

Partnership for DSCSA Governance (PDG) Foundational Blueprint for 2023 Interoperability

DSCSA Tracing Request/Response Schemas

Version 1.2
July 15, 2023

Tracing Messages – Technical Rendering

JSON Schema for TI Request Message (Draft v1.0.1)

```
{
  "$schema": "http://json-schema.org/draft-07/schema#",
  "$id": "https://pdg/dscsa-trace-message-schemas/pdg-dscsa-ti-request-draft-v1.0.1.jschema",
  "title": "PDG DSCSA TI Request Schema",
  "description": "Defines requests for DSCSA Transaction Information.",
  "type": "object",
  "properties": {
    "tiRequestSet": {
      "properties": {
        "tiRequestAuditReferences": {
          "type": "object",
          "properties": {
            "tiRequestID": {"$ref": "#/definitions/uuidType"},
            "tiRequestTimestamp": {"$ref": "#/definitions/timestampType"}
          },
          "required": [
            "tiRequestID",
            "tiRequestTimestamp"
          ]
        },
        "tiRequestingPartyInformation": {
          "type": "object",
          "required": [
            "contactInformation",
            "callbackAddress"
          ],
          "properties": {
            "dscsaCredentialPresentation": {"$ref": "#/definitions/dscsaCredentialPresentationType"},
            "contactInformation": {"$ref": "#/definitions/contactInformationType"},
            "requesterGLN": {"$ref": "#/definitions/glnType"},
            "callbackAddress": {"$ref": "#/definitions/callbackAddressType"}
          }
        },
        "tiRequestParameters": {
          "type": "object",
          "properties": {
            "responseTypeRequested": {
              "enum": [
                "Transaction Information",
                "All Known Owners",
                "Last Known Owner"
              ]
            },
            "investigationReasonAttestation": {
              "type": "string",
              "enum": [
                "Suspect Product Investigation",
                "Illegitimate Product Investigation",
                "Recalled Product Investigation",
                "Compliance Audit"
              ]
            },
            "investigationCircumstances": {"type": "string"},
            "3911IncidentNumber": {
              "type": "string",
              "$comment": "3911 Incident number is provided if it has been assigned. 3911 Incident Number is assigned by the FDA and there may be instances where the number has yet to be assigned by the time of the request."
            },
            "recallDepth": {
              "$ref": "#/definitions/recallDepthType",

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        "$comment": "Used to mitigate unnecessary returns when the recall doesn't affect the Responder."
      },
      "recallRequestLevel": {
        "type": "string",
        "enum": [
          "Serial Number",
          "Lot Number"
        ]
      }
    ],
    "required": [
      "responseTypeRequested",
      "investigationCircumstances",
      "investigationReasonAttestation"
    ]
  ],
  "tiRequests": {
    "type": "array",
    "items": {
      "properties": {
        "requestLineNumber": {"type": "number"},
        "productID": {
          "oneOf": [
            {"$ref": "#/definitions/gtinType"},
            {"$ref": "#/definitions/ndcType"}
          ],
          "type": "object"
        },
        "serialNumberOrLotNumber": {
          "oneOf": [
            {"$ref": "#/definitions/serialNumberType"},
            {"$ref": "#/definitions/lotNumberType"}
          ],
          "type": "object"
        }
      },
      "type": "object",
      "required": [
        "requestLineNumber",
        "productID",
        "serialNumberOrLotNumber"
      ]
    }
  ],
  "type": "object",
  "required": [
    "tiRequestAuditReferences",
    "tiRequestingPartyInformation",
    "tiRequestParameters",
    "tiRequests"
  ]
},
"definitions": {
  "apiType": {
    "type": "string",
    "format": "uri",
    "pattern": "\\^(https?|wss?|ftp):/\\w*"
  },
  "callbackAddressType": {
    "type": "object",
    "anyOf": [
      {
        "properties": {
          "apiCallbackAddress": {"$ref": "#/definitions/apiType"}
        }
      }
    ]
  }
}

