

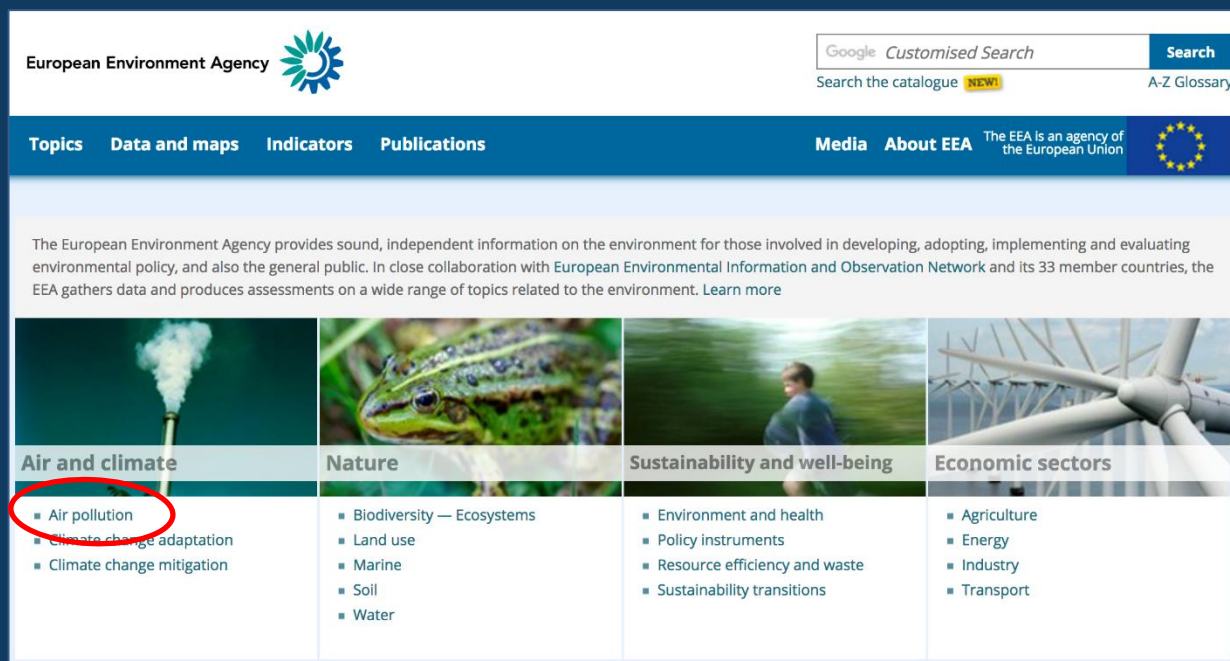
Delta Tool as recommended input for e-Reporting of DQOs from air quality models

EEA/ETC-ACM & FAIRMODE
work compiled by Artur Gsella
(EEA)




What is EEA/ETC-ACM?

www.eea.europa.eu




The screenshot shows the homepage of the European Environment Agency (EEA). At the top left is the EEA logo and name. To the right is a search bar with the text "Google Customised Search" and a "Search" button. Below the search bar is a navigation menu with links for "Topics", "Data and maps", "Indicators", "Publications", "Media", and "About EEA". The "About EEA" link includes the text "The EEA is an agency of the European Union" and the European Union flag. Below the navigation menu is a paragraph of text describing the EEA's mission. At the bottom of the page is a grid of four topic categories, each with a representative image and a list of sub-topics. The "Air and climate" category is circled in red.





European Environment Agency 

Google Customised Search

Search the catalogue [NEW!](#) [A-Z Glossary](#)

[Topics](#) [Data and maps](#) [Indicators](#) [Publications](#) [Media](#) [About EEA](#) The EEA is an agency of the European Union 

