



Digital Data Sets for eTOD Compliance



19 59'53" N | 73 44'53" E

**Workshop on Aeronautical Information Datasets
Cairo 21-22 May 2023**

Challenge : Slow adoption of eTOD Globally

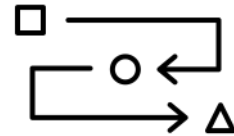
Apprehensions



Data Redundancy



Specialists

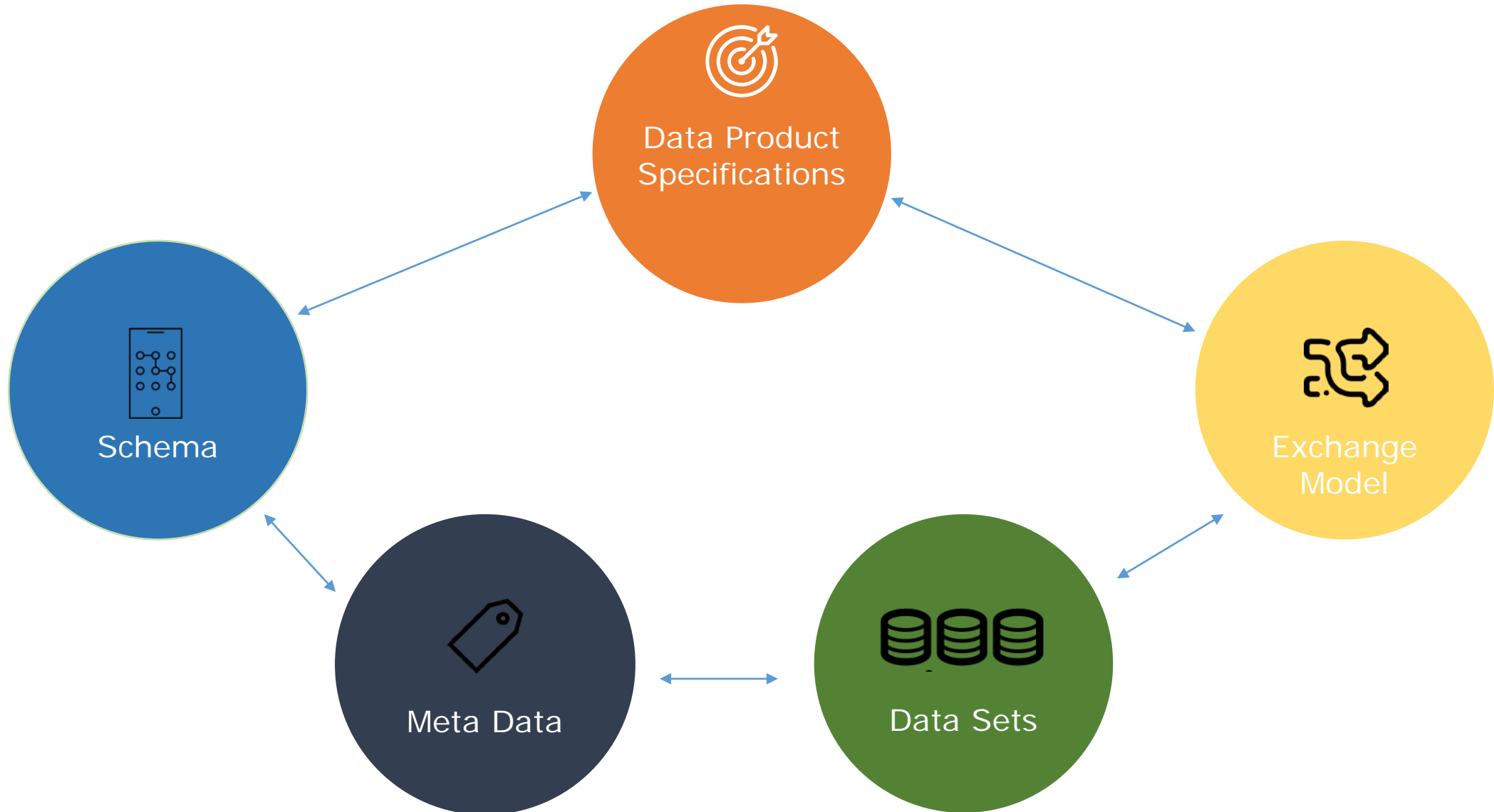


Methodology



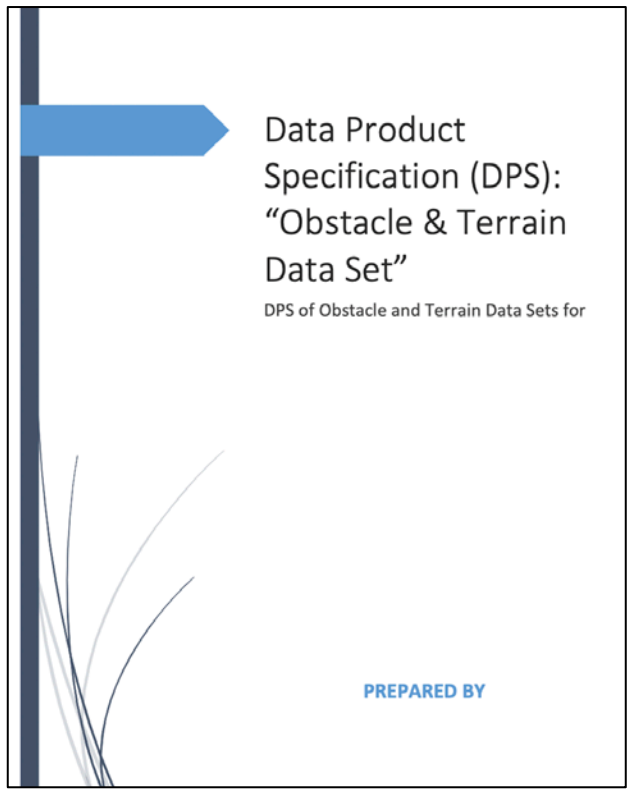
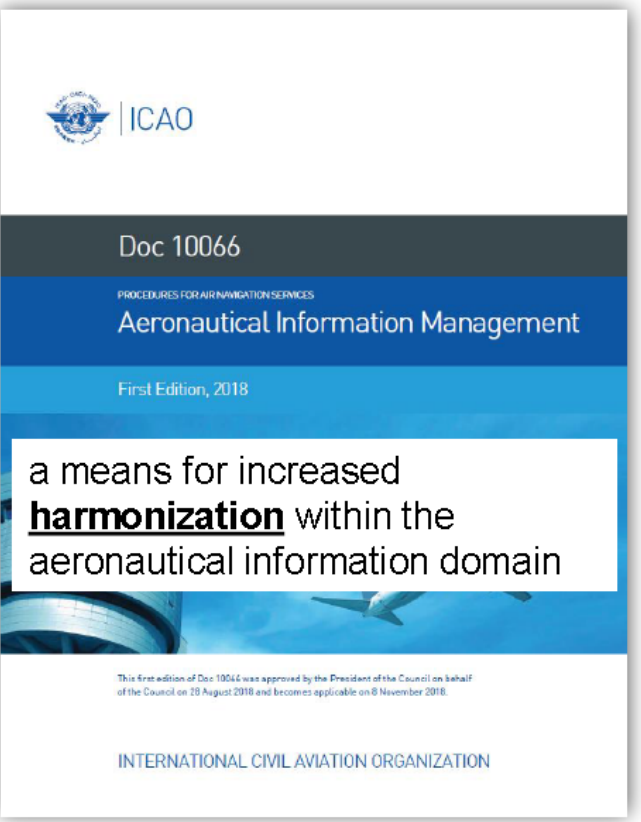
Cost / Investment