```

```

    },
    {
      "properties": {
        "emailCallbackAddress": {"$ref": "#/definitions/emailType"}
      }
    }
  ]
},
"companyNameType": {
  "type": "string",
  "maxLength": 50
},
"contactInformationType": {
  "properties": {
    "personOrDepartmentName": {"$ref": "#/definitions/nameValueType"},
    "organizationName": {"$ref": "#/definitions/companyNameType"},
    "contactMethod": {
      "anyOf": [
        {"$ref": "#/definitions/phoneType"},
        {"$ref": "#/definitions/emailType"}
      ]
    }
  },
  "type": "object",
  "required": [
    "personOrDepartmentName",
    "organizationName",
    "contactMethod"
  ]
},
"dateType": {
  "type": "string",
  "pattern": "^\\|d{6}$",
  "maxLength": 6,
  "minLength": 6
},
"digitalSignatureType": {"type": "string"},
"drugNameType": {
  "type": "string",
  "maxLength": 50,
  "pattern": "^\\[a-zA-Z]*$"
},
"dscsaCredentialPresentationType": {
  "oneOf": [
    {
      "properties": {
        "dscsaATPCredential": {
          "type": "string",
          "format": "jwt"
        }
      }
    },
    {
      "properties": {
        "dscsaATPEquivalentCredential": {
          "type": "string",
          "format": "jwt"
        }
      }
    },
    {
      "properties": {
        "dscsaAuthorityCredential": {
          "type": "string",
          "format": "jwt"
        }
      }
    }
  ]
}

```

```

    ],
    "type": "object"
  },
  "emailType": {
    "type": "string",
    "format": "email"
  },
  "expirationDate": {
    "type": "string",
    "format": "date"
  },
  "glnType": {
    "type": "string",
    "minLength": 13,
    "pattern": "^\\d{13}$",
    "maxLength": 13
  },
  "gtinType": {
    "type": "string",
    "minLength": 14,
    "pattern": "^\\d{14}$",
    "maxLength": 14
  },
  "lotNumberType": {
    "type": "string",
    "minLength": 1,
    "maxLength": 30
  },
  "nameValueType": {
    "type": "string",
    "pattern": "[a-zA-Z]*$",
    "maxLength": 30
  },
  "ndcType": {
    "oneOf": [
      {
        "type": "string",
        "pattern": "#####-###-###",
        "$comment": "4-4-2"
      },
      {
        "type": "string",
        "pattern": "#####-###-###",
        "$comment": "5-3-2"
      },
      {
        "type": "string",
        "pattern": "#####-###-#",
        "$comment": "5-4-1"
      },
      {
        "type": "string",
        "$comment": "5-5-2",
        "pattern": "#####-#####-###"
      }
    ]
  },
  "phoneType": {"type": "string"},
  "reasonAttestationOptions": {
    "enum": [
      "Suspect",
      "Illegitimate",
      "Recall",
      "Audit"
    ]
  },
  "recallDepthType": {
    "type": "string",

```

```

    "enum": [
      "Wholesale Distributor",
      "Pharmacy",
      "Patient"
    ]
  },
  "recallDepthOptions": {
    "enum": [
      "Wholesaler",
      "Pharmacy",
      "Patient"
    ]
  },
  "serialNumberType": {
    "type": "string",
    "maxLength": 20,
    "minLength": 1,
    "pattern": ""
  },
  "timestampType": {
    "$comment": "A timestamp to millisecond precision, with an explicit timezone indicator (+/-hh:mm) relative to UTC",
    "type": "string",
    "pattern": "^[0-9]{4}-(0[1-9]|1[0-2])-(0[1-9]|1[0-9]|2[0-9]|3[0-1])T(2[0-3]|0[0-9]):[0-5][0-9]:[0-5][0-9]\\.([0-9]{3}(Z|((\\+|\\-)([0-9]1[0-3]):([0-5][0-9]))))"
  },
  "uuidType": {
    "type": "string",
    "pattern": "^[a-fA-F\\d]{8}-[a-fA-F\\d]{4}-4[a-fA-F\\d]{4}-[89abAB][a-fA-F\\d]{4}-[a-fA-F\\d]{12}$",
    "$comment": "Universally Unique Identifier (UUID)"
  }
},
"required": ["tiRequestSet"]

