

SAP PO Integration between Clarity and SAP R/3 System

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Abstract - Clarity (CA) Project Portfolio Management (PPM) is a non-SAP (System Application Product) system and is a fastest way of digital transformation. CA platform helps in planning, tracking, project management, time writing and managing deliverables. It gain modern capabilities for digital outcome management, so enterprise can optimize cost (budget) efficiency. SAP system is an enterprise information system designed to synchronize all the information, activities, and resources required to complete business processes. In particular organization, SAP system have N number of kernel like Industry sector, Financial sector, Sales Order sector, and various other sector. Since the CA and SAP are two different applications or systems, CA sends file in Extensible Markup Language (XML) format and SAP in Intermediate Document (IDoc) file format. Integration is required to communicate between CA and SAP system. To implement integration between CA (source) system and SAP R/3 (target) System, SAP Process Orchestration (SAP PO) system is used. SAP PO system is middleware technology to allow integration between non-SAP and SAP applications. It uses the Process Integration tool to communicate two different systems or applications. SAP PO uses Java, programming language used to map the two structure from CA and SAP. SAP Advanced Business Application Programming (ABAP) language used to transfer data and store the data. The implementation of the SAP PO has helped to build communication between SAP and non-SAP system. Therefore, process orchestration tool helps to automate and optimize business processes.

Key Words: SAP (System Application Products), SAP PO (SAP Process Orchestration), CA PPM (Clarity Project Profile Management), SOAP (Simple Object Access Protocol), IDoc (Intermediate Document) Protocol, IDoc (Intermediate Document)

1. INTRODUCTION

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1.1 Clarity and SAP R/3 System

Clarity Project and Portfolio Management (CA PPM) [1] is a platform that manage the life cycle of investment planning and innovative projects. CA helps in track, customer requirements and prioritize market, and make better decisions on how to invest limited resources, so that optimize enterprise, product portfolio and service. CA has recognized the importance of delivering tools that assist organizations in building, enhancing, tracking and empowering the team. The latest version of CA focused on providing support for team-based planning, from defining the team to the allocation of project, task and the capturing of team data. CA is one of the best leading systems to track and assigning projects to the team. CA (non-SAP) act as Source system and used for project management and time writing.

SAP represents for Systems Applications and Products [5] in Data-Processing. SAP, by definition is as well name of the Enterprise Resource Planning (ERP) [6] software. SAP system comprises of various incorporated modules, which covers-basically every feature of business management. It store entire information of the enterprise, designed to synchronize all the activities, information and resources required to complete the business processes, such as human resource management, invoice billing, order fulfillment, and production planning. In particular organization, SAP system have N number of kernel like Industry sector, Financial sector, Sales Order sector, and etc. In this project, SAP system uses the Industry Kernel for data processing. The SAP system, which is a backend (target system) for the whole project where the exact source code generated for interface. Creates z_table to store the data of each employee Project, Task, and the Hour work for each project assigned.

1.2 Integrating Clarity and SAP using SAP PO

CA is source system and SAP is target system. Clarity is one of the PPM (Project Profile Management) tool, which can be used to track system, time writing, assign project in business requirement, etc. Since Clarity and SAP are two different, application the structure of the each application is different from one another to synchronize both systems and to communicate between two different applications SAP Process Orchestration (SAP PO) [9] introduced as a middleware technology to integrate between the systems.

SAP PO used as a middleware technology to integrate the two different application, which can be SAP to non-SAP (CA) or vice-verse. SAP PO integration platform provides integration between non-SAP and SAP partner applications within the organization Application to Application (A2A) or outside the organization Business to Business (B2B).

The main aim is to create integration between Clarity and SAP System, SAP PO system is used as middleware. SAP PO system is middleware for both CA and SAP R/3 [10] system. Mapping determines the structure of data in a source system to structure of data in a target system. It also determines the conversion rules that applied to the data between source and target System. Below figure shows the mapping of sender (CA) and receiver (SAP R/3).

IDoc type shows the SAP structure or format that will be utilized to communicate the data or messages for a business exchange between non-SAP and SAP. The IDoc is transmitted to-the recipient, which might be a SAP R/3, SAP R/2, or some other external systems.

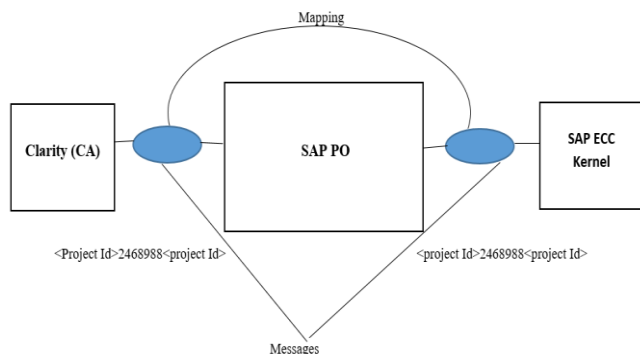


Figure 1: Process of Integrating Clarity to SAP via SAP PO

2. Literature survey

Clarity (CA) is simple and powerful software for planning, tracking, and managing deliverables. Gain modern capabilities for digital outcome management, so enterprise can optimize cost (budget) efficiency. The CA focused on providing support for team-based planning, from defining the team to project and task allocation and the capturing of team data [1]. SAP R/3 is the most widely used Enterprise Resource Planning system in the world. It is the world's most-utilized standard business software for customer/server registering [2]. In any case, imagine a scenario where we have a supply chain partner that has not executed SAP, but might want to have an e-business

arrangement with the partner who has implemented SAP. How to integrate non-SAP partner to SAP? [3].

