**Kymeta Corporation**

# Functional & Technical Design Document

# – Work Order Interface

DELMIAWORKS to Oracle Fusion

Created 07/20/2022

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## Introduction

#### Project Purpose

The objective of this interface is to automate KYMETA CORPORATION business processes and integrate two applications DELMIAWorks and Oracle Fusion Using Microsoft Azure Cloud Integration service.

The integration will assist in integrating manufacturing events from the DELMIAWorks MES system to Oracle Fusion so that the Financial & Accounting operations performed in Oracle fusion.

#### Document Purpose

The document is to provide understanding of the basic Inbound API goals, its methods and relevant REST/SOAP transactions as well as to ensure successful interaction between DELMIAWorks and Fusion Cloud applications via the AZURE Integration.

This document primarily describes the Oracle Fusion API methods that need to be used by the AZURE Inbound API to transfer information (send requests and accept responses) with external system which is DELMIAWorks in this case.

#### Customer Overview

KYMETA CORPORATION is a satellite communications company manufacturing software-enabled, meta-materials based electronic beamforming antennas and terminals for satellite communications. They have a single site facility encompassing all manufacturing, warehousing, shipping, and administrative work in Redmond, WA.

#### Integration Platform (TBD)

The solution defined in this document is based on functionality Azure Integration Cloud Service.

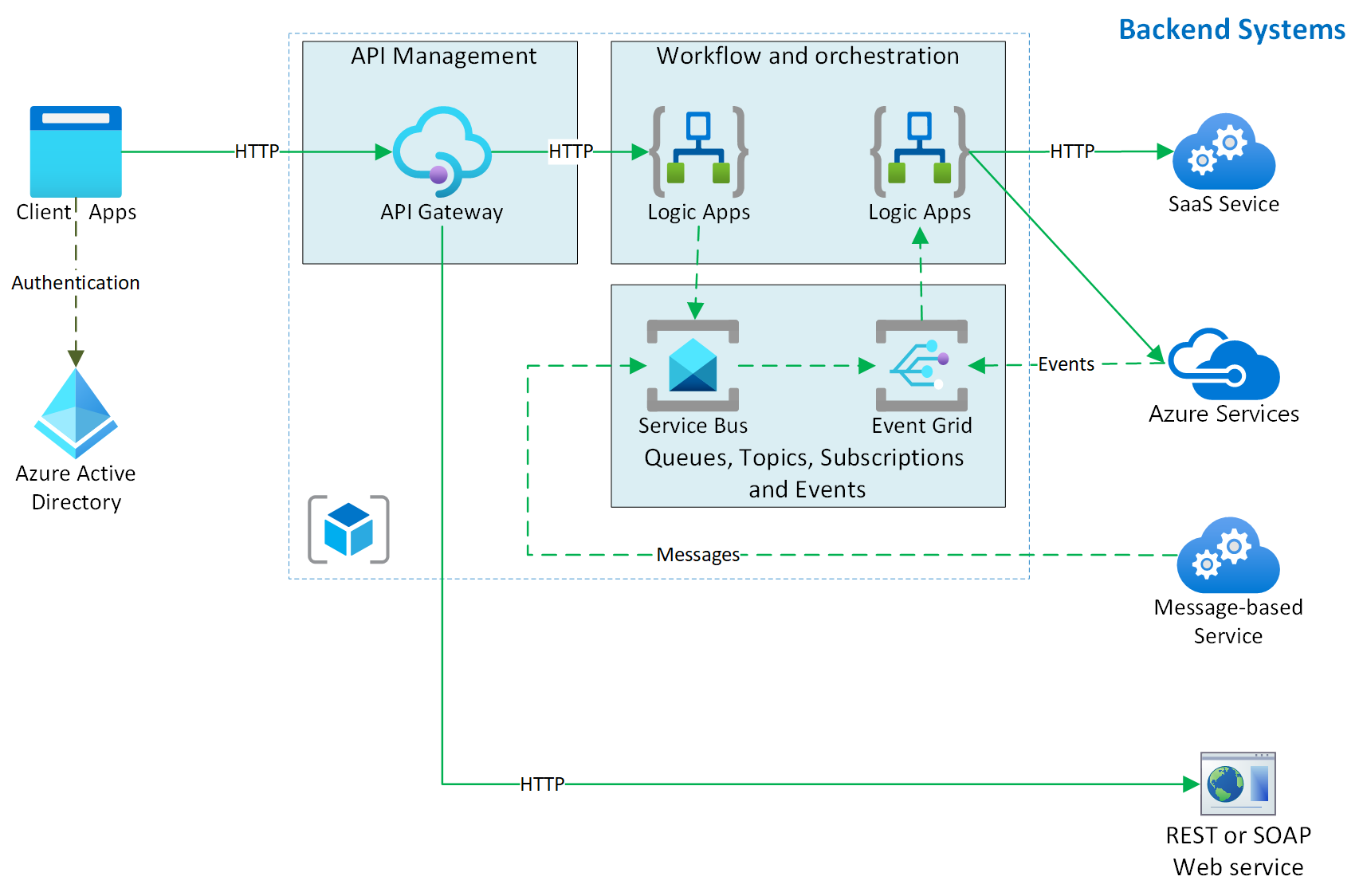
It is assumed that Azure Integration Service Environment which will be fully isolated and dedicated environment for KYMETA integration needs will be made available.