```

JSON example for the TI Response Message (Draft v1.0.1)

```
{
  "$schema": "http://json-schema.org/draft-07/schema#",
  "$id": "https://pdg/dscsa-trace-message-schemas/pdg-dscsa-ti-response-draft-v1.0.1.jschema",
  "title": "PDG DSCSA TI Response Schema",
  "description": "Defines responses for requests for DSCSA Transaction Information and Ownership Information.",
  "type": "object",
  "properties": {
    "tiResponse": {
      "properties": {
        "tiResponseAuditReferences": {
          "type": "object",
          "properties": {
            "tiResponseID": {"$ref": "#/definitions/uuidType"},
            "tiRequestID": {"$ref": "#/definitions/uuidType"},
            "responder3911IncidentNumber": {"type": "string"},
            "tiResponseTimestamp": {"$ref": "#/definitions/timestampType"}
          }
        },
        "required": [
          "tiResponseID",
          "tiRequestID",
          "tiResponseTimestamp"
        ]
      }
    },
    "tiRespondingPartyInformation": {
      "type": "object",
      "required": ["contactInformation"],
      "properties": {
        "contactInformation": {"$ref": "#/definitions/contactInformationType"},
        "dscsaCredentialPresentation": {"$ref": "#/definitions/dscsaCredentialPresentationType"},
        "responderGLN": {"$ref": "#/definitions/glnType"}
      }
    }
  },
  "oneOf": [
    {
      "properties": {
        "tiRequestResponses": {
          "type": "array",
          "items": {
            "properties": {
              "individualRequest": {
                "properties": {
                  "requestLineNumber": {"type": "number"},
                  "productID": {
                    "oneOf": [
                      {
                        "properties": {
                          "gtin": {"$ref": "#/definitions/gtinType"}
                        }
                      },
                      {
                        "properties": {
                          "ndc": {"$ref": "#/definitions/ndcType"}
                        }
                      }
                    ]
                  }
                }
              },
              "$comment": "One Of",
              "type": "object"
            }
          }
        },
        "serialOrLotIdentifier": {
          "oneOf": [
            {
              "properties": {
                "serialNumber": {"$ref": "#/definitions/serialNumberType"}
              }
            }
          ]
        }
      }
    }
  ]
}
```

```

    },
    {
      "properties": {
        "lotNumber": {"$ref": "#/definitions/lotNumberType"}
      }
    },
    ],
    "$comment": "One Of",
    "type": "object"
  },
  "responseTypeRequested": {
    "enum": [
      "Transaction Information",
      "All Known Owners",
      "Last Known Owner"
    ]
  },
  },
  "required": [
    "requestLineNumber",
    "productID",
    "serialOrLotIdentifier",
    "responseTypeRequested"
  ]
},
"responsesToRequest": {
  "oneOf": [
    {"$ref": "#/definitions/transactionInformationResponses"},
    {"$ref": "#/definitions/ownershipInformationResponses"}
  ]
},
"requestLineNumberMessage": {"$ref": "#/definitions/requestResponseMessageType"}
},
"required": [
  "individualRequest"],
"$comment": "repeats for each Product Identifier/Serial or Lot Identifier pair that matches the results of the
request. ",
"type": "object"
},
"minItems": 1
}
},
{
  "properties": {
    "responseMessage": {"$ref": "#/definitions/responseMessageType"}
  }
}
],
"type": "object",
"required": [
  "tiResponseAuditReferences",
  "tiRespondingPartyInformation",
]
}
},
"definitions": {
  "addressType": {
    "type": "object",
    "properties": {
      "streetAddress": {
        "type": "string",
        "examples": ["21 2nd Street"],
        "default": ""
      },
    },
  },

