Production Release of the ETDX Scope 3 Emissions Reporting Standard

Chris Welsh – ETDX Workgroup Chair
START OF THE JOURNEY

Feb 2020

Kick Off Innovation Day

May 2020

Form ETDX Team

Nov 2020

Evaluate Scope, Align with Open Footprint

Dec 2020

Define Scope - Data Exchange

Feb 2021

Develop Data Definition to be Exchanged
Define Proof of Concept for Data Exchange

Run POC

Evaluate Results and Publish to Industry

Define Alignment with WBCSD and PACT

Develop Production Standards for Publication

Aug 2021

Feb 2023

Mar 2023

Sep 2023

Dec 2023
1. Define the way the Operator can request Emissions Data on the OrderCreate document, what data and at what granularity?

2. Define the way the Supplier can transmit Emissions Data on the Invoice document, what data and what reference scheme?
ART OF THE POSSIBLE

Operator

START

Require 3 Drill Bits for Well B-28, Send Order to Supplier

Driller

PIDX
OrderCreate

Request for Manufactured Emissions Data

PIDX
OrderCreate

Drilling Related Emissions to be Captured and Sent to Operator [C11]

3 Drill Bits

Drill Well B-28

PIDX
Invoice

PIDX
Invoice

Drill Well B-28

Well B-28 Drilled

Receive Invoice, Check Delivery, Pay Invoice [Store Emissions Data]

END

Shipper

PIDX
OrderCreate

Transport Related Emissions to be Captured and Sent to Operator [C4]

3 Drill Bits

Invoice

Supplier

Receive Order, Manufacture Drill Bits [Record Total Manufactured Emissions per Serialized Drill Bit]

Ship Drill Bits to Driller

Send Manufacturing Emissions Data per Drill Bit [C1]

Invoice Operator
# POC Between Operator and Service Co.

<table>
<thead>
<tr>
<th>Column C</th>
<th>UoM</th>
<th>KG CO2e per KG of product</th>
<th>+/- %</th>
<th>Emission Methodology</th>
<th>Emission Verification &amp; Validity</th>
<th>Scope &amp; Category</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>BARI4U.1</td>
<td>not provided</td>
<td>0.180</td>
<td>84%</td>
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<td>N/A</td>
<td>N/A</td>
<td>GWP100, EN 15804 Version: August 2021</td>
<td>as per ISO 14025 and EN 15804-42</td>
<td>Scope 3</td>
<td>Category 1</td>
</tr>
<tr>
<td>CEMENT, CLASS A</td>
<td>not provided</td>
<td>N/A</td>
<td>N/A</td>
<td>US EPA TRACI v2.1 IPCC: 2013 (AR 5)</td>
<td>According to ISO 14025:2006, ISO 21930:2017 (the core PCR) and the NSF product category rules for Portland, Blended, Masonry, Mortar and Plastic (Stucco) Cements (subcategory POR)</td>
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**Data source comments:**
- Cement Class A: supplier's data (single supplier - single plant - US location)
- Cement Class C: supplier's data (single supplier - single plant - Germany location)
- Lime: supplier's data (single supplier - single plant - Australia location)
- Calcium Carbonate: supplier's data (single supplier - single plant - Italy location)
- Product packaging not included in CO2e factor

**Other findings:**
- List provided has line-items without UoM
- List provided contains fluids (product blends) without fluid density reference
POC Successful

5000+ purchases
$14million+
Carbon footprint of around 3 million kg CO2e
Challenges

• Carbon footprint information is complex
  • UOMs
  • different facilities
• Need more Product Category Rules for O&G
• Sensitive information
• Some companies may not have the platform to exchange the info
Next steps

• Use draft PIDX schema to exchange data
• Involve other service companies and buyers
• Apply to other scope 3 categories
• Review compatibility with other standards – OFP, WBCSD, etc.
Crystalizing our use cases

Corporate data platforms

- Data ingestion using OFP based APIs and reference implementation
- Data export to support GHG reporting using OFP based APIs
- OFP based APIs to export data to customer facing platforms and exchanges

Regulators

- Existing data transfer methods
- Regulated data:
  - EU (CSRD / ESRS)
  - UK (CFD)
  - US (SEC / EPA)
  - Canada (CSA)
  -...
- Shared data:
  - GHG emissions
  - GHG intensity
  - Other environmental data

Partner data platforms

- OFP reference implementation and APIs to control data exported
- OFP reference implementation / data model on partner side to ingest data received through data exchange(s)

Customers

- Shared data:
  - GHG emissions
  - GHG intensity / PCF

Third parties

- Data Exchange(s) using OFP based APIs and data model
- Data ingestion using OFP based APIs and reference implementation
- Data Exchange(s) using OFP based APIs and data model

