

## Continental Airlines and Electronic Forms

In early 2005, Continental embarked upon a paperless initiative. Among the initiative's multiple goals was the elimination of paper forms. Continental evaluated three leading forms vendors before deciding upon the Adobe LiveCycle platform. InfoTrust Inc., an Adobe Enterprise partner, piloted an eForms solution for Continental. The particular form identified for the pilot was the Engineering Request, a form used extensively in Continental Technical Operations to evaluate proposed changes to aircraft.

### Challenges Faced

#### *Regulatory Compliance*

In the United States, the Federal Aviation Administration (FAA) regulates airlines. Any form dealing with plane maintenance or engineering must comply with FAA directives. A prime objective of the eForms pilot was to demonstrate the ability to strictly adhere to regulatory requirements. The FAA defines compliance as having the correct data available to, or entered by, the users, along with the latest approved procedures guiding the steps that the form progresses through. The current paper-based form system was prone to errors such as out of date forms, entry of invalid values and transcription errors into tracking systems and databases. Delivery of paper forms via intra departmental mail or other physical means sometimes resulted in lost mail or delayed processing due to employees being out of the office.

#### *Cost Reduction and Efficiency*

Increasing efficiency and reducing costs is a major initiative in the airline industry. Senior management at Continental recognized that reducing paper and the costs associated with paper-based processes had tremendous cost savings potential. The cost of warehousing completed paper forms for one Continental department approached \$200K annually. The personnel required to process paper were underutilized and stuck in a mundane job. Users of paper forms wasted time by entering common standard information such as employee id, mail stop, phone number etc. Searching for completed forms or data in the form was tedious and time consuming.

### Challenges Addressed

In a regulated environment such as the airline industry, information integrity must be combined with a well-defined, auditable review and approval process. Continental's prime requirements for the system were strict adherence to compliance processes while realizing the cost savings that electronic forms and workflow promised. For the Continental solution, InfoTrust chose three Adobe LiveCycle products: Forms Server, Workflow Server and Form Manager, all versions 7.1. Together, they would produce the electronic forms and associated workflows that would address Continental's stringent requirements. A central server manages eForms. LiveCycle Form Manager and Administrator provided release functionality, making the correct form and workflow available for the users.

InfoTrust used Adobe Workflow Designer to create electronic workflows. Workflow Designer functionality allows a business analyst to connect 'QPACs' (Quick Process Action Components) into workflows. QPACs implement discrete steps in a workflow. The QPACs and the routes connecting the QPACs implement the business logic associated with the form review and approval. Adobe provides numerous standard QPACs that are customizable. They may then be saved along with complete workflows, promoting reuse. Workflows may be chained together and can also be associated with a form. Opening and submitting the form launches the workflow. For the Continental eForms pilot, InfoTrust created QPACs that would pre-populate the form with standard information (requestor name, id, phone, mailstop etc.) and also create a unique ER (Engineering Request) tracking number. Form field editability depended upon where the form was in the workflow. Comment fields were date/time stamped and made part of the permanent record. Placing a link to the ER Form on the existing Technical Operations Portal in a 'My Forms' area made it very easy for the requestor to find the form and submit it, starting the workflow.

## CASE STUDY

The LiveCycle repository saves a completed form as a PDF. A QPAC extracts the data entered in the form and saves it to a MS SQL Server database. Reports run against the database and ad hoc queries provide the real-time information needed for users of the system. Process data meets audit requirements for the FAA in terms of review and approval, 'on plane' engineering and maintenance procedures.

InfoTrust used Adobe Designer's import feature to jumpstart the form design. Continental had a PDF of the Engineering Request form, which InfoTrust imported and combined with an XML schema representing the data. Adding the Workflow controls made it ready for linking to the workflow. The form that appeared electronically was the same as the paper form the users were accustomed to, enhancing user adoption.

## Solution Architecture