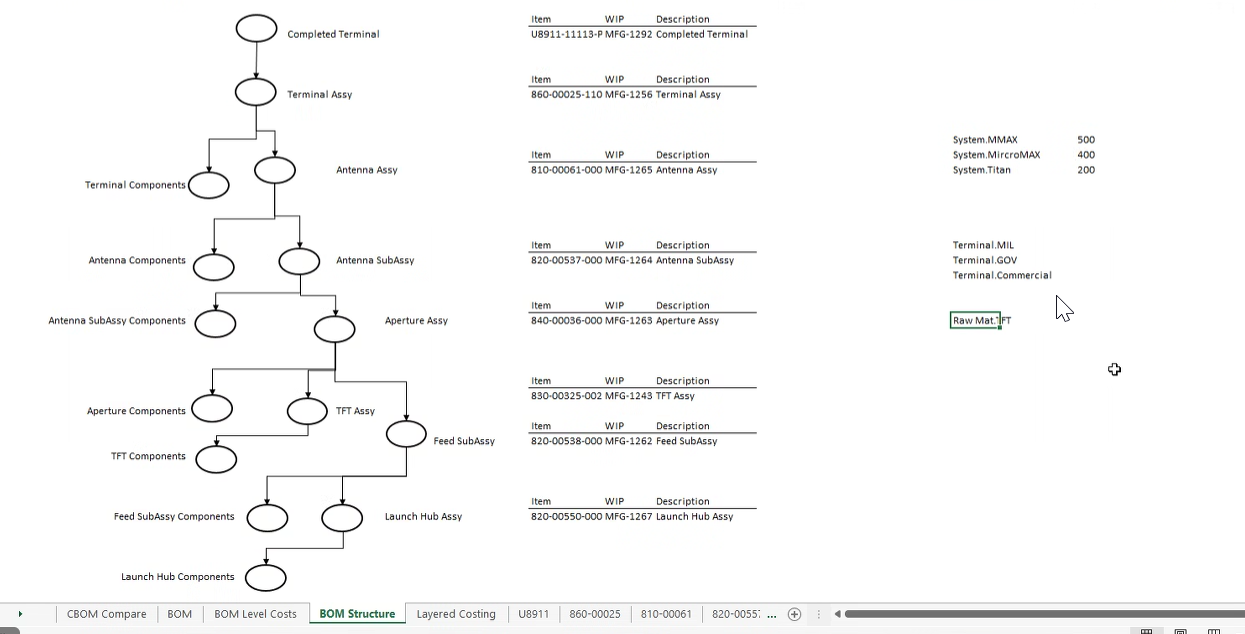
## Proposed System

#### Business Processes Supported

KYMETA CORPORATION will utilize EnterpriseIQ as an MES solution to manage their manufacturing operations. KYMETA CORPORATION will be using the following Oracle Fusion Modules: Oracle Fusion Manufacturing, Oracle Fusion Supply Chain Management, Fusion Cost management, Fusion Procurement, Oracle Fusion Finance.

#### High-Integration Technology Architecture (Azure)





#### Detailed API Design – Work Orders

* [**Create Work Order**](#_Work_Order_Creation) **à /fscmRestApi/resources/11.13.18.05/workOrders**
* [**Update Work Order**](#_Work_Order_Updation) **à /fscmRestApi/resources/11.13.18.05/workOrders/{WorkOrderId}**
* **Work Order Material Transactions**
  + **Create Material Transaction à /fscmRestApi/resources/11.13.18.05/materialTransactions/{materialTransactionsUniqID}/child/MaterialTransactionDetail**
  + **Create Operation Transaction à /fscmRestApi/resources/11.13.18.05/operationTransactions**
  + **Create Lots à /fscmRestApi/resources/11.13.18.05/materialTransactions/{materialTransactionsUniqID}/child/MaterialTransactionDetail/{MaterialTransactionDetailUniqID}/child/TransactionLot**
  + **Create Serials à /fscmRestApi/resources/11.13.18.05/materialTransactions/{materialTransactionsUniqID}/child/MaterialTransactionDetail/{MaterialTransactionDetailUniqID}/child/TransactionSerial**
  + **Component Transactions à /fscmRestApi/resources/11.13.18.05/materialTransactions/{materialTransactionsUniqID}/child/MaterialTransactionDetail/{MaterialTransactionDetailUniqID}/child/ComponentTransactionDetail**
* [**Repair Work Order**](#_Work_Order_Creation) **Creation à /fscmRestApi/resources/11.13.18.05/workOrders**
* [**Repair Work Order**](#_Work_Order_Creation) **Update à /fscmRestApi/resources/11.13.18.05/workOrders/{WorkOrderId}**

[WO Creation Field Mapping.xlsx (sharepoint.com)](https://kymeta.sharepoint.com/:x:/r/sites/Copernicus/_layouts/15/Doc.aspx?sourcedoc=%7BF73ADCCD-B6FC-44F2-B4D9-965D396CFB07%7D&file=WO%20Creation%20Field%20Mapping.xlsx&action=default&mobileredirect=true)

##### Work Order Creation Parameters

This REST API integration supports json media.

Following KYMETA REST API can be used.

[**https://ebxw-dev1.fa.us2.oraclecloud.com/fscmRestApi/resources/11.13.18.05/workOrders**](https://ebxw-dev1.fa.us2.oraclecloud.com/fscmRestApi/resources/11.13.18.05/workOrders)

