

The COIN Platform: Supporting the Marine Shipping Industrial Sector

Achilleas P. Achilleos, Georgia M. Kapitsaki, George Sielis, and George A. Papadopoulos
Department of Computer Science, University of Cyprus, Nicosia, Cyprus
E-mail: {achilleas, gkapi, sielis, george}@cs.ucy.ac.cy

Abstract – The COIN (Enterprise Collaboration and Interoperability) platform allows exposure, integration and application of interoperability and collaborative services in various business domains. As part of the COIN FP7 project, the objective was to exploit the COIN platform and apply its services in the marine shipping sector. In this demo, we demonstrate how COIN services are used to expedite and simplify business processes in the marine shipping domain. The demo showcases the execution of the two marine business processes, which are implemented using the COIN service platform. On the basis of the case studies, the necessary results are acquired based on the feedback received from marine experts. This reveals the positive impact of the COIN platform, in terms of reducing the time required to execute marine processes.

Keywords - Web-based Enterprise Systems; Web-based Business Processes; Collaboration and Interoperability

I. INTRODUCTION

The business use cases studied and developed in the form of COIN pilots involve the marine shipping domain in Cyprus. The first use case refers to the “Negotiations between UPT and charterers for the voyage’s pre-fixture queries”, which produces the “Recap” document as an outcome of negotiations and logical amendments for the vessel's voyage. The second scenario refers the creation of the Proforma Disbursement Account (PDA). The PDA details all estimated port costs that the port agent will have to pay in order for the vessel to have a smooth voyage.

The platform forms the backbone, integrating Web Services for Enterprise Collaboration (EC) and Enterprise Interoperability (EI) in various business domains [1]. It fulfils the COIN vision of providing a pervasive service platform to host Baseline and Innovative Web Services for EI and EC, which can be used by European enterprises for running their business in a secure, reliable and efficient way. The COIN platform is developed on top of Liferay, which is an enterprise, web-based portal for building technology-oriented, business applications that deliver immediate results and long-term value. Using the COIN platform we have implemented the marine pilots using the ProcessMaker application (i.e. business process management and workflow software) offered by the platform. Through this application we can invoke the necessary COIN services that allow executing the required business tasks. In this demo we will allow conference participants to execute the pilots via a Web-Based portal.

Table 1 shows the COIN EC/EI services, which follow the notion of “Software as a Service” (SaaS) [2], used for the pilots implementation. The following services [3] were deemed essential based on the initial requirement analysis performed with our industrial partners: (1) Collaboration Visualization Tool (CVT) – Formulation and visualization of human collaboration networks, including users and their discovered relations (e.g. joint activities), (2) Trusted Information Sharing (TIS) – Flexible sharing of business related information (e.g. documents) on the basis of CVT relations, (3) Interoperability Space Service (ISS) – A negotiation tool for exchanging and negotiating business documents in standardized UBL format and (4) Baseline Communication Services – A suite of services that include Skype call, instant messaging and notification.

TABLE 1: DEVELOPED WORKFLOWS, EC/EI SERVICES AND SUCCESSFUL EXECUTIONS

| | EC/EI Services Used | Workflow Executions | Successful Executions |
|------|------------------------------|---------------------|-----------------------|
| BUC1 | CVT, TIS, ISS, Communication | 14 | 11 |
| BUC2 | CVT, ISS, Communication | 11 | 10 |

The execution of the pilots was carried out initially by the developers at the University of Cyprus (UCY). Actors from our industrial partner Donnelly Tanker Management (DTM) were also involved. At this stage DTM employees were acquainted with the functionalities offered by the platform and the EC/EI services used in the developed workflows. Developers trained DTM actors how to use the service platform to execute the workflows. Next, they were involved in solo execution and evaluation of the workflows. Finally, a meeting was setup at DTM offices where DTM employees engaged in the pilots execution and provided the needed feedback. Developers undertook the roles of the remaining parties.

The initial training of DTM employees by developers was sufficient for successful executions of the use cases. Failures were recorded in the first executions, since an initial learning curve was essential to avoid errors and omissions. The workflows design foreseen in improving two factors: reduce execution time and achieve efficient voyages management by a single operator. Currently, the communication methods used are e-mails and telephone.

This makes the process time consuming. An operator is also responsible to operate more than one voyage per day. Therefore, an operator needs to be aware of several recap documents, forward each recap to the right captain and at the same time be able to manage each trip by following the recap instructions that corresponds to a voyage. Hence, the use of structured workflows will aid the operator in managing several voyages and executing business processes more efficiently.