This study of survey concentrates on how well SAP Process Orchestration [4] used to integrate a non-SAP partner and a SAP partner. It also speaks about how well the SAP Intermediate Document message and the Clarity business messages match and how smoothly the message transfer take place between two applications or system messages can be synchronized. An implementation prototype constructed, to test how the situation in the business scenarios. The overall paper describes how messages delivered between a SAP partner (Industry Kernel) and a non-SAP partner (Clarity). To synchronize messages from two different system or application SOAP [7] and IDoc [8] protocol used. IDoc is SAP structure used transfer the messages from SAP R/3 system to the any external system (eg; Clarity System).

3. System Architecture

Clarity sends XML or WSDL file to SAP Kernels. SAP R/3 System generates IDoc and response sent back to the Clarity via SAP PO. SAP PO uses the Process Orchestration tool to communicate between the Clarity system and SAP system. Both the CA and SAP R/3 system communicate and transfer the data through communication channel SOAP adapter and the IDoc Protocol. Once the network IDoc received in SAP side, the feedback IDO is processed and then via PO data sent to Clarity.

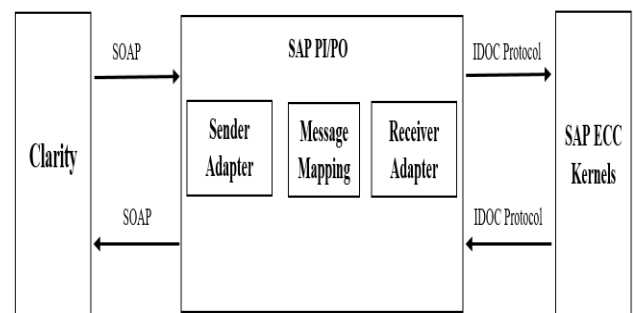


Figure 2: System architecture of integrating Clarity to SAP using SAP PO

4. USE CASE

Requirement: Build project interface to assigning project to the each employee

Methodology: The Clarity send the project or work package details in xml or WSDL file to SAP PO through SOAP adapter

[9] (Simple Object Access Protocol). SAP PO transfer the data to SAP ECC Kernels through IDoc protocol [10].

Solution: The information or messages present in the Clarity side should be present in the SAP kernel. To communicate between two systems SAP PO provides integration for both the system through communication channel (adapter).



Figure 3: Flow of Project creation from Clarity to SAP using SAP PO

The project and work package information (Project ID, Project Name, Project Manager, Project Manager Name, Company Code, SAP Project Id, etc.,) from Clarity side XML file is send to SAP Kernel. Once the messages reaches to target successful in SAP. IDoc messages created successfully for project structure in SAP kernel and IDoc messages transfer back to the Clarity. So that, the messages delivered successfully from Clarity to SAP kernel and feedback from SAP to Clarity. Further messages from Clarity to SAP flow can be included in next activity.

Project and Work Package details sent from Clarity system to SAP (Industry Kernel) system through SAP PO.

Once the IDoc delivered to SAP Industry kernel, IDoc delivery date sent back to Clarity from SAP Kernel through SAP PO.

Steps to implement the Project interface:

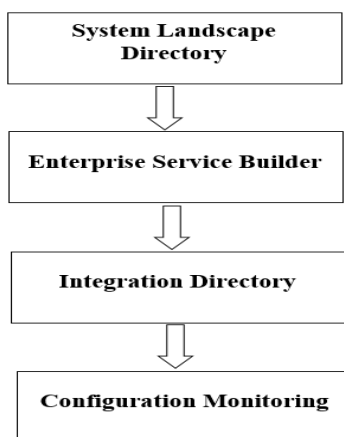


Figure 4: Steps to implement project interface

Step1: Creation of Objects in Enterprise Service Builder

SAP PO import the file in the External Definition. Create Service Interface (SI) for inbound and outbound. Create Message Mapping (MM) for each field in the structure. Create Operation Mapping (OM) using MM.