Elements of eTOD



All of them together makes an Airport or State eTOD compliant

Rollout Methodology





Why DPS should be 1st Deliverable



To Set the Appropriate Frame of Reference specific to Airport / State



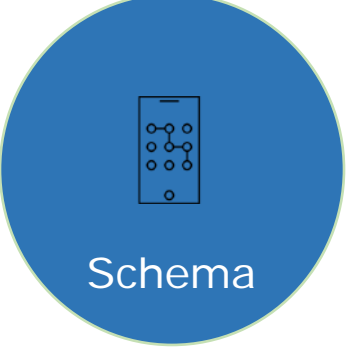
DPS

Data Product Specifications - Report

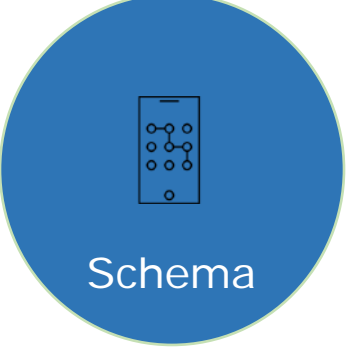


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| 2.1. Overview | |
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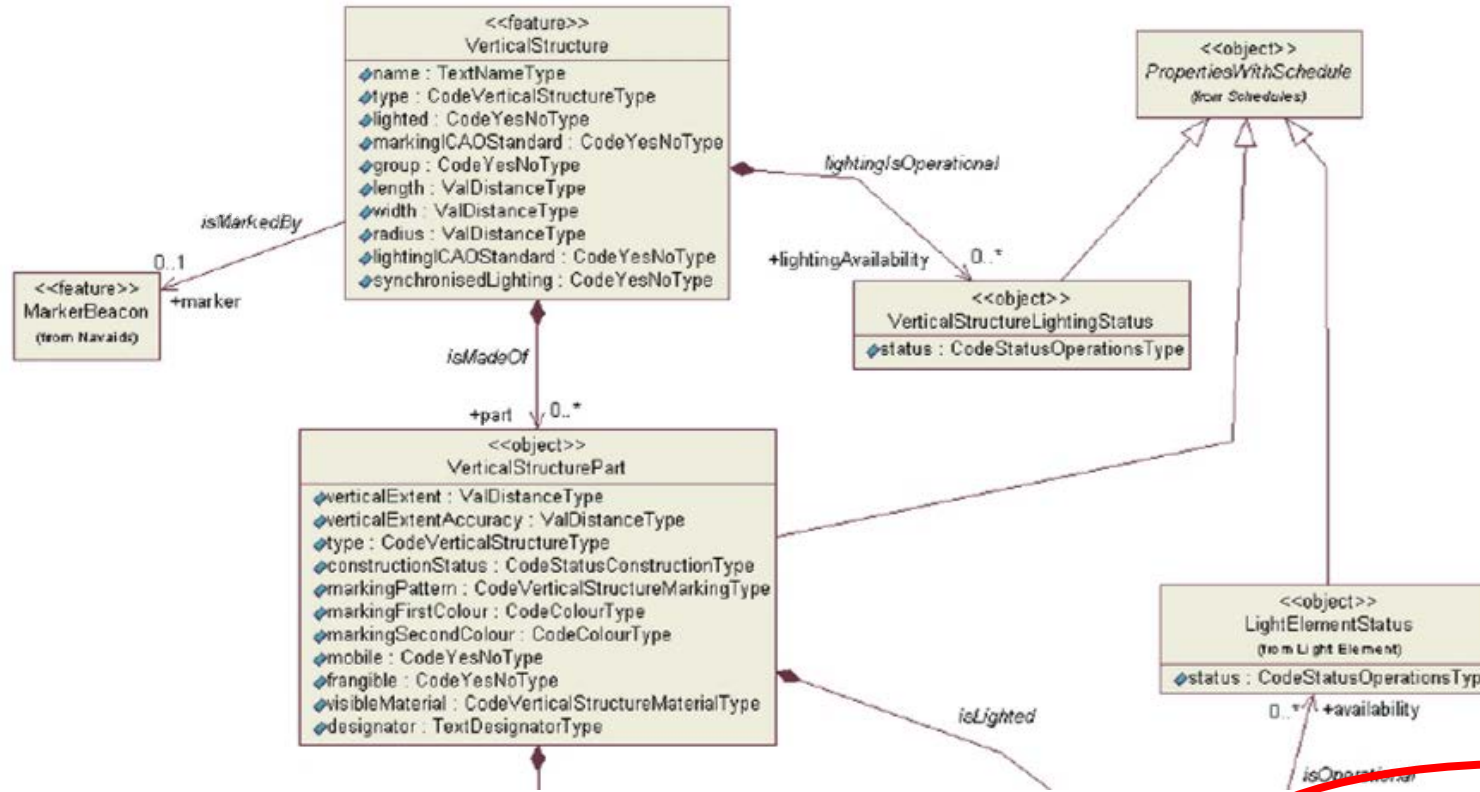