Suppliers / Partners

- Data Exchange(s) using OFP based APIs and data model

Asset envt system

- Data exchange(s) using OFP based APIs and data model
- Asset envt system

Corporate envt system

- Corporate envt system
- Corporate financial reporting
- Corporate data platforms
Pathfinder Framework
Guidance for the Accounting and Exchange of Product Life Cycle Emissions
Version 2.0

Guidelines for emissions accounting
- Relating to existing product standards and methods
  - Hierarchy of application
  - Unification of relevant approaches
- Additional elements
  - Hierarchy of allocation approaches
  - Approach to secondary data sources
  - Exemption rules

Guidelines for data integrity
- Hierarchy of data types
- Data quality assessment based on data quality matrix
- Calculation process for determination of primary data share in PCFs
- Assurance and verification guidelines

Guidelines for data exchange
- Temporal validity of exchanged PCFs
- Minimum required data elements for exchange

Exchange of PCFs along the value chain

Additional technological guidelines and mechanisms for standardized data exchange have been developed in parallel by the Pathfinder Network (e.g., technical data specifications, company onboarding mechanism, or governance structure for the extension of required data elements).
Technical Specifications for PCF Data Exchange (Version 2.0.0)

Living Document, 21 February 2023

This version: https://wbcsd.github.io/tr/2023/data-exchange-protocol-20230221/

Latest published version: http://wbcsd.github.io/data-exchange-protocol/v2/

Feedback: public-dev@pathfinder.sine.dev with subject line "[data-exchange-protocol] ... message topic ...

Editors: Martin Pompéry (SINE Foundation) martin@sine.foundation
        Cecilia Valeri (WBCSD) valeri@wbcsd.org

Abstract

This document specifies a data model for GHG emission data at product level based on the Pathfinder Framework Version 2, and a protocol for interoperable exchange of GHG emission data at product level.

JSON Data Format

Exchange Using REST Web Services
ART OF THE POSSIBLE - PRACTICAL

<table>
<thead>
<tr>
<th>Operator</th>
<th>Driller</th>
<th>Shipper</th>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>START</strong></td>
<td>Request for Manufactured Emissions Data</td>
<td><strong>Send Manufacturing Emissions Data per Drill Bit [C1]</strong></td>
<td>Receive Order, Manufacture Drill Bits [Record Total Manufactured Emissions per Serialized Drill Bit]</td>
</tr>
<tr>
<td>Require 3 Drill Bits for Well B-28, Send Order to Supplier</td>
<td><strong>PIDX OrderCreate</strong></td>
<td><strong>PIDX OrderCreate</strong></td>
<td><strong>Ship Drill Bits to Driller</strong></td>
</tr>
<tr>
<td><strong>PIDX OrderCreate</strong></td>
<td><strong>Drilling Related Emissions to be Captured and Sent to Operator [C11]</strong></td>
<td><strong>3 Drill Bits</strong></td>
<td><strong>Invoice Operator</strong></td>
</tr>
<tr>
<td>Well B-28 Drilled</td>
<td>3 Drill Bits</td>
<td><strong>Transport Related Emissions to be Captured and Sent to Operator [C11]</strong></td>
<td><strong>Invoice</strong></td>
</tr>
<tr>
<td><strong>Receive Invoice, Check Delivery, Pay Invoice [Store Emissions Data]</strong></td>
<td><strong>Drill Well B-28</strong></td>
<td><strong>PIDX Invoice</strong></td>
<td><strong>PIDX Invoice</strong></td>
</tr>
<tr>
<td><strong>PIDX Invoice</strong></td>
<td></td>
<td><strong>WBCSD JSON PCF</strong></td>
<td><strong>WBCSD JSON PCF</strong></td>
</tr>
<tr>
<td><strong>Invoice</strong></td>
<td><strong>Well B-28 Drilled</strong></td>
<td><strong>WBCSD JSON PCF</strong></td>
<td><strong>WBCSD JSON PCF</strong></td>
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<tr>
<td><strong>END</strong></td>
<td><strong>Invoice</strong></td>
<td><strong>END</strong></td>
<td><strong>END</strong></td>
</tr>
</tbody>
</table>
Three formats of attachment available

- Inline Embedded Data
- Link to URN/URI
- Link to Envelope Attachment

Header Level or Line Level

Choice on Aggregation at the Header Level
Three formats of attachment available

Inline Embedded Data

Link to URN/URI

Link to Envelope Attachment

Header Level or Line Level

Choice on Aggregation at the Header Level

USING THE ATTACHMENT WITH WBCSD
Three formats of attachment available

- **Inline Embedded Data**
- **Link to URN/URI**
- **Link to Envelope Attachment**