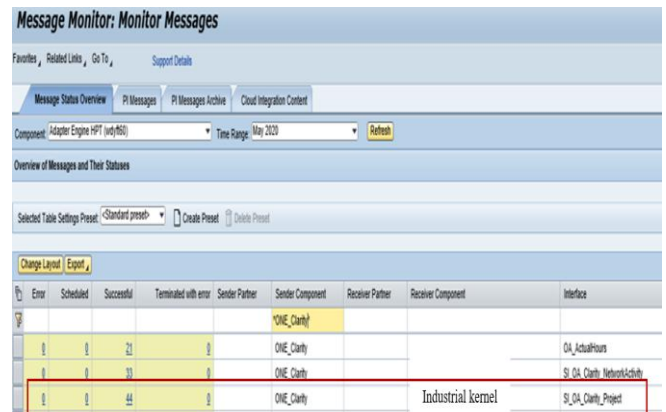
Step2: Configuration of Objects in Integration Directory

Creating Communication Channel for Inbound and Outbound. Configuration of ICO using inbound and outbound Communication Channels.

Step3: In configuration monitoring, send Text message for the particular interface with payload attach to it. To check the message flow delivered to the target system. Message monitoring used to check the data is triggered to the destination system. If messages delivered successfully then information transferred properly from source to target system.

5. RESULT

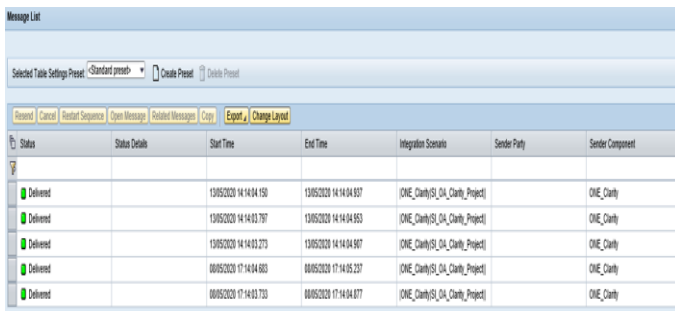
Projects are a set of exercises intended to accomplish a particular target. The projects created at Clarity and interfaced with the SAP through SAP PO. The below figure shows the successful messages of projects transferred from Clarity to SAP.



Error	Scheduled	Successful	Terminated with error	Sender Partner	Sender Component	Receiver Partner	Receiver Component	Interface
		21			ONE_Clarity			OA_ActualPerson
		33			ONE_Clarity			SI_OA_Clarity_NetworkSchdu
		44			ONE_Clarity	Industrial kernel		SI_OA_Clarity_Project

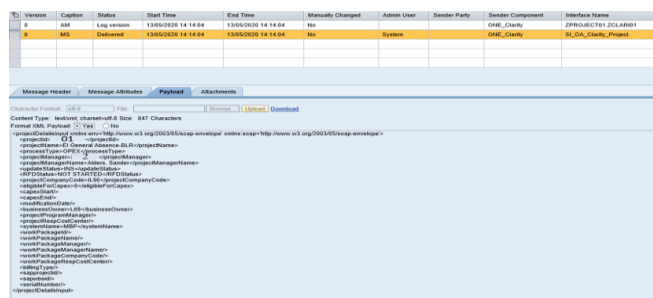
Figure 5: Shows Successful Messages of Project interface

Below figures, 6 and 7 shows the delivered messages of project and payload. Project assigned to the particular Company code with project details like Project ID, Project manager, Project Manager Name, etc.



Status	Status Details	Start Time	End Time	Integration Scenario	Sender Party	Sender Component
Delivered		13/05/2020 14:14:04.150	13/05/2020 14:14:04.837	ONE_Clarity(SI_OA_Clarity_Project)		ONE_Clarity
Delivered		13/05/2020 14:14:03.797	13/05/2020 14:14:04.853	ONE_Clarity(SI_OA_Clarity_Project)		ONE_Clarity
Delivered		13/05/2020 14:14:03.273	13/05/2020 14:14:04.867	ONE_Clarity(SI_OA_Clarity_Project)		ONE_Clarity
Delivered		08/05/2020 17:14:04.883	08/05/2020 17:14:05.237	ONE_Clarity(SI_OA_Clarity_Project)		ONE_Clarity
Delivered		08/05/2020 17:14:03.733	08/05/2020 17:14:04.077	ONE_Clarity(SI_OA_Clarity_Project)		ONE_Clarity

Figure 6: Shows Successful delivered Messages of Project interface



Version	Caption	Status	Start Time	End Time	Manually Changed	Admin User	Sender Party	Sender Component	Interface Name
8	XML	Log message	13/05/2020 14:14:04	13/05/2020 14:14:04	No		ONE_Clarity	SPRODUCTIVITY_SCLAB001	
8	XML	Delivered	13/05/2020 14:14:04	13/05/2020 14:14:04	No	System	ONE_Clarity	ONE_Clarity	ONE_Clarity_Project

Figure 7: Shows Payload of Project interface from Clarity to SAP

6. CONCLUSION

The paper presents about the usage of the PO integration and how acknowledgment provided back to the source system is achieved through SAP PO middleware integration in between two systems or application. The SAP PO system helps to communicate between SAP and non-SAP system or application. To achieve the communication between two systems Process Orchestration (PO) provides interface and it uses the SOAP adapter channel and IDOC protocol to communicate between two systems. Therefore, process orchestration tool helps to automate and optimize business processes. Furthermore, discusses about sending response back to source system is achieved by providing the example in the above use case with business requirement.

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