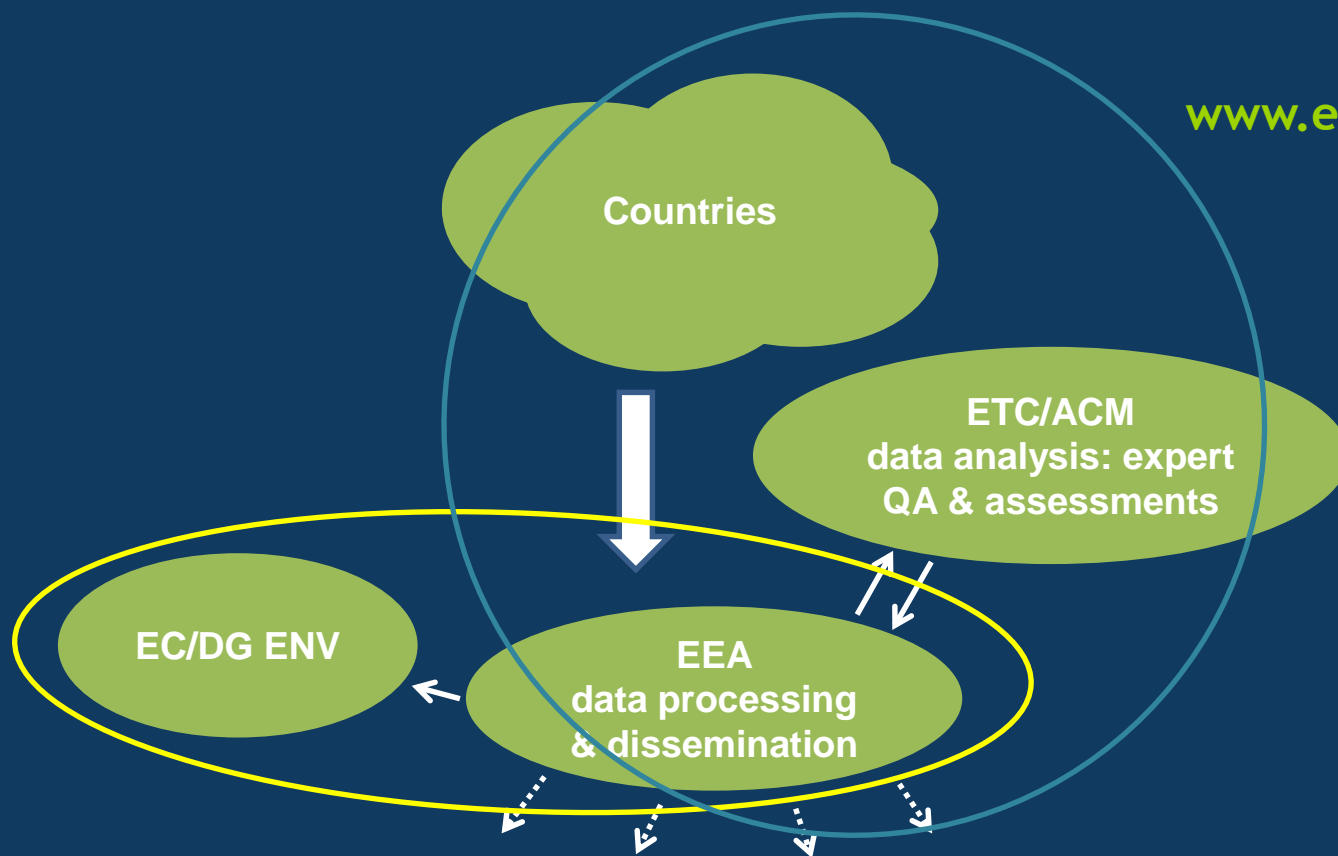
The European Environment Agency provides sound, independent information on the environment for those involved in developing, adopting, implementing and evaluating environmental policy, and also the general public. In close collaboration with European Environmental Information and Observation Network and its 33 member countries, the EEA gathers data and produces assessments on a wide range of topics related to the environment. [Learn more](#)

 Air and climate	 Nature	 Sustainability and well-being	 Economic sectors
<ul style="list-style-type: none">■ Air pollution■ Climate change adaptation■ Climate change mitigation	<ul style="list-style-type: none">■ Biodiversity — Ecosystems■ Land use■ Marine■ Soil■ Water	<ul style="list-style-type: none">■ Environment and health■ Policy instruments■ Resource efficiency and waste■ Sustainability transitions	<ul style="list-style-type: none">■ Agriculture■ Energy■ Industry■ Transport



What is EEA/ETC-ACM?

www.eionet.europa.eu



What is Air Quality e-Reporting?

how it used to be?