Schema is a Declaration represented by XML Code

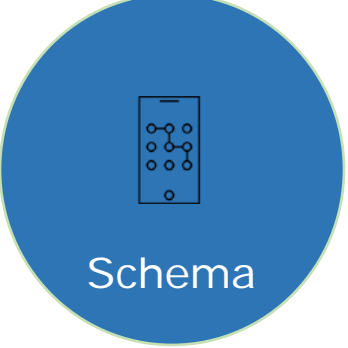


Schema

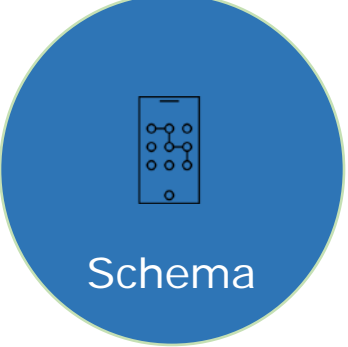
Schema



```
<?xml version="1.0" encoding="UTF-8"?>
<AIXMBasicMessage xmlns:gts="http://www.isotc211.org/2005/gts" xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.opengis.net/gml"
  <aixm-5.1:messageMetadata>
    <gmd:MD_Metadata>
      <gmd:characterSet>
        <gmd:MD_CharacterSetCode codeList="http://www.aixm.aero/schema/5.1/ISO_19139_Schemas/resources/CodeList/gmxCodeLists.xml#MD_CharacterSetCode" codeListValue="utf8"
      </gmd:characterSet>
```



Structure of relationship between multiple data points in Digital Format



Schema Output

```
</aixm-5.1:FeatureCollection>
<aixm-5.1:timeSlice>
  <aixm-5.1:VerticalStructureTimeSlice gml:id="gmlIDR1">
    <gml:validTime>
      <gml:TimePeriod gml:id="gmlIDV0">
        <gml:beginPosition>2018-04-24T00:00:00.000Z</gml:beginPosition><gml:endPosition indeterminatePosition="unknown"/>
      </gml:TimePeriod>
    </gml:validTime>
    <aixm-5.1:interpretation>BASELINE</aixm-5.1:interpretation>
    <aixm-5.1:sequenceNumber>1</aixm-5.1:sequenceNumber>
    <aixm-5.1:correctionNumber>0</aixm-5.1:correctionNumber>
    <aixm-5.1:name>AEROBRIDGE</aixm-5.1:name>
    <aixm-5.1:type xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:nil="true"/>
    <aixm-5.1:lighted>YES</aixm-5.1:lighted>
    <aixm-5.1:markingICAOStandard>YES</aixm-5.1:markingICAOStandard>
    <aixm-5.1:group>NO</aixm-5.1:group>
    <aixm-5.1:part>
      <aixm-5.1:VerticalStructurePart gml:id="gmlIDSS0">
        <aixm-5.1:verticalExtent uom="M">9</aixm-5.1:verticalExtent>
        <aixm-5.1:verticalExtentAccuracy uom="M">0.5</aixm-5.1:verticalExtentAccuracy>
        <aixm-5.1:visibleMaterial xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:nil="true"/>
        <aixm-5.1:horizontalProjection_surfaceExtent>
          <aixm-5.1:ElevatedSurface srsName="urn:ogc:def:crs:EPSG::4326" gml:id="VT0">
            <gml:patches>
              <gml:PolygonPatch>
                <gml:exterior>
                  <gml:LinearRing>
                    <gml:posList> 13.20142058 77.70824464 13.20138598 77.70824386 13.20138180 77.70824376 13.20127499
                  </gml:LinearRing>
                </gml:exterior>
              </gml:PolygonPatch>
            </gml:patches>
            <aixm-5.1:horizontalAccuracy uom="M">0.5</aixm-5.1:horizontalAccuracy>
            <aixm-5.1:elevation uom="M">930.4</aixm-5.1:elevation>
            <aixm-5.1:verticalDatum>EGM_08</aixm-5.1:verticalDatum>
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        </aixm-5.1:horizontalProjection_surfaceExtent>
      </aixm-5.1:VerticalStructurePart>
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  </aixm-5.1:VerticalStructureTimeSlice>
</aixm-5.1:timeSlice>
```



Meta Data is Characteristics of Data



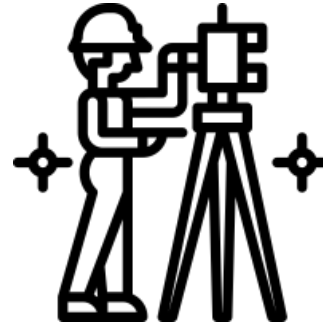
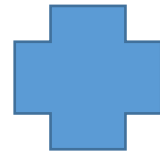
Meta Data

```
<gml:identifier codeSpace="http://www.aixm.aero/5.1" value="83000740 CBSO 1120 0330 0000" />
<aixm-5.1:featureMetadata>
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    <gmd:characterSet>
      <gmd:MD_CharacterSetCode codeList="http://www.aixm.aero/schema/5.1,
    </gmd:characterSet>
    <gmd:contact>
      <gmd:dateStamp>
      <gmd:identificationInfo>
      <gmd:dataQualityInfo>
    </gmd:MD_Metadata>
  </aixm-5.1:featureMetadata>
```