**Header Level or Line Level**

**Choice on Aggregation at the Header Level**

```xml
<pidx:Attachment>
  <pidx:AttachmentPurposeCode>Other</pidx:AttachmentPurposeCode>
  <pidx:AttachmentLocation>https://www.pidx.org/api/displayPCF?pcfid=xyz123&amp;format=WBCSDV2.0</pidx:AttachmentLocation>
</pidx:Attachment>
```
ADVANTAGES

- Uses existing secure and trusted data transport
- Industry partner IDs already defined
- Uses an industry agnostic format
- Supported by more industry companies
- Users can test conformance to WBCSD format
- Can be used in all versions of PIDX XML Standards
PROVE THE THEORY & DEFINE THE STANDARD

- Define Proof of Concept for Data Exchange
- Run POC
- Evaluate Results and Publish to Industry
- Define Alignment with WBCSD and PACT
- Develop Production Standards for Publication

Timeline:
- Aug 2021
- Feb 2023
- Mar 2023
- Sep 2023
- Dec 2023
**Implementation Guideline**

**Petroleum Industry Data eXchange (PIDX)**

**IMPLEMENTATION GUIDES**

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Use</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>AttachmentPurposeCode</td>
<td>string</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Template</td>
<td>string</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Other</td>
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</tr>
<tr>
<td>FileName</td>
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</tr>
<tr>
<td>AttachmentLocation</td>
<td>string</td>
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<td>1</td>
</tr>
</tbody>
</table>

**parent(s)**

- InvoiceResponseLineItem
- InvoiceResponseProperties

**Example XML:**

```xml
<pidx:Attachment>
  <pidx:AttachmentPurposeCode>Other</pidx:AttachmentPurposeCode>
  <pidx:FileName>PCF_Data.json</pidx:FileName>
  <pidx:AttachmentTitle>PACT V2.0 Conformant PCF</pidx:AttachmentTitle>
  <pidx:AttachmentDescription>Pathfinder Framework Version 2.0</pidx:AttachmentDescription>
  <pidx:FileType>application/json</pidx:FileType>
  <pidx:AttachmentLocation>
    "id": "bfbf3c9d-cb44-4448-baab-9c8cf0358ccc",
    "specVersion": "2.0.0",
    "version": 1,
    "created": "2021-06-01T00:00:00Z",
    "status": "Active",
    "companyName": "Big Supplier Norge A/S",
    "companyIds": [
      "urn:DUNSNumber:123456789",
      "urn:DUNS+4Number:1234567897009"
    ],
  </pidx:AttachmentLocation>
</pidx:Attachment>
```
Challenges