Council Decision 97/101/EC of 27 January 1997 establishing a reciprocal **exchange of information** and data from networks and individual stations measuring ambient air pollution within the Member States

Commission Decision 2004/461/EC of 29 April 2004 laying down a **questionnaire** to be used **for annual reporting on ambient air quality assessment** under Council Directives 96/62/EC and 1999/30/EC and under Directives 2000/69/EC and 2002/3/EC of the European Parliament and of the Council (notified under document number C(2004) 1714), (Text with EEA relevance) (OJ L156, 30.04.2004, pp.78-125)

...

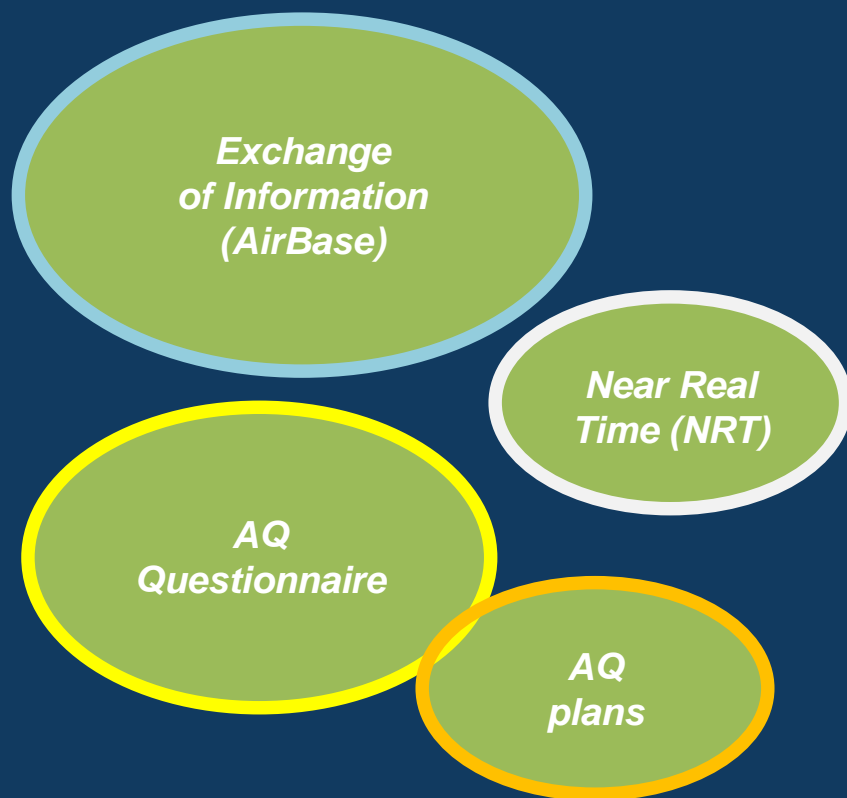
how is it now?

COMMISSION IMPLEMENTING DECISION of 12 December 2011 laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal **exchange of information and reporting on ambient air quality**, notified under document C(2011) 9068)(2011/850/EU)