```



```

"city": {
  "type": "string",
  "examples": ["New York"],
  "default": ""
},
"state": {
  "type": "string",
  "examples": ["NY"],
  "default": ""
},
"postalCode": {
  "type": "string",
  "examples": ["10021-3100"],
  "default": ""
}
},
"required": [
  "streetAddress",
  "city",
  "state",
  "postalCode"
]
},
"callbackAddressType": {
  "type": "string",
  "format": "url"
},
"CompanyInformation": {
  "type": "object",
  "properties": {
    "gln": {"$ref": "#/definitions/glnType"},
    "companyName": {"$ref": "#/definitions/companyNameType"},
    "companyAddress": {"$ref": "#/definitions/addressType"},
    "tiRequestConnectivityInformation": {"$ref": "#/definitions/connectivityInformationType"}
  },
  "required": [
    "gln",
    "companyName",
    "companyAddress",
    "tiRequestConnectivityInformation"
  ]
},
"companyNameType": {
  "type": "string",
  "maxLength": 50
},
"connectivityInformationType": {
  "anyOf": [
    {
      "properties": {
        "connectivityMethod": {
          "type": "string",
          "enum": ["email"]
        },
        "connectivityAddress": {"$ref": "#/definitions/emailType"}
      },
      "required": [
        "connectivityMethod",
        "connectivityAddress"
      ],
      "$comment": "Trace Endpoint is an email address"
    },
    {
      "properties": {
        "connectivityMethod": {
          "type": "string",
          "enum": ["URI"]
        }
      }
    }
  ]
}

```

```

        "connectivityAddress": {"$ref": "#/definitions/uriType"}
    },
    "required": [
        "connectivityMethod",
        "connectivityAddress"
    ],
    "$comment": "Trace Endpoint is a URI. May be an API to the Trace App, an API to a Resolver, Redirecter or
DIDComm address."
}
],
"type": "object"
},
"contactInformationType": {
    "properties": {
        "personOrDepartmentName": {"$ref": "#/definitions/nameValueType"},
        "organizationName": {"$ref": "#/definitions/companyNameType"},
        "contactMethod": {
            "anyOf": [
                {"$ref": "#/definitions/phoneType"},
                {"$ref": "#/definitions/emailType"}
            ]
        }
    }
},
"type": "object",
"required": [
    "personOrDepartmentName",
    "organizationName",
    "contactMethod"
]
},
"dateType": {
    "type": "string",
    "maxLength": 6,
    "minLength": 6,
    "pattern": "^\\d{6}$"
},
"directPurchaseStatementType": {
    "type": "string",
    "maxLength": 250
},
"drugNameType": {
    "type": "string",
    "maxLength": 50,
    "pattern": "^[a-zA-Z ]*$"
},
"dscsaCredentialPresentationType": {
    "oneOf": [
        {
            "properties": {
                "dscsaATPCredentialPresentation": {
                    "type": "string",
                    "format": "jwt"
                }
            }
        },
        {
            "required": ["dscsaATPCredentialPresentation"]
        },
        {
            "properties": {
                "dscsaATP-EquivalentCredentialPresentation": {
                    "type": "string",
                    "format": "jwt"
                }
            }
        },
        {
            "required": ["dscsaATP-EquivalentCredentialPresentation"]
        },
        {
            "properties": {
                "dscsaAuthorityPresentation": {