Some of the Input Parameters need to be finalized.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Row#** | **Parameter** | **Optional / Mandatory** | **Data Type** | **Data Type Detail** | **MES Field** |
| **1** | **ActualCompletionDate** | **Optional** | **string** | Date-Time |  |
| 2 | ActualStartDate | Optional | string | Date-Time |  |
| 3 | BackToBackFlag | Optional | boolean |  |  |
| **4** | **CanceledDate** | **Optional** | string | Date-Time |  |
| 5 | CanceledReason | Optional | string |  |  |
| **6** | **ClosedDate** | **Optional** | **string** | Date-Time |  |
| 7 | CmPOHeaderId | Optional | integer | Integer(64) |  |
| 8 | CmPOLineId | Optional | integer | Integer(64) |  |
| 9 | CmPOLineLocId | Optional | integer | Integer(64) |  |
| **10** | **CompletedQuantity** | **Optional** | **number** |  |  |
| **11** | **CompletionLocator** | **Optional** | **string** |  |  |
| 12 | CompletionLocatorId | Optional | integer | Integer(64) |  |
| **13** | **CompletionSubinventoryCode** | **Optional** | **string** |  |  |
| 14 | ContractMfgFlag | Optional | boolean |  |  |
| 15 | CreatedBy | Optional | string |  |  |
| 16 | CreationDate | Optional | string | Date-Time |  |
| 17 | DelayStatus | Optional | integer | Integer(64) |  |
| 18 | Description | Optional | string |  |  |
| 19 | ExplosionFlag | Optional | string |  |  |
| 20 | FirmPlannedFlag | Optional | string |  |  |
| 21 | InterfaceSourceCode | Optional | string |  |  |
| 22 | InventoryItemId | Optional | integer | Integer(64) |  |
| **23** | **ItemNumber** | **Mandatory** | **string** |  |  |
| 24 | ItemRevision | Optional | string |  |  |
| 25 | ItemStructureName | Optional | string |  |  |
| 26 | LastUpdateDate | Optional | string | Date-Time |  |
| 27 | LastUpdatedBy | Optional | string |  |  |
| 28 | links | Optional | array |  |  |
| 29 | NettableSupplyQuantityOverride | Optional | number |  |  |
| 30 | OrchestrationCode | Optional | string |  |  |
| 31 | OrderLessFlag | Optional | boolean |  |  |
| **32** | **OrganizationCode** | **Optional** | **string** |  |  |
| 33 | OrganizationId | Optional | integer | Integer(64) |  |
| **34** | **OrganizationName** | **Mandatory** | **string** |  |  |
| 35 | OvercomplToleranceType | Optional | string |  |  |
| 36 | OvercomplToleranceTypeDescription | Optional | string |  |  |
| 37 | OvercomplToleranceValue | Optional | number |  |  |
| **38** | **PlannedCompletionDate** | **Mandatory** | **string** | Date-Time |  |
| **39** | **PlannedStartDate** | **Mandatory** | **string** | Date-Time |  |
| **40** | **PlannedStartQuantity** | **Mandatory** | **number** |  |  |
| 41 | PreassignLotFlag | Optional | boolean |  |  |
| 42 | ProjectDetailsDFF | Optional | array |  |  |
| 43 | ProjectNumber | Optional | string |  |  |
| **44** | **RejectedQuantity** | **Optional** | **number** |  |  |
| **45** | **ReleasedDate** | **Optional** | **string** | Date-Time |  |
| 46 | ResequenceFlag | Optional | boolean |  |  |
| 47 | SchedulingMethod | Optional | string |  |  |
| 48 | ScoSupplyOrderId | Optional | integer | Integer(64) |  |
| **49** | **ScrappedQuantity** | **Optional** | **number** |  |  |
| 50 | SerialTrackingFlag | Optional | boolean |  |  |
| 51 | SourceHeaderReference | Optional | string |  |  |
| 52 | SourceHeaderReferenceId | Optional | integer | Integer(64) |  |
| 53 | SourceLineReference | Optional | string |  |  |
| 54 | SourceLineReferenceId | Optional | integer | Integer(64) |  |
| 55 | SourceSystemId | Optional | number |  |  |
| 56 | SourceSystemType | Optional | string |  |  |
| **57** | **SupplyType** | **Optional** | **string** |  |  |
| 58 | SupplyTypeDescription | Optional | string |  |  |
| 59 | TaskNumber | Optional | string |  |  |
| 60 | TransformFromItemId | Optional | integer | Integer(64) |  |
| 61 | TransformFromItemNumber | Optional | string |  |  |
| 62 | UnitOfMeasure | Optional | string |  |  |
| **63** | **UOMCode** | **Optional** | **string** |  |  |
| 64 | WorkDefinitionAsOfDate | Optional | string | Date-Time |  |
| 65 | WorkDefinitionCode | Optional | string |  |  |
| 66 | WorkDefinitionId | Optional | integer | Integer(64) |  |
| 67 | WorkDefinitionName | Optional | string |  |  |
| 68 | WorkDefinitionVersionId | Optional | integer | Integer(64) |  |
| 69 | WorkDefinitionVersionNumber | Optional | string |  |  |
| 70 | WorkMethodCode | Optional | string |  |  |
| 71 | WorkMethodId | Optional | integer | Integer(64) |  |
| 72 | WorkOrderActiveOperation | Optional | array |  |  |
| 73 | WorkOrderAssemblyComponent | Optional | array |  |  |
| 74 | WorkOrderAttachment | Optional | array |  |  |
| 75 | WorkOrderDate | Optional | string | Date-Time |  |
| 76 | WorkOrderDescription | Optional | string |  |  |
| 77 | WorkOrderDFF | Optional | array |  |  |
| 78 | WorkOrderExceptionCount | Optional | array |  |  |
| 79 | WorkOrderId | Optional | integer | Integer(64) |  |
| 80 | WorkOrderLotNumber | Optional | array |  |  |
| 81 | WorkOrderMaterial | Optional | array |  |  |
| 82 | WorkOrderNumber | Optional | string |  |  |
| **83** | **WorkOrderOperation** | **Optional** | **array** |  |  |
| 84 | WorkOrderPriority | Optional | number |  |  |
| 85 | WorkOrderReservation | Optional | array |  |  |
| 86 | WorkOrderResource | Optional | array |  |  |
| 87 | WorkOrderSerialNumber | Optional | array |  |  |
| **88** | **WorkOrderStatus** | **Optional** | **array** |  |  |
| 89 | WorkOrderStatusCode | Optional | string |  |  |
| 90 | WorkOrderStatusHistory | Optional | array |  |  |
| 91 | WorkOrderStatusId | Optional | integer | Integer(64) |  |
| 92 | WorkOrderStatusName | Optional | string |  |  |
| 93 | WorkOrderSubType | Optional | string |  |  |
| 94 | WorkOrderSubTypeDescription | Optional | string |  |  |
| 95 | WorkOrderSystemStatusCode | Optional | string |  |  |
| **96** | **WorkOrderType** | **Optional** | **string** |  |  |
| 97 | WorkOrderTypeDescription | Optional | string |  |  |