Data Set are absolute values

Data Capture



Control Network



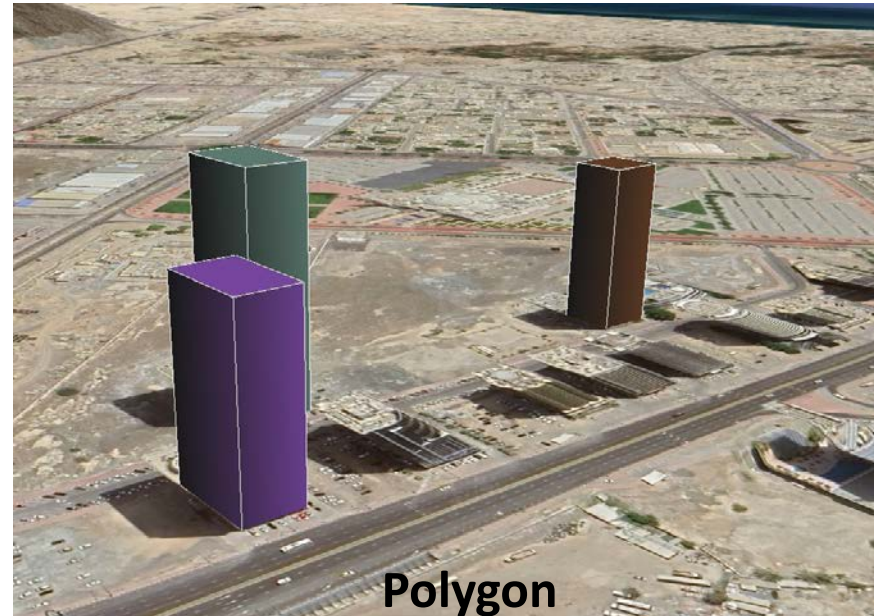