```

```

        "type": "string",
        "format": "jwt"
    }
},
"required": ["dscsaAuthorityPresentation"]
}
],
"type": "object"
},
"emailType": {
    "type": "string",
    "format": "email"
},
"glInType": {
    "type": "string",
    "minLength": 13,
    "pattern": "^\\d{13}$",
    "maxLength": 13
},
"gtInType": {
    "type": "string",
    "minLength": 14,
    "pattern": "^\\d{14}$",
    "maxLength": 14
},
"lastKnownOwnerResponse": {
    "properties": {
        "lastKnownOwnerInformation": {"$ref": "#/definitions/CompanyInformation"},
        "dateOfShipment": {"$ref": "#/definitions/dateType"},
        "dateOfTransaction": {
            "$ref": "#/definitions/dateType",
            "$comment": "Will only have a Transaction Date if Shipment date was greater than 24 hours from the transaction."
        }
    }
},
"required": [
    "lastKnownOwnerInformation",
    "dateOfShipment"
],
"type": "object"
},
"lotNumberType": {
    "type": "string",
    "minLength": 1,
    "maxLength": 30
},
"nameValueType": {
    "type": "string",
    "pattern": "[a-zA-Z]*$",
    "maxLength": 60
},
"ndcType": {
    "type": "string",
    "oneOf": [
        {
            "type": "string",
            "pattern": "#####-###-###",
            "$comment": "4-4-2"
        },
        {
            "type": "string",
            "pattern": "#####-###-###",
            "$comment": "5-3-2"
        },
        {
            "type": "string",
            "pattern": "#####-###-###",
            "$comment": "5-4-1"
        }
    ]
},

```

```

    {
      "type": "string",
      "pattern": "#####-####-##",
      "$comment": "5-5-2 (future)"
    }
  ],
  "$comment": "One Of"
},
"ownershipInformationResponses": {
  "items": {
    "properties": {
      "gtin": {"$ref": "#/definitions/gtinType"},
      "ndc": {"$ref": "#/definitions/ndcType"},
      "serialNumber": {"$ref": "#/definitions/serialNumberType"},
      "dateOfShipment": {"$ref": "#/definitions/dateType"},
      "dateOfTransaction": {
        "$ref": "#/definitions/dateType",
        "$comment": "Will only have a Transaction Date if Shipment date was greater than 24 hours from the transaction."
      },
      "knownOwnerInformation": {"$ref": "#/definitions/CompanyInformation"}
    },
    "required": [
      "gtin",
      "ndc",
      "serialNumber",
      "dateOfShipment",
      "knownOwnerInformation"
    ],
    "type": "object"
  },
  "type": "array",
  "minItems": 1
},
"phoneType": {"type": "string"},
"productContainerSizeType": {
  "type": "number",
  "exclusiveMinimum": 1
},
"productDataType": {
  "type": "object",
  "properties": {
    "gtin": {"$ref": "#/definitions/gtinType"},
    "ndc": {"$ref": "#/definitions/ndcType"},
    "drugName": {"$ref": "#/definitions/productNameType"},
    "strength": {"$ref": "#/definitions/productStrengthType"},
    "dosageForm": {"$ref": "#/definitions/productDosageFormType"},
    "containerSize": {"$ref": "#/definitions/productContainerSizeType"},
    "numberOfContainers": {"$ref": "#/definitions/productNumberOfContainersType"}
  },
  "required": [
    "gtin",
    "ndc",
    "drugName",
    "strength",
    "dosageForm",
    "containerSize",
    "numberOfContainers"
  ]
},
"productDosageFormType": {"type": "string"},
"productNameType": {"$ref": "#/definitions/nameValueType"},
"productNumberOfContainersType": {
  "type": "number",
  "exclusiveMinimum": 1
},
"productProductionDataType": {
  "properties": {
    "lotNumber": {"$ref": "#/definitions/lotNumberType"},

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```

    "serialNumber": {"$ref": "#/definitions/serialNumberType"},
    "expirationDate": {"$ref": "#/definitions/dateType"}
  },
  "required": [
    "lotNumber",
    "expirationDate",
    "serialNumber"
  ],
  "type": "object"
},
"productStrengthType": {"type": "string"},
"requestResponseMessageType": {
  "properties": {
    "requestResponseMessageCode": {"$ref": "#/definitions/requestResponseMessageCodeType"},
    "requestResponseMessageDescription": {
      "type": "string",
      "maxLength": 250
    }
  },
  "required": [
    "requestResponseMessageCode",
    "requestResponseMessageDescription"
  ],
  "type": "object"
},
"requestResponseMessageCodeType": {
  "enum": [
    "xx1",
    "xx2",
    "xx3",
    "xx4",
    "xx5",
    "xx6"
  ],
  "$comment": "xx1 Request Closed, xx2: Additional Information, xx3: Not TI found for request, xx4: Response Delayed, xx5: Request parameter error, xx6: Request addressed via alternate channel ",
  "type": "string"
},
"responseMessageType": {
  "properties": {
    "responseMessageCode": {"$ref": "#/definitions/requestResponseMessageCodeType"},
    "responseMessageDescription": {
      "type": "string",
      "maxLength": 250
    }
  },
  "required": [
    "responseMessageCode",
    "responseMessageDescription"
  ],
  "type": "object"
},
"serialNumberType": {
  "type": "number",
  "maxLength": 20,
  "minLength": 1,
  "pattern": ""
},
"timestampType": {
  "$comment": "A timestamp to millisecond precision, with an explicit timezone indicator (+/-hh:mm) relative to UTC",
  "type": "string",
  "pattern": "^([0-9]{4}-([0-9]{1-2})-([0-9]{1-2})[0-9]{3}([0-1])T([2|0-3])?([0-9])?:[0-5][0-9]:[0-5][0-9]\\.([0-9]{3}|Z|([+|-])([0-9]{1,2})))([0-9]{1}[0-3])?([0-5][0-9])?14:00))$"
},
"transactionInformationResponses": {
  "items": {
    "properties": {
      "transactionInformationData": {