##### Work Order Creation Source

Detailed Source for Generating the JSON File. (TBD)

{

"type":"object",

"properties":{

"ActualCompletionDate":{

"description":"Actual finish date of the work order. This date occurs when the work order status changes to Completed.",

"type":"string",

"format":"date-time"

},

"ActualStartDate":{

"description":"Actual start date of the work order.",

"type":"string",

"format":"date-time"

},

"BackToBackFlag":{

"description":"Contains one of the following values: true or false. If true, then the application created the work order as part of the back-to-back flow. If false, then application did not create the work order as part of the back-to-back flow. The default value is false.",

"type":"boolean"

},

"CanceledDate":{

"description":"Date when the work order is canceled.",

"type":"string",

"format":"date-time"

},

"CanceledReason":{

"description":"Reason for canceling the work order.",

"type":"string",

"maxLength":240

},

"ClosedDate":{

"description":"Date when the work order is closed.",

"type":"string",

"format":"date-time"

},

"CmPOHeaderId":{

"description":"Value that uniquely identifies the purchase order header. It is a primary key that the application generates when it creates the purchase order header.",

"type":"integer",

"format":"int64"

},

"CmPOLineId":{

"description":"Value that uniquely identifies the purchase order line. It is a primary key that the application generates when it creates the purchase order line.",

"type":"integer",

"format":"int64"

},

"CmPOLineLocId":{

"description":"Value that uniquely identifies the purchase order line schedule. It is a primary key that the application generates when it creates the purchase order line schedule.",

"type":"integer",

"format":"int64"

},

"CompletedQuantity":{

"description":"Work order quantity that is completed into inventory at the last operation.",

"type":"number"

},

"CompletionLocator":{

"description":"Completion locator to use, by default, when considering the work order for product completion.",

"type":"string",

"maxLength":255

},

"CompletionLocatorId":{

"description":"Value that uniquely identifies the locator. It is a primary key that the application generates when it creates the locator.",

"type":"integer",

"format":"int64"

},

"CompletionSubinventoryCode":{

"description":"Completion subinventory to use, by default, when considering the work order for product completion.",

"type":"string",

"maxLength":10

},

"ContractMfgFlag":{

"description":"Contains one of the following values: true or false. If true, then the work order was created as part of the contract manufacturing flow. If false, then the work order was not created as part of the contract manufacturing flow. The default value is false.",

"type":"boolean"

},

"CreatedBy":{

"description":"User who created the work order.",

"type":"string",

"maxLength":64

},

"CreationDate":{

"description":"Date when the user created the work order.",

"type":"string",

"format":"date-time"

},

"DelayStatus":{

"description":"Delay status of the work order. It contains one of the following values: 0, 1, 2, or 3. 0: no delay; 1: a delay exists in starting the work order; 2: a delay exists in completing the work order; 3: a delay exists in one or more of the work order operations. This attribute is for future use.",

"type":"integer",

"format":"int32"

},

"Description":{

"title":"Item Description",

"description":"Description of the item.",

"type":"string",

"maxLength":240

},

"ExplosionFlag":{

"description":"Contains one of the following values: true or false. If true, then the application creates work order operations, operation materials, and operation resources from the work definition on the work order header. If false, then the application does not create these operations, materials, or resources from the work definition. The default value is false.",

"type":"string"

},

"FirmPlannedFlag":{

"description":"Contains one of the following values: true or false. If true, then planning does not consider the work order when rescheduling or re-planning. If false, then planning can suggest rescheduling and re-planning recommendations with respect to the work order. The default value is false.",

"type":"string",

"maxLength":1

},

"InterfaceSourceCode":{

"description":"Abbreviation that identifies the interface source.",

"type":"string",

"maxLength":30

},

"InventoryItemId":{

"description":"Value that uniquely identifies the item, product, or assembly in the inventory organization.",

"type":"integer",

"format":"int64"

},

"ItemNumber":{

"description":"Number that identifies the item, which is an output of the work order.",

"type":"string",

"maxLength":300

},

"ItemRevision":{

"description":"Revision of the item that is in effect according to the work definition date of the work order.",

"type":"string",

"maxLength":18

},

"ItemStructureName":{

"description":"Name of the item structure that the work definition on the work order references.",

"type":"string",

"maxLength":80

},

"LastUpdateDate":{

"description":"Date and time when the user most recently updated the work order.",

"type":"string",

"format":"date-time"

},

"LastUpdatedBy":{

"description":"Login of the user who most recently updated the work order.",

"type":"string",

"maxLength":64

},

"NettableSupplyQuantityOverride":{

"description":"Quantity that the planning system uses as supply from the work order.",

"type":"number"

},

"OrchestrationCode":{

"description":"Abbreviation that identifies the orchestration process that created the work order.",

"type":"string",

"maxLength":30

},

"OrderLessFlag":{

"description":"Contains one of the following values: true or false. If true, then the application created the work order as part of a flow that does not have an order. If false, then the application did not create the work order as part of a flow that does not have an order. The default value is false.",

"type":"boolean"

},

"OrganizationCode":{

"description":"Abbreviation that identifies the inventory organization that is enabled for manufacturing.",

"type":"string",

"maxLength":18

},

"OrganizationId":{

"description":"Value that uniquely identifies the inventory organization that is enabled for manufacturing. It is a primary key of the inventory organization.",

"type":"integer",

"format":"int64"

},

"OrganizationName":{

"description":"Name of the inventory organization that is enabled for manufacturing.",

"type":"string",

"maxLength":240

},

"OvercomplToleranceType":{

"description":"Tolerance type for completing more work than the work order quantity requires.",