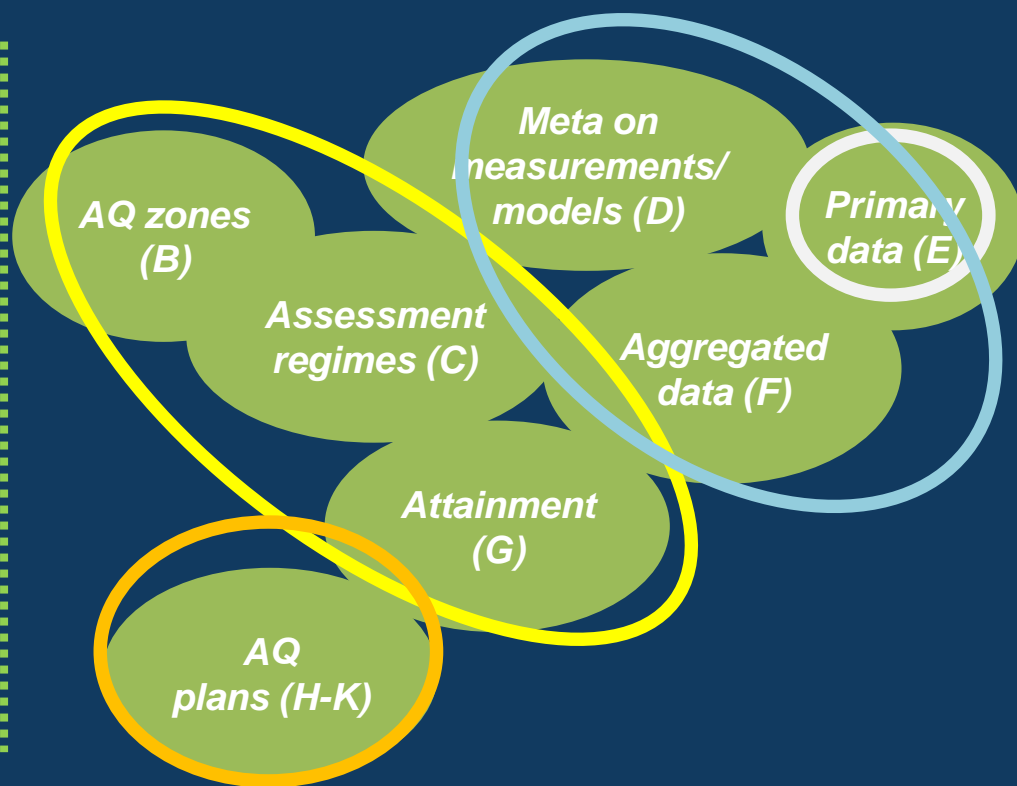


What is Air Quality e-Reporting?

how it used to be?

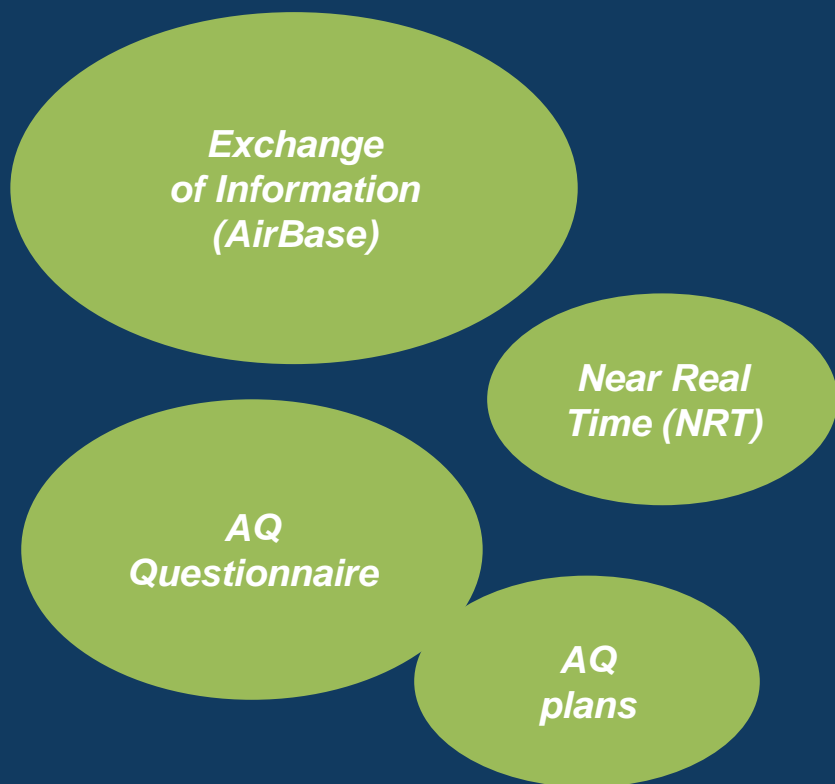


how is it now?