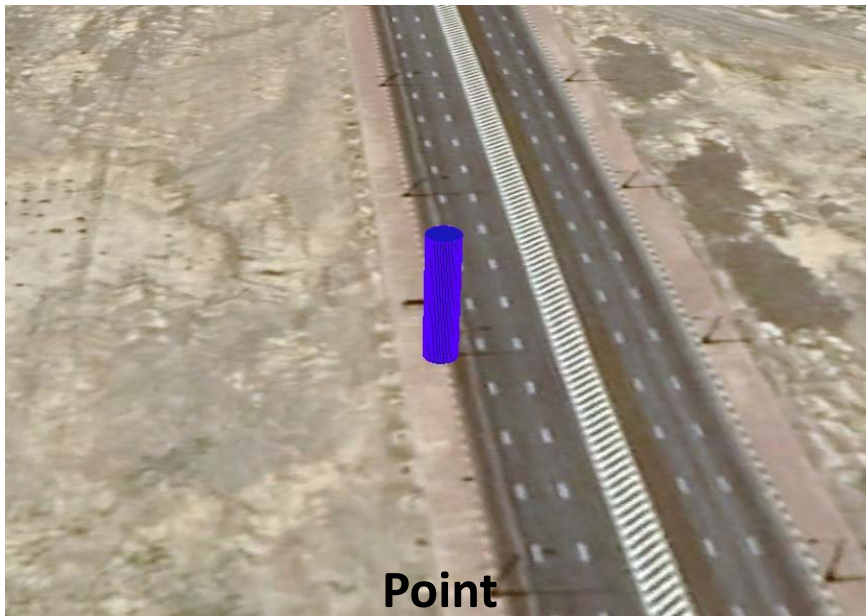
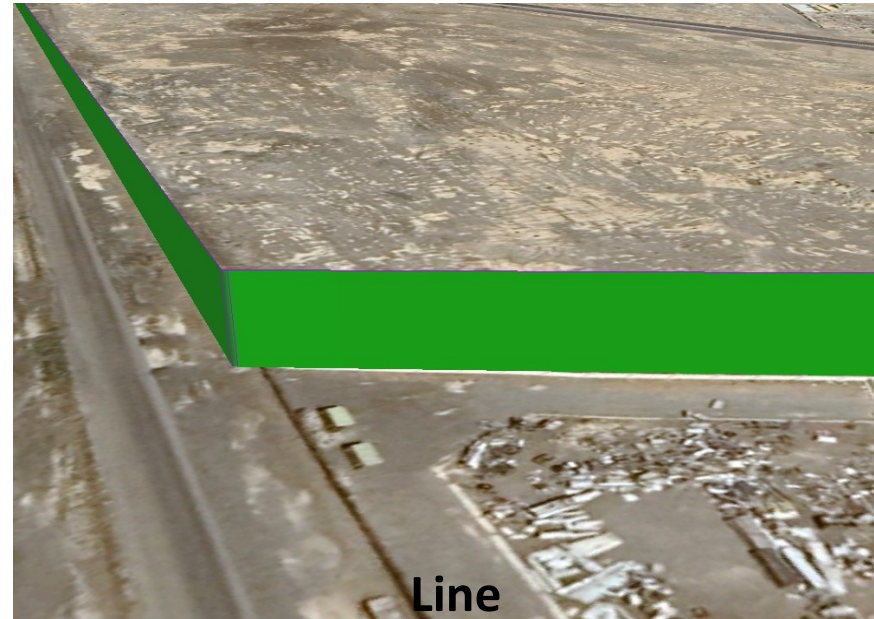
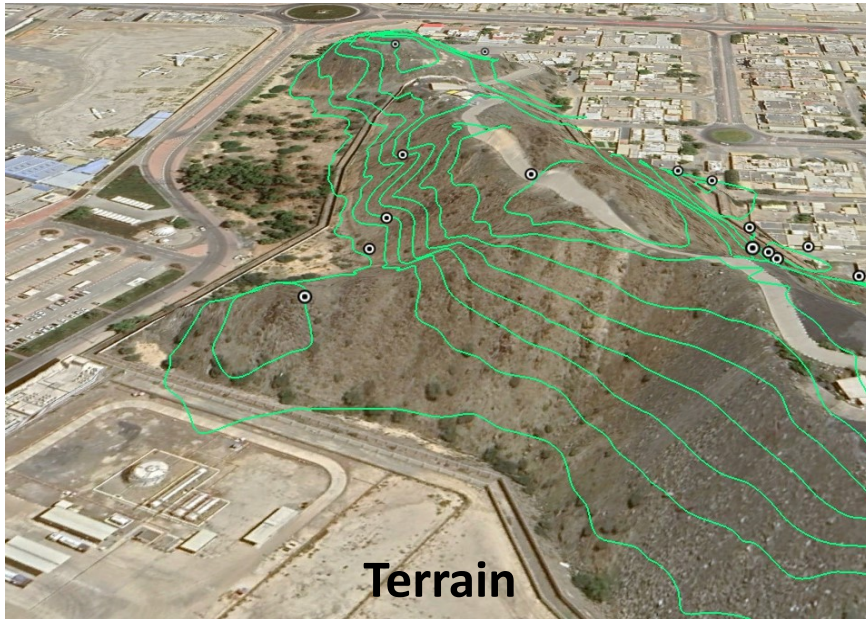
Data Validation