"type":"string",

"maxLength":30

},

"OvercomplToleranceTypeDescription":{

"description":"Description of the tolerance type for the over-completion.",

"type":"string",

"maxLength":255

},

"OvercomplToleranceValue":{

"description":"Percent or quantity to allow the finished work to exceed the work order quantity.",

"type":"number"

},

"PlannedCompletionDate":{

"description":"Scheduled date and time when the work order completes.",

"type":"string",

"format":"date-time"

},

"PlannedStartDate":{

"description":"Scheduled date and time when the work order starts.",

"type":"string",

"format":"date-time"

},

"PlannedStartQuantity":{

"description":"Planned production quantity for the work order.",

"type":"number"

},

"PreassignLotFlag":{

"description":"Contains one of the following values: true or false. If true, then one or more lot numbers can be preassigned to a product in the work order. If false, then preassigned lot numbers cannot be associated with a work order. The value of this attribute is copied from the work definition and does not have a default value. This attribute is associated with a feature that requires opt in.",

"type":"boolean"

},

"ProjectDetailsDFF":{

"title":"Flexfields for Project Details",

"description":"The Flexfields for Project Details resource manages the descriptive flexfields that contain details about the project costing attributes for a work order. This resource is associated with a feature that requires opt in.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-ProjectDetailsDFF-item"

}

},

"ProjectNumber":{

"title":"Project Number",

"description":"Number that identifies the project associated with the work order. This attribute is associated with a feature that requires opt in.",

"type":"string",

"maxLength":25

},

"RejectedQuantity":{

"description":"Total rejected quantity across all operations for the work order.",

"type":"number"

},

"ReleasedDate":{

"description":"Date when the work order is released.",

"type":"string",

"format":"date-time"

},

"ResequenceFlag":{

"description":"Contains one of the following values: true or false. If true, then the work order has resequence operations. If false, then the work order doesn't have resequence operations. It is read-only value. This attribute is associated with a feature that requires opt in.",

"type":"boolean"

},

"SchedulingMethod":{

"description":"Scheduling method that the application uses to schedule the work order. The default value is DEFAULT\_SCHEDULING.",

"type":"string",

"maxLength":30

},

"ScoSupplyOrderId":{

"description":"Value that uniquely identifies the supply order in the orchestration module of the supply chain. It is a primary key that the application generates when it creates the supply order.",

"type":"integer",

"format":"int64"

},

"ScrappedQuantity":{

"description":"Total scrapped quantity across all operations for the work order.",

"type":"number"

},

"SerialTrackingFlag":{

"description":"Contains one of the following values: true or false. If true, then serial tracking is enforced for the work order. If false, then serial tracking is not enforced. The default value depends on the work definition that the work order references. The default value is false.",

"type":"boolean"

},

"SourceHeaderReference":{

"description":"Reference to the work order header in the source system.",

"type":"string",

"maxLength":240

},

"SourceHeaderReferenceId":{

"description":"Value that uniquely identifies the work order header in the source system.",

"type":"integer",

"format":"int64"

},

"SourceLineReference":{

"description":"Reference to the work order line in the source system.",

"type":"string",

"maxLength":240

},

"SourceLineReferenceId":{

"description":"Value that uniquely identifies the work order line in the source system.",

"type":"integer",

"format":"int64"

},

"SourceSystemId":{

"description":"Value that uniquely identifies the source system.",

"type":"number"

},

"SourceSystemType":{

"description":"Type of source system. Values include INTERNAL or EXTERNAL.",

"type":"string",

"maxLength":30

},

"SupplyType":{

"description":"Default supply type to use for the work order components.",

"type":"string",

"maxLength":30

},

"SupplyTypeDescription":{

"description":"Description of the supply type.",

"type":"string",

"maxLength":80

},

"TaskNumber":{

"title":"Task Number",

"description":"Number that identifies the task associated with the work order. This attribute is associated with a feature that requires opt in.",

"type":"string",

"maxLength":100

},

"TransformFromItemId":{

"description":"Value that uniquely identifies the item that transforms to the inventory item on this work order.",

"type":"integer",

"format":"int64"

},

"TransformFromItemNumber":{

"description":"Number that uniquely identifies the item that the user defines for the item that is to be transformed.",

"type":"string",

"maxLength":300

},

"UOMCode":{

"description":"Abbreviation that identifies the unit of measure of the quantity of the work order item.",

"type":"string",

"maxLength":3

},

"UnitOfMeasure":{

"title":"UOM Name",

"description":"Unit of measure that the quantity of the work order item. It is the primary unit of measure.",

"type":"string",

"maxLength":25

},

"WorkDefinitionAsOfDate":{

"description":"As-of date that the work definition uses to determine the work definition version.",

"type":"string",

"format":"date-time"

},

"WorkDefinitionCode":{

"description":"Abbreviation that identifies the work definition.",

"type":"string",

"maxLength":255

},

"WorkDefinitionId":{

"description":"Value that uniquely identifies the work definition.",

"type":"integer",

"format":"int64"

},

"WorkDefinitionName":{

"description":"Work definition that the work order uses to refer the operation, material, and resource requirements.",

"type":"string",

"maxLength":80

},

"WorkDefinitionVersionId":{

"description":"Value that uniquely identifies the work definition version.",

"type":"integer",

"format":"int64"

},

"WorkDefinitionVersionNumber":{

"description":"Number that indicates the version of the work definition used in the work order.",

"type":"string",

"maxLength":10

},

"WorkMethodCode":{

"description":"Abbreviation that identifies the manufacturing method that the work order uses such as DISCRETE\_MANUFACTURING.",

"type":"string",

"maxLength":255

},

"WorkMethodId":{

"description":"Value that uniquely identifies the work method. It is a primary key that the application generates when it creates the work method.",

"type":"integer",

"format":"int64"