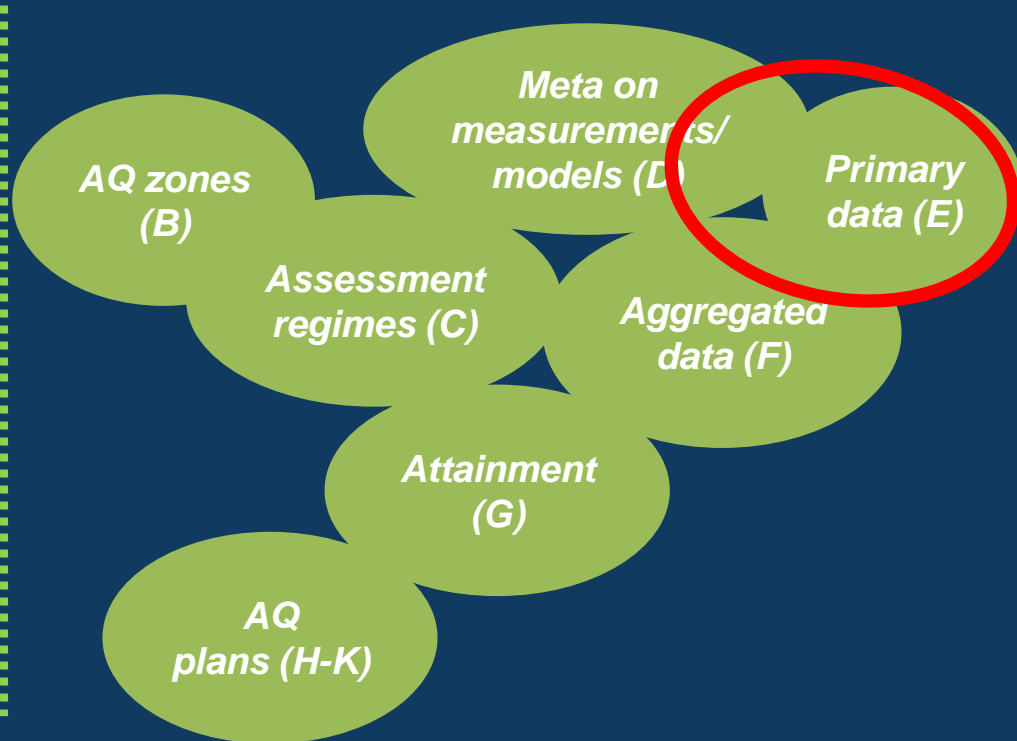


What is Air Quality e-Reporting?

how it used to be?



how is it now?



Presentation plan

- FAIRMODE & AQ e-Reporting interactions
- Recommendation on DQOs reporting
- What's next



