1、接口协议

1. 协议总则

本技术协议适用于达智汇WMS系统，目标为建立一个与现有盟立WCS系统对接，乙方保证提供符合现行技术规范和现行工业标准的优质产品。

2. 接口头部定义

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| - | - | - | - |

3. 服务器地址

* 测试环境：待定
* 生产环境：待定

2、全局状态码

|  |  |
| --- | --- |
| **错误码** | **错误解释** |
| 200 | 成功 |
| 500 | 失败 |

3、接口清单

3.1、WMS – WCS

|  |  |  |
| --- | --- | --- |
| Interface Name | 說明 | WS Owner |
| Retrieve Transfer | 將Carrier搬運到出庫口 | WCS |
| PutAway Transfer | 將Carrier搬運至庫格 | WCS |
| Shelf Transfer | 將Carrier在庫格之間搬送 | WCS |
| Carrier Transfer Cancel | 取消Carrier傳送 | WCS |
| EQP Status Query | WMS跟WCS取得ASRS Crane 及Port口的狀態. | WCS |

3.1.1、Retrieve Transfer

简要描述：

* 將Carrier搬運到出庫口

请求URL：

* /\*\*

请求方式：

* POST,GET

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| carrierId | 是 | string | 料盒ID |
| fromShelfId | 是 | string | 庫格ID |
| toPortId | 是 | string | Port ID |
| backupPortId | 是 | string | 備用Port ID |
| priority | 是 | string | 优先级(默认5） |
| batchId | 否 | string | 批次ID |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "RETRIEVE\_TRANSFER",  "carrierId": "c001",  "fromShelfId": "xxx",  "toPortId": "xxx,yyy,zzz",  "backupPortId": "xxx,yyy,zzz",  "priority": 5,  "batchId": "xxx",  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| carrierId | string | 料盒ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "RETRIEVE\_TRANSFER",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  } |

3.1.2、PutAway Transfer

简要描述：

* 將Carrier搬運至庫格

请求URL：

* /\*\*

请求方式：

* POST,GET

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| carrierId | 是 | string | 料盒ID |
| formPortId | 是 | string | Port ID |
| toShelfId | 是 | string | 庫格 ID |
| priority | 是 | string | 优先级(默认5） |
| destZoneId | 否 | string | To Shelf無法傳送時，WCS需擺放的目标区域ID |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "PUTAWAY\_TRANSFER",  "carrierId": "c001",  "formPortId": "xxx",  "toShelfId": "xxx",  "priority": 5,  "destZoneId": "Z01",  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| carrierId | string | 料盒ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "PUTAWAY\_TRANSFER",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  } |

3.1.3 Shelf Transfer

简要描述：

* 將Carrier從庫格搬送至另外一個庫格，ASRS內庫格間搬送

请求URL：

* /\*\*

请求方式：

* POST,GET

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| carrierId | 是 | string | 料盒ID |
| formShelfId | 是 | string | From 庫格 ID |
| toShelfId | 是 | string | To 庫格 ID |
| priority | 是 | string | 优先级(默认5） |
| batchId | 否 | string | 批次ID |
| destZoneId | 否 | string | To Shelf無法傳送時，WCS需擺放的目标区域ID |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "SHELF\_TRANSFER",  "carrierId": "c001",  "formShelfId": "xxx",  "toShelfId": "xxx",  "priority": 5,  "batchId": "xxx",  "destZoneId": "Z01",  } |
|  |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| carrierId | string | 料盒ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "SHELF\_TRANSFER",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  } |

3.1.4、Carrier Transfer Cancel

简要描述：

* 取消Carrier傳送命令

请求URL：

* /\*\*

请求方式：

* POST,GET

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| carrierId | 是 | string | 料盒ID |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "CARRIER\_TRANSFER\_CANCEL",  "carrierId": "c001"  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| carrierId | string | 料盒ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "CARRIER\_TRANSFER\_CANCEL",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  } |

3.1.5、EQP Status Query

简要描述：

* WMS取得WCS所控管的Crane and Port的狀態

请求URL：

* /\*\*

请求方式：

* POST,GET

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "EQP\_STATUS\_QUERY",  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |
| craneList | Array | 具体数据（集合） |
| portList | Array | 具体数据（集合） |

结果集中craneList参数：

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| craneId | string | Crane ID |
| craneStatus | string | Crane 狀態  0 🡪 Down  1 🡪 Run  2 🡪 只能出庫不能入庫 |

结果集中portList参数：

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| portId | string | Port ID |
| portStatus | string | Port 狀態  0 🡪 Down  1 🡪 Run |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": " EQP\_STATUS\_QUERY",  "returnCode": 200,  "returnComment": "",  "craneList ": [  {  "craneId": "1",  "craneStatus": "1",  },  {  "craneId": "2",  "craneStatus": "1",  }  ],  "portList ": [  {  "portId": "1",  "portStatus": "1",  },  {  " portId": "2",  " portStatus": "1",  }  ]  } |