},

"WorkOrderActiveOperation":{

"title":"Active Operations for Work Orders",

"description":"The Active Operations for Work Orders resource manages each active operation. An active operation is an operation that contains a quantity that is greater than zero.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderActiveOperation-item"

}

},

"WorkOrderAssemblyComponent":{

"title":"Work Order Assemblies",

"description":"The Work Order Assemblies resource manages the assembly that the application issued as a component to the work order for rework.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderAssemblyComponent-item"

}

},

"WorkOrderAttachment":{

"title":"Attachments for Work Orders",

"description":"The Attachments for Work Orders resource manages documents that the user attached to the work order.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderAttachment-item"

}

},

"WorkOrderDFF":{

"title":"Flexfields for Work Order",

"description":"The Flexfields for Work Order resource manages the descriptive flexfields that the work order references.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderDFF-item"

}

},

"WorkOrderDate":{

"description":"If the work order status is Unreleased, then the work order date is equal to the planned start date of the work order. If the work order status is not Unreleased, then the work order date is equal to the planned completion date. This is a calculated attribute.",

"type":"string",

"format":"date-time"

},

"WorkOrderDescription":{

"description":"Description of the work order.",

"type":"string",

"maxLength":240

},

"WorkOrderExceptionCount":{

"title":"Work Order Exceptions",

"description":"The Work Order Exceptions resource gets the count of exceptions for the work order.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderExceptionCount-item"

}

},

"WorkOrderId":{

"description":"Value that uniquely identifies the work order. It is a primary key that the application generates when it creates the work order.",

"type":"integer",

"format":"int64"

},

"WorkOrderLotNumber":{

"title":"Work Order Lots",

"description":"The Work Order Lots resource manages the product lots for the work order item. This resource is associated with a feature that requires opt in.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderLotNumber-item"

}

},

"WorkOrderMaterial":{

"title":"Work Order Materials",

"description":"The Work Order Materials resource manages materials that the operations use to process the work order.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderMaterial-item"

}

},

"WorkOrderNumber":{

"description":"Number that identifies the work order. This number is unique in the manufacturing organization. The user can manually assign the number when the user creates the work order, or can allow the application to create a unique number from the numbering scheme defined by these plant parameters: Work Order Prefix or Work Order Starting Number.",

"type":"string",

"maxLength":120

},

"WorkOrderOperation":{

"title":"Work Order Operations",

"description":"The Work Order Operations resource manages the operations that the application performs to process the work order.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderOperation-item"

}

},

"WorkOrderPriority":{

"description":"Priority to use when determining when to run the work order in relation to other work orders.",

"type":"number"

},

"WorkOrderReservation":{

"title":"Work Order Reservations",

"description":"The Work Order Reservations resource manages the demand documents that the application uses to reserve the output quantity for the work order.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderReservation-item"

}

},

"WorkOrderResource":{

"title":"Work Order Resources",

"description":"The Work Order Resources resource manages resources that the operations use to process the work order.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderResource-item"

}

},

"WorkOrderSerialNumber":{

"title":"Work Order Serials",

"description":"The Work Order Serials resource manages serial numbers that identify the assemblies that the work order references.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderSerialNumber-item"

}

},

"WorkOrderStatus":{

"title":"Work Order Statuses",

"description":"The Work Order Statuses resource manages the work order status.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderStatus-item"

}

},

"WorkOrderStatusCode":{

"description":"Abbreviation that identifies the work order status. A list of all the valid work order statuses can be retrieved using the workOrderStatuses resource.",

"type":"string",

"maxLength":255

},

"WorkOrderStatusHistory":{

"title":"Status History",

"description":"The Status History resource gets the status history for the work order.",

"type":"array",

"items":{

"$ref":"#/definitions/workOrders-WorkOrderStatusHistory-item"

}

},

"WorkOrderStatusId":{

"description":"Value that uniquely identifies the work order status. A list of all the valid work order statuses can be retrieved using the workOrderStatuses resource.",

"type":"integer",

"format":"int64"

},

"WorkOrderStatusName":{

"description":"Name of the work order status. A list of all the valid work order statuses can be retrieved using the workOrderStatuses resource.",

"type":"string",

"maxLength":120

},

"WorkOrderSubType":{

"description":"Description of the work being performed. Values include Standard Production, Prototyping, or Repair.",

"type":"string",

"maxLength":30

},

"WorkOrderSubTypeDescription":{

"title":"Meaning",

"description":"Description of the work order subtype.",

"type":"string",

"maxLength":80

},

"WorkOrderSystemStatusCode":{

"description":"Abbreviation that identifies the work order status. The system references the work order status to determine the abbreviation to display.",

"type":"string",

"maxLength":30

},

"WorkOrderType":{

"description":"Type of work order that the user selected when creating the work order.",

"type":"string",

"maxLength":30

},

"WorkOrderTypeDescription":{

"title":"Meaning",

"description":"Description of the work order type.",

"type":"string",

"maxLength":80

},

"links":{

"title":"Items",

"description":"Link Relations",

"type":"array",

"items":{

"$ref":"#/definitions/link"

}

}

}

}

##### Work Order Creation Sample JSON

TBD

##### Work Order Updating Parameters

##### Work Order Updating Source

##### Work Order Updating Sample JSON

#### DELMIAWorks API Sequencing

Work Order Create  
  
The Create process will start with the upload of a flat file for all new work orders. This will provide the seed for gathering work order information via API calls. Flat files are uploaded to the Kymeta Secure FTP site from the DELMIAWorks servers.