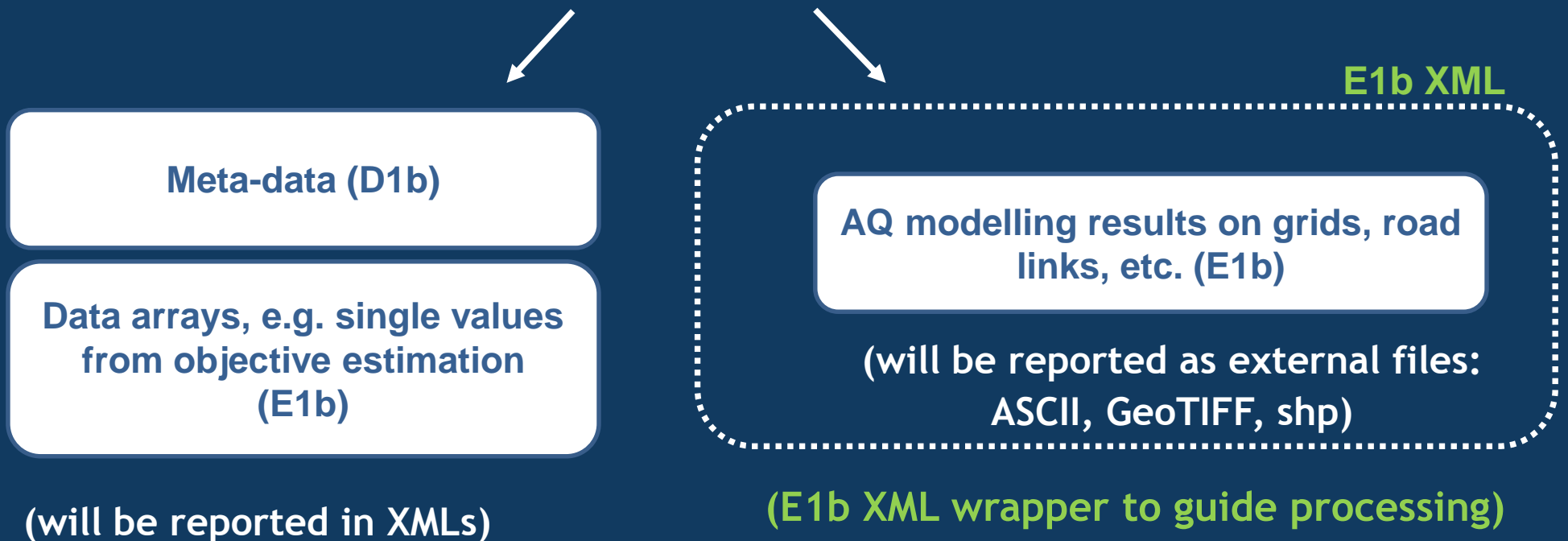
FAIRMODE & AQ e-Reporting interactions

- **2013 - 2014** FAIRMODE recommends formats, projections and code lists for AQ e-Reporting; discussions on reporting formats & projections,
- **2015 - 2016** FAIRMODE's initiates European Composite Maps from models, EEA/ETC-ACM extends ETL capacities & proposes user guide on E1b reporting which harmonises the XML structure,



Harmonised e-Reporting of data from AQ models

- How to report **diverse results** in harmonised way?



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- **2017 - 2018** all countries reporting E1b use the harmonised XML structure, EEA/ETC-ACM prepares DB schema & processing concept for E1b data, FAIRMODE includes AQ interpolated maps in Composite Maps, ...



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Status of e -Reporting of DQOs from AQ models

- There is already harmonised XML structure to report result quality:

```
▼<om:resultQuality>
  ▼<gmd:DQ_DomainConsistency>
    ▼<gmd:result>
      ▼<gmd:DQ_QuantitativeResult>
        ▼<gmd:valueUnit>
          ▼<gml:BaseUnit gml:id="PercentageUnit_3c9258dc-10ce-4b4b-bbbc-97bb1aaeb2c">
            <gml:identifier codeSpace="http://dd.eionet.europa.eu/vocabulary/aq/resultquality/uncertaintyestimation/"><25%</gml:identifier>
            <gml:catalogSymbol codeSpace="http://dd.eionet.europa.eu/vocabulary/uom/statistics/percentage">%</gml:catalogSymbol>
            <gml:unitsSystem xlink:href="http://www.opengis.net/def/uom/UCUM"/>
          </gml:BaseUnit>
        </gmd:valueUnit>
        ▼<gmd:value>
          <gco:Record>not available</gco:Record>
        </gmd:value>
      </gmd:DQ_QuantitativeResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</om:resultQuality>
```

i.e. there is **vocabulary and place in XML** to hold the information...



Status of e -Reporting of DQOs from AQ models

- Harmonised methodology, however, is still missing in AQ e-Reporting...