3.2、WCS – WMS

|  |  |  |
| --- | --- | --- |
| Interface Name | 說明 | WS Owner |
| Position Report | WCS上報 Carrier Position位置 | WMS |
| Retrieve Complete | Carrier被搬運至出庫口回報出庫完成 | WMS |
| PutAway Check | Carrier在入庫口跟WMS確認是否可以入庫 | WMS |
| PutAway Complete | Carrier被搬運至庫格回報入庫完成 | WMS |
| Shelf Report | WCS上報庫格狀態 | WMS |
| Pickup Query | WCS跟WMS查詢Port口撿料Slot清單 | WMS |
| Auto Pickup | WCS上報自動撿料的Slot清單 | WMS |
| Shelf Request | WCS跟WMS要求一筆庫對庫的傳送指令 | WMS |
| Shelf Complete | 庫對庫搬運後，Carrier被搬運至庫格回報入庫完成 | WMS |
| Empty Shelf Query | WCS跟WMS取得一個空的儲位 | WMS |

3.2.1、Position Report

简要描述：

* WCS上報Carrier Position位置

请求URL：

* /\*\*

请求方式：

* POST

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| carrierId | 是 | string | 料盒ID |
| location | 是 | string | ASRS所在位置 |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "POSITION\_REPORT",  "carrierId": "c001",  "location": "xxx"  } |

结果 (不需要回覆)

3.2.2、Retrieve Complete

简要描述：

* Carrier被搬運至出庫口回報出庫完成

请求URL：

* /\*\*

请求方式：

* POST

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| carrierId | 是 | string | 料盒ID |
| portId | 是 | string | 出庫PortID |
| isComplete | 是 | string | 是否完成搬運 (Y/N) |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "RETRIEVE\_COMPLETE",  "carrierId": "c001",  "portId": "xxx",  "isComplete": "Y"  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| carrierId | string | 料盒ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "RETRIEVE\_COMPLETE",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  } |

3.2.3、PutAway Complete

简要描述：

* Carrier被搬運至庫格回報入庫完成

请求URL：

* /\*\*

请求方式：

* POST

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| carrierId | 是 | string | 料盒ID |
| shelfId | 是 | string | 庫格ID |
| isComplete | 是 | string | 是否完成搬運 (Y/N) |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "PUTAWAY\_COMPLETE",  "carrierId": "c001",  "shelfId": "xxx",  "isComplete": "Y"  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| carrierId | string | 料盒ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "PUTAWAY\_COMPLETE",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  } |

3.2.4、PutAway Check

简要描述：

* Carrier在入庫口跟WMS確認是否可以入庫
* 8組的Slot查詢跟回覆皆需要存在

请求URL：

* /\*\*

请求方式：

* POST

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| portId | 是 | string | 入庫PortID |
| carrierId | 是 | string | 料盒ID |
| onlineMode | 是 | string | 是否online mode (Y/N) |
| lotList | 是 | Array | 数据集合 |

参数集中lotList参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| lotId | 是 | string | LotID |
| slotId | 是 | string | Carrier格位 |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "PUTAWAY\_CHECK",  "portId": "xxx",  "carrierId": "c001",  "onlineMode": "Y",  "lotList": [  {  "lotId": "XX1",  "slotId": "1",  },  {  "lotId": "XX2",  "slotId": "2",  },  {  "lotId": "",  "slotId": "3",  },  {  "lotId": "XX4",  "slotId": "4",  },  {  "lotId": "",  "slotId": "5",  },  {  "lotId": "",  "slotId": "6",  },  {  "lotId": "",  "slotId": "7",  },  {  "lotId": "",  "slotId": "8",  }  ]  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| portId | string | 入庫PortID |
| carrierId | string | 料盒ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |
| lotList | Array | 数据集合 |

参数集中lotList参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| lotId | 是 | string | LotID |
| slotId | 是 | string | Carrier格位 |
| checkResult | 是 | string | 每個LotCheck結果   1. OK 2. Lot Missing 3. Wring Status 4. Wrong Pick 5. Wrong Group |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "PUTAWAY\_CHECK",  "portId": "xxx",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  "lotList": [  {  "lotId": "XX1",  "slotId": "1",  “checkResult”: "ASRSIN"  },  {  "lotId": "XX2",  "slotId": "2",  "checkResult”: "ASRSIN"  },  {  "lotId": "",  "slotId": "3",  “checkResult”: ""  },  {  "lotId": "XX4",  "slotId": "4",  "checkResult”: "ASRSIN"  },  {  "lotId": "XX5",  "slotId": "5",  “checkResult”: "ASRSIN"  },  {  "lotId": "",  "slotId": "6",  "checkResult”: ""  },  {  "lotId": "",  "slotId": "7",  “checkResult”: ""  },  {  "lotId": "",  "slotId": "8",  "checkResult”: ""  }  ]  } |
|  |