```

```

    "type": "object",
    "properties": {
      "productData": {"$ref": "#/definitions/productDataType"},
      "productProductionData": {"$ref": "#/definitions/productProductionDataType"},
      "ownershipFromInformation": {"$ref": "#/definitions/CompanyInformation"},
      "ownershipToInformation": {"$ref": "#/definitions/CompanyInformation"},
      "dropShipIndicator": {
        "type": "boolean",
        "enum": [
          "true",
          "false"
        ]
      },
      "DropShip": {
        "if": {
          "properties": {
            "dropShipIndicator": {"const": "true"}
          },
          "then": {
            "properties": {
              "dropShipToInformation": {"$ref": "#/definitions/CompanyInformation"}
            },
            "required": ["dropShipToInformation"]
          }
        }
      },
      "poAssociatedWithTI": {"type": "string"},
      "transactionStatement": {"$ref": "#/definitions/transactionStatementType"},
      "directPurchaseStatement": {"$ref": "#/definitions/directPurchaseStatementType"},
      "dateOfShipment": {"$ref": "#/definitions/dateType"},
      "dateOfTransaction": {
        "$ref": "#/definitions/dateType",
        "$comment": "Will only have a Transaction Date if Shipment date was greater than 24 hours from the
transaction."
      },
      "required": [
        "productData",
        "productProductionData",
        "ownershipFromInformation",
        "ownershipToInformation",
        "transactionStatement",
        "dateOfShipment"
      ]
    },
    "required": ["transactionInformationData"],
    "type": "object"
  },
  "type": "array",
  "minItems": 1
},
"transactionStatementType": {
  "type": "string",
  "maxLength": 250
},
"uriType": {
  "type": "string",
  "format": "uri-reference"
},
"uuidType": {
  "type": "string",
  "pattern": "^[a-fA-F\\d]{8}-[a-fA-F\\d]{4}-4[a-fA-F\\d]{4}-[89abAB][a-fA-F\\d]{4}-[a-fA-F\\d]{12}$",
  "$comment": "Universally Unique Identifier (UUID)"
}
},
"required": ["tiResponse"]

```

Change Control

| Date of Change | Section | Description of Change | Approved By |
|----------------|---------|--|------------------------|
| Version 1.0.1 | | | |
| 2023-04-19 | | Applied Change Request #22: added definitions and aligned "required" attribute names with Schema data names | PDG Board of Directors |
| 2023-05-04 | | Applied definition changes agreed by the Trace WG on 2023-05-03. Also, brought Figures 7,8 and 9 into alignment with v1.0.0 of the TI Request and TI Response schemas. | PDG Board of Directors |
| Version 1.2 | | | |
| | | No Further Changes in this Version | |