

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

## DSCSA Tracing Request/Response Schemas

**Version 1.0.1**  
**June 6, 2023**

# Tracing Messages – Technical Rendering

## JSON Schema for TI Request Message (Draft v13)

```
{
  "$schema": "http://json-schema.org/draft-07/schema#",
  "$id": "https://c4scs.org/pdg/Draft/1.0.0/pdgdscsatirequestschemajson",
  "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"
          ]
        }
      },
      "required": [
        "tiRequestAuditReferences"
      ],
      "type": "object"
    },
    "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",
        }
      }
    }
  }
}
```

```

        "$comment": "Used to mitigate unnecessary returns when the recall doesn't affect the Responder."
      },
      "recallRequestLevel": {
        "type": "string",
        "enum": [
          "Serial Number",
          "Lot Number"
        ]
      }
    ],
    "required": [
      "responseTypeRequested",
      "isComplianceAuditOrTest",
      "investigationCircumstances",
      "investigationReasonAttestation"
    ]
  },
  "tiRequests": {
    "type": "array",
    "items": {
      "properties": {
        "requestLineNumber": {"type": "number"},
        "productID": {
          "oneOf": [
            {"$ref": "#/definitions/gtinType"},
            {"$ref": "#/definitions/ndcType"}
          ],
          "type": "object"
        },
        "serialNumberOrLotNumber": {
          "oneOf": [
            {"$ref": "#/definitions/serialNumberType"},
            {"$ref": "#/definitions/lotNumberType"}
          ],
          "type": "object"
        }
      },
      "type": "object",
      "required": [
        "requestLineNumber",
        "productID",
        "serialNumberOrLotNumber"
      ]
    }
  },
  "type": "object",
  "required": [
    "tiRequestAuditReferences",
    "tiRequestingParty",
    "tiRequestParameters",
    "tiRequests"
  ]
},
"definitions": {
  "apiType": {
    "type": "string",
    "format": "uri",
    "pattern": "\\^(https?|wss?|ftp):/\\/"
  },
  "callbackAddressType": {
    "type": "object",
    "anyOf": [
      {
        "properties": {
          "apiCallbackAddress": {"$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": {
    "$comment": "A timestamp to millisecond precision, with an explicit timezone indicator (+/-hh:mm) relative to UTC",
    "type": "string",
    "pattern": "^[0-9]{4}-(0[1-9]|1[0-2])-(0[1-9]|1[0-9]|2[0-9]|3[0-1])T(2[0-3]|[01][0-9]):[0-5][0-9]:[0-5][0-9]\\.\\.[0-9]{3}(Z|((\\+|\\-)([0-9]1[0-3]):([0-5][0-9]))14:00))"
  },
  "uuidType": {
    "type": "string",
    "pattern": "^[a-fA-F\\d]{8}-[a-fA-F\\d]{4}-4[a-fA-F\\d]{4}-[89abAB][a-fA-F\\d]{4}-[a-fA-F\\d]{12}$",
    "$comment": "Universally Unique Identifier (UUID)"
  }
},
"required": [
  "tiRequestID",
  "requestingParty",
  "requestParameters",
  "requests",
  "tiRequestSetID",
  "tiRequestingParty",
  "tiRequestParameters",
  "tiRequestReason",
  "tiRequests",
  "tiRequest"
]
}

```

## JSON example for the TI Response Message (Draft v14)

```
{
  "$schema": "http://json-schema.org/draft-07/schema#",
  "$id": "https://c4scs.org/pdg/Draft/1.0.0/pdgdscsatirequestschemajson",
  "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": {"$ref": "#/definitions/requestResponseMessageType"}
},
"required": [
  "individualRequest",
  "responses"
],
"$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",
  "tiRespondingParty",
  "tiRequestResponses"
]
},
},
"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",
    "tiRequestDigitalContactInformation"
  ]
},
"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": {"$ref": "#/definitions/uriType"}
    },
    "required": [
        "connectivityMethod",
        "connectivityURIAddress"
    ],
    "$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[1-9]|1[0-2])-(0[1-9]|1[2][0-9]|3[0-1])T(2[0-3]|[01][0-9]):[0-5][0-9]:[0-5][0-9]\\.([0-9]{3}|Z|([\\+|\\-])([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": [
  "tiRequestID",

```

```
"respondingParty",  
"tiRequestSetID",  
"tiRequestResponseID",  
"tiResponses",  
"tiResponseID",  
"tiResponse"  
  ]  
}
```

**Change Control**

<b>Date of Change</b>	<b>Section</b>	<b>Description of Change</b>	<b>Approved By</b>
Version 1.0			