Shelf Report

简要描述：

* WCS 自行庫對庫搬運，預約目的庫格
* 请求URL：
* /\*\*

请求方式：

* POST

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| shelfId | 是 | string | 庫格ID |
| shelfStatus | 是 | string | 庫格狀態(IN) |
| carrierId | 是 | string | 料盒ID |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "SHELF\_REPORT",  "shelfId": "xxxx",  "shelfStatus": "xxx",  "carrierId": "c001"  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| shelfId | string | 庫格ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "SHELF\_REPORT",  "shelfId": "xxxxx",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  } |

Pickup Query

简要描述：

* WCS跟WMS詢問作業Port口的Pickup清單，將此料盒在此Port的撿料的Slot位置回報，若料盒是屬於送出放料，則撿料List則為空.
* 请求URL：
* /\*\*

请求方式：

* POST

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| portId | 是 | string | 出庫PortID |
| carrierId | 是 | string | 料盒ID |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "PICKUP\_QUERY",  "portId": "xxx",  "carrierId": "c001"  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| portId | string | 出庫PortID |
| carrierId | string | 料盒ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |
| slotList | Array | 数据集合 |

参数集中slotList参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| lotId | 是 | string | LotID |
| slotId | 是 | string | Carrier格位 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "PICKUP\_QUERY",  "portId": "xxx",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  "slotList": [  {  "lotId": "XX1",  "slotId": "1",  },  {  "lotId": "XX2",  "slotId": "2",  }  ]  } |
|  |

Auto Pickup

简要描述：

* WCS 上報在作業區，人員撿料的Slot清單，WMS自動將Slot清單的Lot進行撿料作業
* 请求URL：
* /\*\*

请求方式：

* POST

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| portId | 是 | string | 出庫PortID |
| carrierId | 是 | string | 料盒ID |
| slotList | 是 | Array | 数据集合 |

参数集中slotList参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| slotId | 是 | string | Carrier格位 |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "AUTO\_PICKUP",  "portId": "xxx",  "carrierId": "c001",  "slotList": [  {  "slotId": "1",  },  {  "slotId": "2",  }  ]  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| portId | string | 出庫PortID |
| carrierId | string | 料盒ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "AUTO\_PICKUP",  "portId": "xxx",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  } |
|  |

Shelf Request

简要描述：

* WCS需要進行庫對庫搬送，跟WMS申請庫對庫傳送，由WMS產生庫對庫傳送指令給WCS

请求URL：

* /\*\*

请求方式：

* POST

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| fromShelfId | 是 | string | 起始庫格ID |
| toShelfId | 是 | string | 目的庫格ID |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "SHELF\_REQUEST",  "fromShelfId": "xxx",  "toShelfId": "xxx"  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| carrierId | string | 料盒ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "SHELF\_REQUEST",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  } |

Shelf Complete

简要描述：

* 庫對庫傳送命令後，當Carrier被搬運至庫格回報庫對庫完成

请求URL：

* /\*\*

请求方式：

* POST

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| carrierId | 是 | string | 料盒ID |
| shelfId | 是 | string | 庫格ID |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "SHELF\_COMPLETE",  "carrierId": "c001",  "shelfId": "xxx"  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| carrierId | string | 料盒ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "SHELF\_COMPLETE",  "carrierId": "c001",  "returnCode": 200,  "returnComment": ""  } |

EmptyShelf Query

简要描述：

* WCS發生原本目的儲位無法存放時，透過此功能跟WMS取得另外一個可以入庫的空儲位 (此儲位必須排除限制儲位以及內庫格有料盒的外儲位)

请求URL：

* /\*\*

请求方式：

* POST

参数：

|  |  |  |  |
| --- | --- | --- | --- |
| **参数名** | **必选** | **类型** | **说明** |
| jobId | 是 | string | 任务ID |
| transactionId | 是 | string | 业务ID |
| carrierId | 是 | string | 料盒ID |

请求示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": "EMPTY\_SHELF\_QUERY",  "carrierId": "c001",  } |

结果

|  |  |  |
| --- | --- | --- |
| **参数名** | **类型** | **说明** |
| jobId | string | 任务ID |
| transactionId | string | 业务ID |
| carrierId | string | 料盒ID |
| shelfId | string | 儲位ID |
| returnCode | string | 状态码 |
| returnComment | string | 异常描述 |

返回示例

|  |
| --- |
| {  "jobId": "20210202231010123456",  "transactionId": " EMPTY\_SHELF\_QUERY",  "carrierId": "c001",  "shelfId": "0010101",  "returnCode": 200,  "returnComment": ""  } |