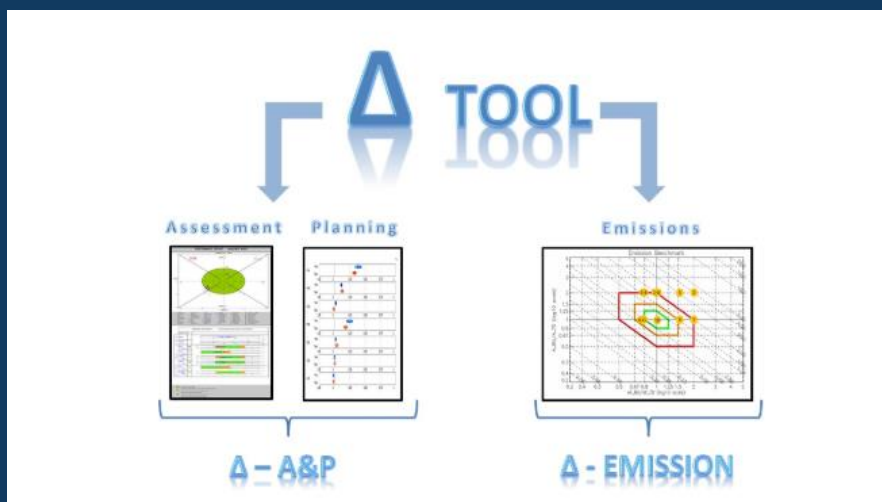
```
▼<om:resultQuality>
  ▼<gmd:DQ_DomainConsistency>
    ▼<gmd:result>
      ▼<gmd:DQ_QuantitativeResult>
        ▼<gmd:valueUnit>
          ▼<gml:BaseUnit gml:id="PercentageUnit_3c9258dc-10ce-4b4b-bbbc-97bb1aeae2c">
            <gml:identifier codeSpace="http://dd.eionet.europa.eu/vocabulary/aq/resultquality/uncertaintyestimation/"><25%</gml:identifier>
            <gml:catalogSymbol codeSpace="http://dd.eionet.europa.eu/vocabulary/uom/statistics/percentage">%</gml:catalogSymbol>
            <gml:unitsSystem xlink:href="http://www.opengis.net/def/uom/UCUM"/>
          </gml:BaseUnit>
        </gmd:valueUnit>
        ▼<gmd:value>
          <gco:Record>not available</gco:Record>
        </gmd:value>
      </gmd:DQ_QuantitativeResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</om:resultQuality>
```

i.e. whatever is reported, is **difficult to analyse...**



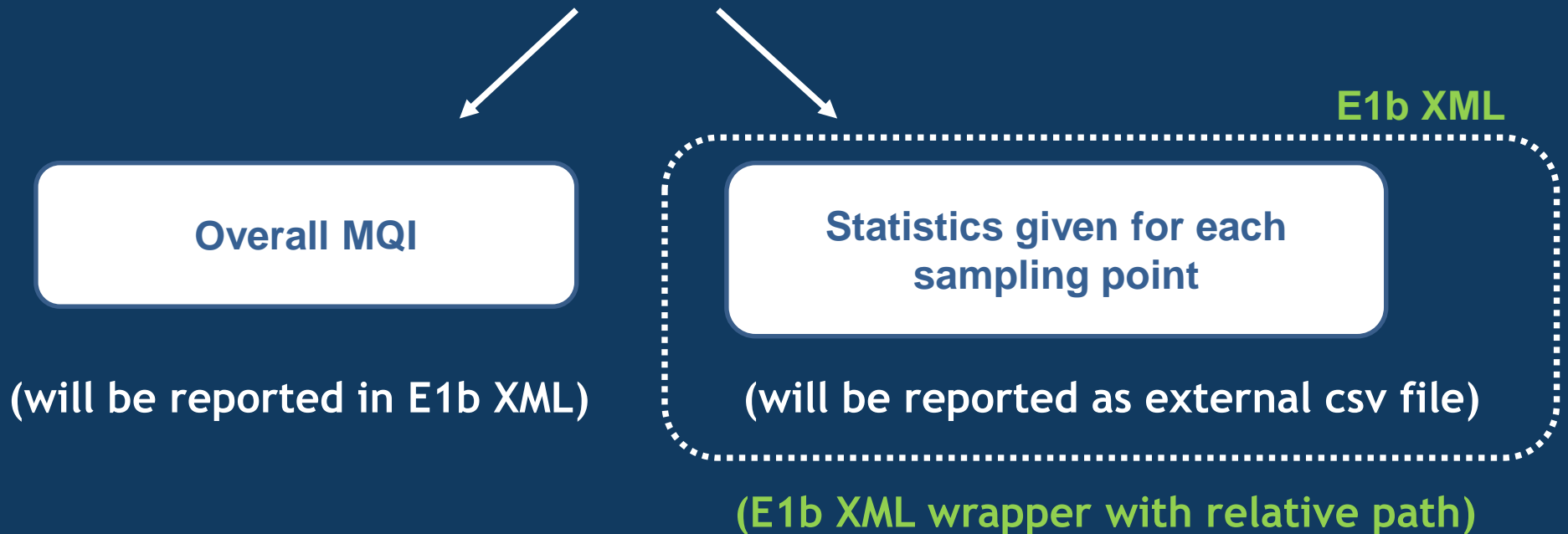
Delta Tool

- well established methodology exists within FAIRMODE!