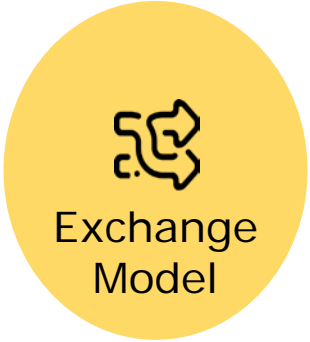


Data Completeness

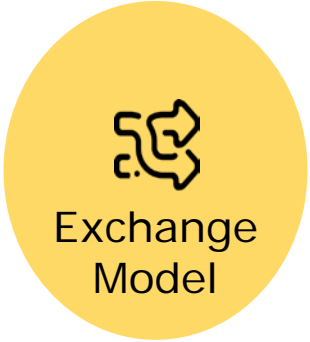


Data Storage





Exchange Model is Information Dissemination



Data Exchange

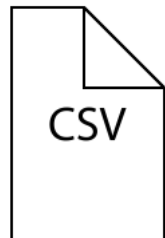
Obstacle Data



AIXM 5.1



GIS



Spread Sheet

Terrain Data



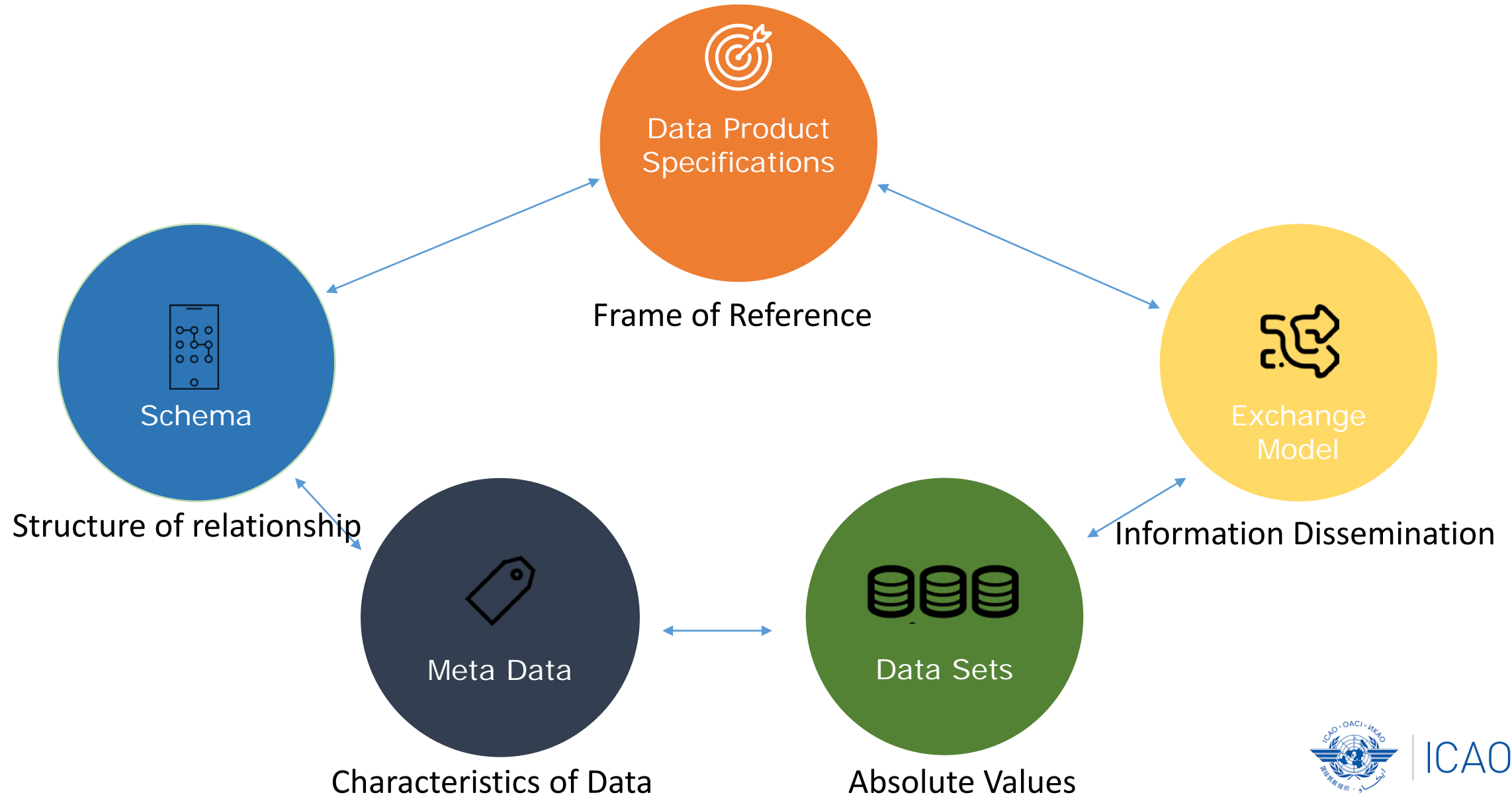
3D DEM



GeoTiff

Making eTOD happen !!

Getting it right the first time



ADL's eTOD output of existing International Airport



ICAO MID

Thank You !!



19 59'53" N | 73 44'53"E

UAE

BC1- GL - FD13, Ground Floor,
Business Centre 1, Abu Dhabi

India

B 76, NICE Area, MIDC, Satpur,
Nashik 422007, MH - India

www.adlcoordinates.com