- Carbon footprint information is complex
- UOMs
- different facilities
- Need more Product Category Rules for O&G
- Sensitive information
- Some companies may not have the platform to...
<p>| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| A20 | AVIATION GASOLINE | AVIATION GASOLINE | N | Y | 100/10 LOW LEAD | BRENT BOWDEN | SHELL |
| A21 | Unleaded Aviation Gasoline 100/LL | AVIATION GASOLINE | N | Y | 100/10 ULTRA LEAD | |
| A22 | AVIATION GASOLINE | AVIATION GASOLINE | N | Y | 100/10 HIGH LEAD | 31-Dec-92 |
| B00 | FUEL ETHANOL | ALTERNATIVE FUEL - E85-43 | A | 79-82 | N | 7.64-5.5 | F | N | 3 | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| B01 | FUEL ETHANOL | ALTERNATIVE FUEL - E85 | A | 85 | Y | F | N | 3 | E85 85% ETHEROL/15% REGULAR GASOLINE | STEVE WOOD | PHILLIPS 66 | 26-Mar-19 |
| B02 | FUEL ETHANOL | ALTERNATIVE FUEL - E80 | A | 80 | Y | F | N | 3 | E80 80% ETHEROL/20% REGULAR GASOLINE | JEAN PICKETT | MAGELLAN | 20-Jul-04 |
| B03 | FUEL ETHANOL | ALTERNATIVE FUEL - E75 | E80 75% ETHEROL/25% REGULAR GASOLINE | 20-Jul-04 |
| B04 | FUEL ETHANOL | ALTERNATIVE FUEL - E80 | A | 80 | Y | F | N | 3 | E80 80% ETHEROL/20% REGULAR GASOLINE | HERMAN WINDHEI | ST. OF MINNESOTA | 6-Jul-06 |
| B06 | FUEL ETHANOL | ALTERNATIVE FUEL - E80 | A | 80 | Y | F | N | 3 | E80 80% ETHEROL/20% SUBGRADE 84 GASOLINE | MARGARET WARD | MAGELLAN | 5-Dec-08 |
| B07 | FUEL ETHANOL | ALTERNATIVE FUEL - E75 | A | 75 | Y | F | N | 3 | E75 75% ETHEROL/25% REGULAR GASOLINE | MARGARET WARD | MAGELLAN | 5-Dec-08 |
| B08 | FUEL ETHANOL | ALTERNATIVE FUEL - E80 | A | 80 | Y | F | N | 3 | E80 80% ETHEROL/20% SUBGRADE 84 GASOLINE | MARGARET WARD | MAGELLAN | 5-Dec-08 |
| B09 | FUEL ETHANOL | ALTERNATIVE FUEL - E75 | A | 75 | Y | F | N | 3 | E75 75% ETHEROL/25% SUBGRADE 84 GASOLINE | MARGARET WARD | MAGELLAN | 5-Dec-08 |
| B10 | FUEL ETHANOL | ALTERNATIVE FUEL - E80 | A | 80 | Y | F | N | 3 | E80 80% ETHEROL/20% SUBGRADE 84 GASOLINE | MARGARET WARD | MAGELLAN | 5-Dec-08 |
| B11 | FUEL ETHANOL | ALTERNATIVE FUEL - E34 | A | 75 | Y | F | N | 3 | E34 75% ETHEROL/25% SUBGRADE 84 GASOLINE | MARGARET WARD | MAGELLAN | 5-Dec-08 |
| B12 | FUEL ETHANOL | ALTERNATIVE FUEL - E80 | A | 80 | Y | F | N | 3 | E80 80% ETHEROL/20% REGULAR GASOLINE | JEAN PICKETT | MAGELLAN | 16-Sep-10 |
| B13 | FUEL ETHANOL | ALTERNATIVE FUEL - E85 | A | 85 | Y | F | N | 3 | E85 85% ETHEROL/15% REGULAR GASOLINE | MARGARET WARD | MAGELLAN | 16-Sep-10 |
| B14 | FUEL ETHANOL | ALTERNATIVE FUEL - E75 | A | 75 | Y | F | N | 3 | E75 75% ETHEROL/25% REGULAR GASOLINE | MARGARET WARD | MAGELLAN | 16-Sep-10 |
| B15 | FUEL ETHANOL | ALTERNATIVE FUEL - E80 | A | 80 | Y | F | N | 3 | E80 80% ETHEROL/20% REGULAR GASOLINE | JEAN PICKETT | MAGELLAN | 16-Sep-10 |
| B16 | FUEL ETHANOL | ALTERNATIVE FUEL - E85 | A | 85 | Y | F | N | 3 | E85 85% ETHEROL/15% REGULAR GASOLINE | JEAN PICKETT | MAGELLAN | 16-Sep-10 |
| B17 | FUEL ETHANOL | ALTERNATIVE FUEL - E75 | A | 75 | Y | F | N | 3 | E75 75% ETHEROL/25% REGULAR GASOLINE | JEAN PICKETT | MAGELLAN | 16-Sep-10 |</p>
<table>
<thead>
<tr>
<th>Column C</th>
<th>UoM</th>
<th>14 KG CO2e per KG of product</th>
<th>+/-%</th>
<th>18 Emission Methodology</th>
<th>19 Emission Verification &amp; Validity</th>
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<td>According to ISO 14025:2006, PCR: Micronized stone from quarry-UN CPC 15200, 15320</td>
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<td>Category 1 Proxy used: micronized limestone with selected granulometry lower than 200 μm (CA150, CA40, CA150SMP)</td>
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<td>CLASS C CEMENT</td>
<td>not provided</td>
<td>N/A</td>
<td></td>
<td>GWP100, EN 15804</td>
<td>as per ISO 14025 and EN 15804+42</td>
<td>Scope 3</td>
<td>Category 1 Proxy used: Class C acc. to API Spec 10A</td>
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<tr>
<td>CEMENT, CLASS A</td>
<td>not provided</td>
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<td></td>
<td>US EPA TRACI v2.1 (IPCC 2013 (AR 5))</td>
<td>According to ISO 14025:2006, ISO 21930:2017 (the core PCR) and the NSF product category rules for Portland, Blended, Masonry, Mortar and Plastic (Stucco) Cements (subcategory PCR)</td>
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<td>Category 1 Proxy used: Portland Type III ASTM C150</td>
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- Cement Class A is supplier's data (single supplier - single plant - US location)
- Cement Class C are supplier's data (single supplier - single plant - Germany location)
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Please get involved!

Questions or Comments?