#### Flat File Information for Work Order Create:

|  |  |
| --- | --- |
| SFTP Folder | WO\_CREATE |
| File Name | CREATE\_WO MM\_DD\_YY HH:MI:SS XXX.csv |
|  |  |
| File Structure |  |
| Column | Description |
| ID | The Work order ID –Primary identifier for each work order |
| CREATE\_DATE | The date of Work Order creation for Integration purposes |

API Calls to gather Data for Oracle – For each record in the work order flat file:  
  
1. Get the Work Order based on the Work Order Number  
  
<https://kmta.iqtrain.iqms-cloud.net/WebAPI/Manufacturing/WorkOrders/WorkOrders?Filter=(ID.eq~1708~>)   
This will return an instance of the [IQMS.Entities.Lib.Manufacturing.WorkOrder](https://kmta.iqtrain.iqms-cloud.net/WebAPI/Help/ResourceModel?modelName=IQMS.Entities.Lib.Manufacturing.WorkOrder) object. From this object we will need the following fields:  
  
StandardID – Used later in the API call to return BOM information  
  
2. Get the partnoID that this work order manufactures. This information will be used in the next API call. This API call passes the ID column from the flat file as a filter criteria  
  
<https://kmta.iqtrain.iqms-cloud.net/WebAPI/Manufacturing/WorkOrders/WorkOrderParts?filter=(workOrderID.eq~1708~>)   
  
This call will return an instance of the [IQMS.Entities.Lib.Manufacturing.WorkOrderPart](https://kmta.iqtrain.iqms-cloud.net/WebAPI/Help/ResourceModel?modelName=IQMS.Entities.Lib.Manufacturing.WorkOrderPart) object. From this object we will need the following fields:  
  
PartNoId – Used in the next API call  
  
3. We can now get the Sales order information associated with this work order. We will pass the ID from the flat file as WorkOrderID and the PartNoId from the previous API call  
  
<https://kmta.iqtrain.iqms-cloud.net/WebAPI/Manufacturing/WorkOrders/SalesOrdersForWorkOrder?workOrderId=1708&partNoId=74252>   
  
This call will return an instance of the [IQMS.Entities.Lib.SalesDistribution.SalesOrder](https://kmta.iqtrain.iqms-cloud.net/WebAPI/Help/ResourceModel?modelName=IQMS.Entities.Lib.SalesDistribution.SalesOrder) object. From this object we will use the following fields:  
  
OrderNo – Passed to Oracle field SourceHeaderReference  
OrdDetailId – Passed to Oracle field SourceLineReferenceId  
EplantId – Passed to Oracle SourceSystemId. Also passed to next API.  
  
4. We now need to get information about the DELMIAWorks Eplant to pass to the Oracle Organization fields. We will pass EplantID from the previous API call  
  
<https://kmta.iqtrain.iqms-cloud.net/WebAPI/AssemblyData/FinalAssembly/GetEplants?Filter=(ID.eq~10~>)   
This call will return an instance of the [IQMS.Entities.Lib.IQSys.EPlant](https://kmta.iqtrain.iqms-cloud.net/WebAPI/Help/ResourceModel?modelName=IQMS.Entities.Lib.IQSys.EPlant) object. From this obect will will use the following fields:  
  
PlantName – Sent to Oracle field OrganizationCode  
CompanyName – Sent to Oracle field OrganizationName  
  
5. Last step is to get the Work Order type. We pass the StandardId from the first API call.  
  
<https://kmta.iqtrain.iqms-cloud.net/WebAPI/Manufacturing/BOM/BillOfMaterial/63966>   
  
This call will return an instance of the [IQMS.Entities.Lib.Manufacturing.BillOfMaterials](https://kmta.iqtrain.iqms-cloud.net/WebAPI/Help/ResourceModel?modelName=IQMS.Entities.Lib.Manufacturing.BillOfMaterials) object. From this object we will get the following fields:  
  
MfgType – Passed to Oracle field WorkOrderType. This field may require translation.

#### Work Order Update

The Update process will start with the upload of a flat file for all new work orders. This will provide the seed for gathering work order information via API calls. Flat files are uploaded to the Kymeta Secure FTP site from the DELMIAWorks servers.

#### Flat File Information for Work Order Update:

|  |  |
| --- | --- |
| SFTP Folder | WO\_UPDATE |
| File Name | UPDATE\_WO MM\_DD\_YY HH:MI:SS XXX.csv |
|  |  |
| File Structure |  |
| Column | Description |
| WORKORDER\_ID | The Work order ID –Primary identifier for each work order |
| ACTUAL\_COMPLETE\_DATE | The date of Work Order completion date for Integration purposes |
| START\_DATE | Date of first activity for this work order |
| CLOSED\_DATE | Date of archive |
| COMPLETED\_QTY | Total manufactured parts for this work order |
| COMPLETED\_LOCATION | Location where these parts were dispositioned |
| REJECT\_QTY | Quantity of Rejected parts |
| SCRAP\_QTY | Quantity of Scrapped Parts |
| WO\_STATUS | TBD |

API Calls to gather Data for Oracle – For each record in the work order flat file:  
  
1. Get the Work Order based on the Work Order Number  
  
<https://kmta.iqtrain.iqms-cloud.net/WebAPI/Manufacturing/WorkOrders/WorkOrders?Filter=(ID.eq~1708~>)   
This will return an instance of the [IQMS.Entities.Lib.Manufacturing.WorkOrder](https://kmta.iqtrain.iqms-cloud.net/WebAPI/Help/ResourceModel?modelName=IQMS.Entities.Lib.Manufacturing.WorkOrder) object. From this object we will need the following fields:  
  
StandardID – Used later in the API call to return BOM information  
  
2. Get the partnoID that this work order manufactures. This information will be used in the next API call. This API call passes the ID column from the flat file as a filter criteria  
  
<https://kmta.iqtrain.iqms-cloud.net/WebAPI/Manufacturing/WorkOrders/WorkOrderParts?filter=(workOrderID.eq~1708~>)   
  
This call will return an instance of the [IQMS.Entities.Lib.Manufacturing.WorkOrderPart](https://kmta.iqtrain.iqms-cloud.net/WebAPI/Help/ResourceModel?modelName=IQMS.Entities.Lib.Manufacturing.WorkOrderPart) object. From this object we will need the following fields:  
  