Delta Tool as input for e-Reporting of DQOs

- How to use **output from Delta Tool** for DQO e-Reporting in E1b?



Delta Tool as input for e-Reporting of DQOs

- XML structure for **om:resultQuality** consists of two parts:

*Title, explanation, Delta Tool version,
reporting year, etc.*

descriptive part

*Result frequency (code list), MQI value, link to
external csv file (relative path)*

part with data



What's next:

- **Section on XML structure for recommended DQOs reporting** using Delta Tool will be **added to the User Guide on XML**,
- FAIRMODE has been working on new version of **Delta Tool (5.6)** adapted to some specific needs from AQ e-Reporting, **link to the FAIRMODE website with Delta Tool will be provided on AQ Portal**,
- **Processing** concept will be elaborated by EEA/ETC-ACM **for the recommended DQOs reporting**.
- *Further recommendations e.g. on using sampling points reported in AQ e-Reporting for AQ model quality validations.*



Thank you for your attention!

AQ e-Reporting Portal: <http://www.eionet.europa.eu/aqportal>

AQ e-Reporting Helpdesk: aqipr.helpdesk@eionet.europa.eu



Delta Tool as input for e-Reporting of DQOs

- XML structure for **om:resultQuality**, descriptive part:

```
<om:resultQuality>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
              <gco:CharacterString>FAIRMODE Model Quality Objective (MQO) - annual frequency</gco:CharacterString>
            </gmd:title>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco:Date>2018</gco:Date>
                </gmd:date>
                <gmd:dateType>
                  <gmd:CI_DateTypeCode codeListValue="revision" codeList="eng">revision date</gmd:CI_DateTypeCode>
                </gmd:dateType>
              </gmd:CI_Date>
            </gmd:date>
            <gmd:edition>
              <gco:CharacterString>FAIRMODE Delta Tool version 5.4</gco:CharacterString>
            </gmd:edition>
          </gmd:CI_Citation>
        </gmd:specification>
        <gmd:explanation>
          <gco:CharacterString>
            Estimate of model quality based on the model quality indicator (MQI) derived from the FAIRMODE Delta Tool for hourly model observations. For e-Reporting, the MQI-hourly shall be less than 1.
          </gco:CharacterString>
        </gmd:explanation>
        <gmd:pass>
          <gco:Boolean>true</gco:Boolean>
        </gmd:pass>
      </gmd:DQ_ConformanceResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</om:resultQuality>
```



Delta Tool as input for e-Reporting of DQOs

- XML structure for **om:resultQuality**, MQI value, references:

```
<om:resultQuality>
  <gmd:DQ_QuantitativeAttributeAccuracy>
    <gmd:result xlink:href="/myDeltaToolOutputs.csv" xlink:title="FAIRMODE Delta Tool outputs on modelling uncertainty - location is relative to that of the XML instance document.">
      <gmd:DQ_QuantitativeResult>
        <gmd:valueUnit>
          <gml:BaseUnit gml:id="BaseUnit_2">
            <gml:identifier codeSpace="FAIRMODE">MQI-annual</gml:identifier>
            <gml:catalogSymbol codeSpace="FAIRMODE">none</gml:catalogSymbol>
            <gml:unitsSystem xlink:href="http://dd.eionet.europa.eu/vocabularies"/>
          </gml:BaseUnit>
        </gmd:valueUnit>
        <gmd:value>
          <gco:Record>1</gco:Record>
        </gmd:value>
      </gmd:DQ_QuantitativeResult>
    </gmd:result>
  </gmd:DQ_QuantitativeAttributeAccuracy>
</om:resultQuality>
```

