Web Services Data Access and Integration – The Relational Realisation (WS-DAIR) – Recommendation – Version 0.4

DAIS-WG Weekly Telcon – 13May2004

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WS-DAIR – Agenda

- Changes from GGF10
- DataAccess Operations
- DataFactory Operations
- Properties
- Data Management

WS-DAIR – Changes from GGF10

- SQLQuery, SQLUpdate and SQLExecute Operations combined into SQLExecute
  - *Previous Versions were direct mappings of JDBC Calls*
  - *SQLQuery and SQLUpdate were exact subsets of SQLExecute*
  - *The XML Realisation only has one Operation for each "Language"*

- DBOperationAccess Operation replaced by SQLResponseAccess
  - *getReturnValue, getResultSets, getOutputParameter replaced by GetRowSet, GetRowSetFactory, GetUpdateCount, GetReturnValue, GetOutputParameter, GetSQLCommunicationsArea*

- SQLCommuncationsArea added to Output
  - *The inclusion of Exceptions, Warnings, Success Messages in responses was not catered for in Previous Versions*

- Keyword Consistency
  - *Renaming for consistency across other WS-DAI* Recommendations*
  - *Capitalisation of the first character of Keywords*

WS-DAIR – DataAccess Operations

- SQLAccess::SQLExecute
  - Input
    - *SQLExecuteRequest*
      - *SQLRequest*
        - » *SQLExpression* - any SQL statement
        - » *SQLExecuteRequestParameters (0 to n) (InputParameter, OutputParameter, InOutParameter)*
      - *ResponseFormat*
  - Output
    - *SQLExecuteResponse*
      - *SQLResponse*
        - » *RowSet (0 to n)* - e.g. WebRowSet as per JSR114
        - » *UpdateCount (0 to n)*
        - » *ReturnValue (0 to n)*
        - » *OutputParameter (0 to n)*
        - » *SQLCommunicationsArea (1 to n) (SQLState, VendorCode, MessageText)*
  - Faults
    - *InvalidSQLExecuteRequest* - XML syntax error or XML schema non-compliance
    - *InvalidSQLExecuteRequestParameters* - Parameters do not match SQLExpression
    - *InvalidResponseFormat* - ResponseFormat not valid
    - *OtherFault*

WS-DAIR – DataAccess Operations

- RowSetAccess::GetTuples
  - Input
    - *GetTuplesRequest*
      - *SQLRequest*
        - » *StartPosition*
        - » *Count*
  - Output
    - *GetTuplesResponse*
      - *SQLResponse*
        - » *RowSet (0 or 1) -* e.g. WebRowSet as per JSR114
        - » *SQLCommunicationsArea (1 to n) (SQLState, VendorCode, MessageText)*
  - Faults
    - *InvalidGetTuplesRequest -* XML syntax error or XML schema non-compliance
    - *InvalidStartPosition -* not a valid StartPosition
    - *InvalidCount -* not a valid Count
    - *OtherFault*

WS-DAIR – DataAccess Operations

- SQLResponseAccess::GetRowSet
  - Input
    - *GetRowSetRequest*
      - *SQLRequest*
        - » *RowSetNumber*
  - Output
    - *GetRowSetResponse*
      - *SQLResponse*
        - » *RowSet (1) -* e.g. WebRowSet as per JSR114
  - Faults
    - *InvalidGetRowSetRequest -* XML syntax error or XML schema non-compliance
    - *InvalidRowSetNumber -* not a valid RowSetNumber
    - *OtherFault*

WS-DAIR – DataAccess Operations

- SQLResponseAccess::GetRowSetFactory
  - Input
    - *GetRowSetFactoryRequest*
      - *SQLRequest*
        - » *RowSetNumber*
  - Output
    - *GetRowSetFactoryResponse*
      - *SQLResponse*
        - » *EndPointReference* - as per WS-Addressing
  - Faults
    - *InvalidGetRowSetFactoryRequest* - XML syntax error or XML schema non-compliance
    - *InvalidRowSetNumber* - not a valid RowSetNumber
    - *OtherFault*

WS-DAIR – DataAccess Operations

- SQLResponseAccess::GetUpdateCount
  - Input
    - *GetUpdateCountRequest*
      - *SQLRequest*
        - » *UpdateCountNumber*
  - Output
    - *GetUpdateCountResponse*
      - *SQLResponse*
        - » *UpdateCount (1)*
  - Faults
    - *InvalidGetUpdateCountRequest -* XML syntax error or XML schema non-compliance
    - *InvalidUpdateCountNumber -* not a valid UpdateCountNumber
    - *OtherFault*

WS-DAIR – DataAccess Operations

- SQLResponseAccess::GetReturnValue
  - Input
    - *GetReturnValueRequest*
      - *SQLRequest*
        - » *ReturnValueNumber*
  - Output
    - *GetReturnValueResponse*
      - *SQLResponse*
        - » *ReturnValue (1)*
  - Faults
    - *InvalidGetReturnValueRequest* - XML syntax error or XML schema non-compliance
    - *InvalidReturnValueNumber* - not a valid ReturnValueNumber
    - *OtherFault*