PartNoId – Used in the next API call  
  
3. We can now get the Sales order information associated with this work order. We will pass the ID from the flat file as WorkOrderID and the PartNoId from the previous API call  
  
<https://kmta.iqtrain.iqms-cloud.net/WebAPI/Manufacturing/WorkOrders/SalesOrdersForWorkOrder?workOrderId=1708&partNoId=74252>   
  
This call will return an instance of the [IQMS.Entities.Lib.SalesDistribution.SalesOrder](https://kmta.iqtrain.iqms-cloud.net/WebAPI/Help/ResourceModel?modelName=IQMS.Entities.Lib.SalesDistribution.SalesOrder) object. From this object we will use the following fields:  
  
OrderNo – Passed to Oracle field SourceHeaderReference  
OrdDetailId – Passed to Oracle field SourceLineReferenceId  
EplantId – Passed to Oracle SourceSystemId. Also passed to next API.  
  
4. We now need to get information about the DELMIAWorks Eplant to pass to the Oracle Organization fields. We will pass EplantID from the previous API call  
  
<https://kmta.iqtrain.iqms-cloud.net/WebAPI/AssemblyData/FinalAssembly/GetEplants?Filter=(ID.eq~10~>)   
This call will return an instance of the [IQMS.Entities.Lib.IQSys.EPlant](https://kmta.iqtrain.iqms-cloud.net/WebAPI/Help/ResourceModel?modelName=IQMS.Entities.Lib.IQSys.EPlant) object. From this obect will will use the following fields:  
  
PlantName – Sent to Oracle field OrganizationCode  
CompanyName – Sent to Oracle field OrganizationName  
  
5. Last step is to get the Work Order type. We pass the StandardId from the first API call.  
  
<https://kmta.iqtrain.iqms-cloud.net/WebAPI/Manufacturing/BOM/BillOfMaterial/63966>   
  
This call will return an instance of the [IQMS.Entities.Lib.Manufacturing.BillOfMaterials](https://kmta.iqtrain.iqms-cloud.net/WebAPI/Help/ResourceModel?modelName=IQMS.Entities.Lib.Manufacturing.BillOfMaterials) object. From this object we will get the following fields:  
  
MfgType – Passed to Oracle field WorkOrderType. This field may require translation.

#### WO Material Transactions

This section is concerned with completed parts for the manufacturing process. There are no API calls for this type of transaction, so all information will be provided in a flat file format.

|  |  |
| --- | --- |
| SFTP Folder | WO MAT TRX |
| File Name | WO\_MAT\_TRX MM\_DD\_YY HH:MI:SS XXX.csv |
|  |  |
| File Structure |  |
| Column | Description |
| WORKORDER\_ID | Work Order ID |
| EPLANT\_ID | Organization Code |
| LOTNO | Lot Number for Oracle API |
| ITEM\_NO | Inventory Item number |
| REV | Inventory Revision |
| LOCATION | Location where item was added to inventory |
| MFG\_TYPE | ASSY1 - May need translation |
| SEQ | Sequence |
| SERIAL | DM Serial # |
| TRANS\_DATE | Transaction Date |
| TRANS\_QTY | Quantity produced |
| TRANS\_TYPE | For accounting purposes |
| UNIT | Unit of Measure |

Information from this schema will be used to update the Oracle APIs. Please see the WO Field Mapping document for more details.

#### WO Components

This section is concerned with the components that are consumed by the work order when making inventory. Again, there are no API calls for this type of transaction, so all information will be provided in a flat file format.

|  |  |
| --- | --- |
| SFTP Folder | WO COMPONENT |
| File Name | WO\_COMP MM\_DD\_YY HH:MI:SS XXX.csv |
|  |  |
| File Structure |  |
| Column | Description |
| ITEMNO | Organization Name for Oracle API |
| REV | Lot Number for Oracle API |
| TRANS\_QTY | Inventory Item number |
| UNIT | Inventory Revision |
| LOTNO | Location where item was added to inventory |
| MFG\_TYPE | ASSY1 - May need translation |

Information from this schema will be used to update the Oracle APIs. Please see the WO Field Mapping document for more details.

#### Exception Handling

Table- Exceptions

| SR# | Exception Name | Exception Description | Owner |
| --- | --- | --- | --- |
| 1 |  |  |  |
| 2 |  |  |  |

#### Test Cases & Validations

Table- Test Scenarios

| Scenario # | Scenario Name | Detailed Description | Owner |
| --- | --- | --- | --- |
| 1 | Work Order Creation | Creating Work Orders in MES and Interfacing to Fusion |  |
| 2 | Work Order Update | Update the work Order in MES and interface the details to Fusion |  |
| 3 | Work Order Execution | Execute Work Order in MES and interface the details to Fusion |  |
| 4 | Material Issue to Work Order | Issue Material to Work Orders in MES and Interface to Fusion |  |
| 3 |  |  |  |

Appendix A: Record of Changes

Instructions: Please record any document changes made below starting with initial version number 1.1

Table - Record of Changes

| Version Number | Date | Author/Owner | Description of Change |
| --- | --- | --- | --- |
| 1.0 | 7/20/2022 | Venkat Ramana | Initial Revision |
|  |  |  |  |
|  |  |  |  |

Appendix B: Approvals

The undersigned acknowledge that they have reviewed the Functional Design Document and agree with the information presented within this document. Changes to this High-Level Technical Design will be coordinated with, and approved by, the undersigned, or their designated representatives.

| Document Approved By | Date Approved |
| --- | --- |
| Name: <Name>, <Job Title> - <Company> | Date |
| Name: <Name>, <Job Title> - <Company> | Date |
| Name: <Name>, <Job Title> - <Company> | Date |
| Name: <Name>, <Job Title> - <Company> | Date |