II. THE COIN EXPERIENCE

The test-bed environment was prepared and executed at DTM offices, in Limassol, Cyprus. Figure 1 presents a small part of the second modeled workflow; due to space limitations. It includes the necessary tasks executed for the formulation and the distribution of the PDA document. The preliminary data is recorded into the initial PDA, as a direct result of the negotiations between DTM and the selected port agent. The PDA is then distributed to the captain and the DTM accounts department. Then, the accounts department is responsible to handle the payment of the appointed agent's fee. The captain and the agent are then in contact and follow the PDA terms to manage and execute the voyage. The vessel captain is also responsible to report daily to DTM. This will lead to the successful execution of the voyage and delivery of goods from the loading to the destination port without any predicaments.

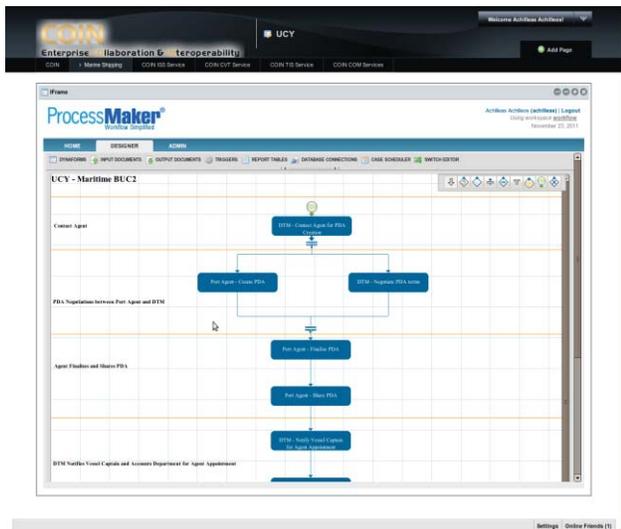


Figure 1: Part of the workflow model of the business use case for the production of the Recap document

A single task is presented, to showcase the changes performed in the marine processes. In this task the agent should create the PDA document that contains the voyage details and terms (e.g. agent fee) under negotiation (Figure 2). Currently, numerous documents exist in accordance to the agent's company. These hard copies include the same data but in different formats. Hence, the agent completes the form and sends it by fax to the DTM operator. In parallel, they exchange emails or phone calls to inform on the changes and negotiate the terms of agreement. With

the structured workflow the data is formalized and defined in an electronic PDA form. The agent completes the form and submits it. Upon submission a transformation script is executed. Thus, the UBL format (i.e. XML-based) of the PDA is automatically generated and uploaded into the COIN ISS to kick-off the negotiations.

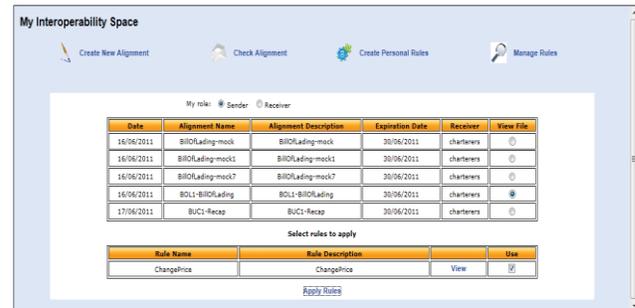


Figure 2. Using ISS for contacting the negotiations

III. LESSONS LEARNED & BEST PRACTICES

The COIN platform has provided benefits in terms of decreasing the development time to implement the pilots and in terms of reducing the time required for executing the business use cases. This efficiency improvement was a result recorded by the DTM actors during the execution of real-life business workflows as shown in Table 1. An important factor is that pilots development was impeded less by developers and was driven mostly by business requirements. The initial learning curve required 3-4 executions assisted by developers, prior to the business partners being able to engage on their own in the successful execution of the workflows.

The pilots' execution via a Web-Based portal aided the partners to familiarize and navigate easily the assigned tasks. The workflow management tool allowed having a clear view of pending tasks. This was very critical for our partners since it provided structure, control and facilitated coordination of the use cases; specifically for the operator. It also allowed DTM managers to view the progress of the workflow to monitor the tasks and be aware of the voyage status. This was missing since ad-hoc procedures did not provide any structure. Thus, it was very difficult to have easy control, coordination, supervision and monitoring of the processes. In overall, the efficiency of the processes as stated by our business partners was improved through the offered collaboration and interoperability services.

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