont/owc/1.0/">http://www.opengis.net/ont/owc/1.0/</a> and <a href="http://www.opengis.net/ont/eo-geojson/1.0/">http://www.opengis.net/ont/eo-geojson/1.0/</a> as per OGC 12-081.</td>
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<td>Y. Coene</td>
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<td>Implemented decisions from SWG telco on 2018-11-06:</td>
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<td>- DLR-3: domain and range restrictions removed for remaining “iana” and “media” in Annex B.3.</td>
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<td>- DLR-9: line 896 in OWL file. Eop:discreteWavelengths has “s” removed in its URI. The explanation in the OWL file that it is a “list of something” is reworded as there are no lists/arrays in JSON-LD. eop:samplingRates also changed into eop:samplingRate for same reason.</td>
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<td>- DLR-11: JSON-LD 1.0 @context removed from document (and Annex B.2). Explanation added why a JSON-LD 1.0 @context was not considered.</td>
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<td>- DLR-16: “Unit of measure (m) is SI base unit (m) without prefix.”. Two times “(m)” inside this description is unnecessary. All similar sentences were modified.</td>
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<td>- DLR-16: altitudeUnit made a URI in JSON-LD in eop: namespace and two individuals created corresponding to “m” and “bar”.</td>
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<td>- DLR-61: Instrument object is split into Instrument (§7.6.2) (containing id, sensorType, instrumentShortName and description) and InstrumentParameters, both below the same parent object AcquisitionInformation.</td>
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<td>Refactored JSON Schema in Annex E by isolating reusable definitions corresponding to lower level specifications in Annex E.2.</td>
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<td>SpectralRange constants updated with values proposed by DLR (§7.6.3, B.3.1, E.1.16).</td>
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| 2019-02-07 | 1.0.0   | Y. Coene | Annex A          | Aligned data and metadata dates with OGC 13-026r9 version uploaded after SWG telco on 16/01/2019. Added in tables and XMLSpy diagrams: 
  - published (metadata – Section 7.2) 
  - creationDate (metadata – Section 7.2) 
  - lang (metadata) – was missing. 
  - created (data – Section 7.3) 
  - available (data – Section 7.3) 

Isolated metadata dates in separate MetadataInformation object (Section 7.2) for closer alignment with UMM-G metadata model. 

Annex A Added conformance class for Section 7.3 in Annex A and figure in Annex A.1. 
Annex C: conformsTo and referenceSystemIdentifier entries corrected. 
Annex E.1 Updated JSON Schema for Properties, MetadataInformation and DataIdentification. |
| 2019-02-19 | 1.0.0   | Y. Coene | All              | Solution for DLR-61 improved: Moved all InstrumentParameters properties to AcquisitionParameters as decided during the SWG telco on 18/02/2019. 

conformsTo and referenceSystemIdentifier entries in JSON-LD context updated (“@id”) as the properties are of type “URI”. |
| 2019-07-31 | 1.0.0 r2| Y. Coene | Section 3.2      | References [OR2], [OR3], [OR4], [OR32] updated to latest versions. 

Typos in A.6 and A.12 tables corrected. 