WS-DAIR – DataAccess Operations

- SQLResponseAccess::GetOutputParameter
  - Input
    - *GetOutputParameterRequest*
      - *SQLRequest*
        - » *OutputParameterNumber*
  - Output
    - *GetOutputParameterResponse*
      - *SQLResponse*
        - » *OutputParameter (1)*
  - Faults
    - *InvalidGetOutputParameterRequest* - XML syntax error or XML schema non-compliance
    - *InvalidOutputParameterNumber* - not a valid OutputParameterNumber
    - *OtherFault*

WS-DAIR – DataAccess Operations

- SQLResponseAccess::GetSQLCommunicationsArea
  - Input
    - *GetSQLCommunicationsAreaRequest*
      - *SQLRequest*
        » *SQLCommunicationsAreaNumber*
  - Output
    - *GetSQLCommunicationsAreaResponse*
      - *SQLResponse*
        » *SQLCommunicationsArea (1)*
  - Faults
    - *InvalidGetSQLCommunicationsAreaRequest* - XML syntax error or XML schema non-compliance
    - *InvalidSQLCommunicationsAreaNumber* - not a valid SQLCommunicationsAreaNumber
    - *OtherFault*

WS-DAIR – DataFactory Operations

- SQLFactory::SQLExecuteFactory
  - Input
    - *SQLExecuteFactoryRequest*
      - *SQLProperties* - Terms
      - *SQLRequest*
        » *SQLExpression*
        » *SQLExecuteRequestParameters (0 to n) (InputParameter, OutputParameter, InOutParameter)*
      - *ResponseFormat*
  - Output
    - *SQLExecuteFactoryResponse*
      - *EndPointReference* - as per WS-Addressing
  - Faults
    - *InvalidSQLExecuteFactoryRequest* - XML syntax error or XML schema non-compliance
    - *InvalidSQLExecuteRequestParameters* - SQLExecute RequestParameters do not match SQLExpression
    - *InvalidDataServiceParameters* - Parameters not valid
    - *InvalidResponseFormat* - ResponseFormat not valid
    - *OtherFault*

WS-DAIR – DataAccess Properties (Settable) aka Terms

- SQL Properties
  - *LanguageCapabilities*
    - *SQL92Expression, SQL99Expression, SQL03Expression*
    - This will be superceded by a proposal arising from a joint activity of the DAIS-WG and CGS-WG to extend the Common Information Model (CIM). The CGS-WG will submit the proposal to the DMTF and thence to the WSDM TC in OASIS.
  - *ValidResponseFormats*
    - *List of QNames*

- RowSet Properties
  - *Forward*
    - *True* or *False*
  - *Reverse*
    - *True* or *False*
  - *CursorHeldOverTxnBoundary*
    - *True* or *False*
  - *Materialisation*
    - *OnResourceCreation*
    - *OnFirstRequest*

- SQLResponse Properties
  - *None*

WS-DAIR – DataAccess Properties (not Settable)

- SQL Properties
  - *RelationalSchema* - describes the schema of the relational data, for example Databases, Domains, Tables, Constraints, Columns, ColumnTypes, Keys, Views, Indexes
  - *StoredProcedures* - describes the names, input and output types of the stored procedures available.
  - *UserDefinedTypes* - describes the names and definitions of the user defined types available.
  - *UserDefinedFunctions* - describes the names and definitions of the user defined functions available.
  - *Triggers* - describes the names and definitions of the triggers available.
  - This will be superceded by a proposal arising from a joint activity of the DAIS-WG and CGS-WG to extend the Common Information Model (CIM). The CGS-WG will submit the proposal to the DMTF and thence to the WSDM TC in OASIS.

- RowSet Properties
  - *RowSetSchema* (e.g. WebRowSet as per JSR114)
  - *NumberofRows*

- SQLResponse Properties
  - *NumberofRowSets*
  - *NumberofUpdateCounts*
  - *NumberofReturnValues*
  - *NumberofOutputParameters*
  - *NumberofSQLCommunicationsAreas*

WS-DAIR – Data Management

- ## Database Management
  - *Will use WS-DM MUWS*
  - *(However it is still possible via SQLAccess::SQLExecute)*
- ## Data Service Management
  - *Will use WS-DM MOWS*

WS-DAIR – Changes from GGF10

- Service Data Elements
  - Relational
  - Rowset

- DataAccess
  - SQLAccess
    - sqlQuery
    - sqlUpdate
    - sqlExecute
  - RowsetAccess
    - getNextNTuples
  - DBOperationAccess
    - getReturnValue
    - getResultSets
    - getOutputParameter

- DataFactory
  - SQLFactory
    - createService
  - RowsetSelectionFactory
    - createService
  - DBOperationFactory
    - createService

- DataManagement
  - possible via SQLAccess::sqlExecute

- Data Properties
  - Relational Properties
  - RowSet Properties
  - SQLResponse Properties

- DataAccess
  - SQLAccess
    - SQLExecute
  - RowSetAccess
    - GetTuples
  - SQLResponseAccess
    - GetRowSet
    - GetRowSetFactory
    - GetUpdateCount
    - GetReturnValue
    - GetOutputParameter
    - GetSQLCommunicationsArea

- DataFactory
  - SQLFactory
    - SQLExecuteFactory

- DataManagement
  - Database Management
    - Use WS-DM MUWS
    - (Still possible via SQLAccess::SQLExecute)
  - Data Service Management
    - Use WS-DM MOWS

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