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# ROBUST UNIVERSAL E–DELIVERY PLATFORM

***Case Study***

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# ROBUST UNIVERSAL E–DELIVERY PLATFORM

***Case Study***

## The Client

The client, based in New York, is a leading provider of investor communications and technology-driven solutions, globally, to banks, broker-dealers, mutual funds, and corporations. Their systems and services include investor communication solutions, securities processing and operations. The client has several thousand customers from the financial industry including investment banks, brokerage firms, and hedge fund companies.

## The Business Challenge

The client was working on providing the state-of-the-art e-delivery platform for their customers that would replace conventional investor communications through regular mail. The platform was developed to add new customers and also to seamlessly onboard the existing customers. Each of the company's customers, typically a brokerage firm or investment banking firm, would in turn have hundreds of thousands of users who will be the ultimate end users of this platform. The e-delivery platform would be used within the customer portal and the look and feel, including colors, fonts and logos, had to be that of the customer. Any communication sent to the end users, for example e-mail, would reflect the unique look and feel and the user experience of the customer to whom the end user is subscribed.

A single e-delivery platform had to be designed to cater to all the customers instead of developing a different platform for each customer as that would entail huge cost, time and effort. A single platform meant that each customer had to be provided with their own look and feel on login. There had been a slippage in schedule the project had to be brought back on track and thousands of customers onboarded on the date committed.

The platform was required to handle concurrent use by several thousand users across the United States. The various applications that form part of the platform has to be ultra secure with outstanding user experience and speed response.

The specific functions that needed to be accomplished by the platform includes:

- Security Framework.
- iFramable hosting of application in the customer's environment (there are over 2000 customers in whose site the e-delivery platform needed to be hosted).
- CMA - Client management application used to setup unique customer-specific themes while onboarding over 2000 clients.

- Tool to clone customer setup for duplicating customers with similar setup/details thereby speeding up the onboarding process.
- Tools to import and export complete customer information there by enabling faster onboarding of customers and with zero errors when moving customer data from UAT environment to production environment.
- Approval work flow process during the onboarding to accept/reject change requests E-Mail template framework to setup emails for investor communications for different customers.
- Provision for Internationalization.
- Robust e-delivery platform to onboard over 2000 customer and million plus end users Interfacing with the mainframe team to leverage mainframe strength and legacy code base.

The Client was also interested in a partner who could:

- Offer a robust onsite solution overcoming the challenges encountered.
- Provide highly cost-effective, best-of-breed solutions.
- Leverage multiple cutting-edge technologies.
- Interface with business and provide outstanding problem solving skills.
- Respond quickly to issues and operational challenges.
- Provide assistance with user interface design using jQuery technology.

## The Engagement

The Client chose Thapovan for its demonstrated experience in building high-performance applications and for its reliable and trusted partnership. The Director of Development of the client was already familiar with Thapovan's offshore team capabilities as he had worked with the team earlier as part of a different company.

The engagement included the following:

- Onsite service model with offshore help in designing user interface.
- Gathering of business requirements and technical specifications.
- Design and development of core applications and modules.
- Seamless interaction with the client's business and technical team.
- Effective interaction with the mainframe technical team to leverage the power of mainframe and legacy code.
- Onsite technical team management.

# Solution Highlights

The overall solution for the universal e-delivery platform included several modules and applications. The following are some of the highlights:

## Security Framework:

Thapovan implemented SHA1 encrypted secure handshake through iFramed application. As the e-delivery application is hosted within the customer's portal, the users are first authenticated by the client application. The client application passes the public SHA1 key along with the user credentials, which is then authenticated by the e-delivery platform.

ESAP and ANTY-SAMY were used for client and server side validation to mitigate SQL injection, XSS and other web security threats like hacking.

## Universal E-Delivery Application

An iFramable universal e-delivery application was hosted in the web portals of over 2000 customers in the financial industry to enable the several thousand end users of these customers to opt for e-delivery of investor communications like statement, trade confirmations, and proxy statements.

The application also provided internationalization support where the end user could select the language in which the application should be rendered.

## CMA – Client Management Application

Since the number of customers numbered in thousands, developing an e-delivery application for each customer was not viable.

The CMA was developed to store customer data and UI preferences in the database. Each screen of the universal e-delivery application is present in the CMA and the customer can edit all UI Elements, including the static labels that are used in rendering the screen. The customer can move around the different sections of the screen depending on how they want it rendered in the end users' browser. The options include setting up the appropriate logo, changing fonts, colors of all the UI elements including the background color. In addition to capturing the UI preference from the customer, the data specific to the customer like the languages used for rendering the screen are also captured.

The information captured is stored in the database. When the universal e-delivery application is invoked by the end users of the customer, the application is rendered based on the UI elements and data options like the language that was selected during the setup phase. For example, if the user has selected French as the language of preference, the application will be rendered in French (including the labels of the button, menu labels, and section header).

The CMA also provides a cloning feature to help the administrator in setting up new customers. As the user-definable UI elements and data properties number over a hundred the cloning feature helps the administrator clone an existing customer while setting up a new customer thereby saving cost and time.

### IMPORT/EXPORT

Once a new customer is setup and validated, the validated data has to be uploaded to the production system. As the volume of data is huge reentry of data would consume a lot of time and would require an elaborate QA process. The platform provides an export/import feature using which the data entered and validated can be exported to an XML file, which can then be imported to the production environment.

## E-mail Templates:

When a user opts for e-delivery, frequent communications need to be sent through email. The theme and some data contained in the e-mail will be unique to each customer. Instead of creating an email template for every customer, a generic email template is created for each investor communication. The email template is filled at runtime with the theme and data of the customer. This feature also includes internationalization.

## Mainframe Interface

The Thapovan team worked with the client's mainframe team and the legacy code was used to leverage mainframe batch jobs in processing and sending investor communications.

# Technology Environment

## Major Technology Components:

- Language: Java ( JDK 1.5.0 )
- Webserver: WebSphare 7,
- Database: DB2 9 in mainframe
- Architecture: MVC – 2
- Frameworks: STRUTS 2, SPRING 3.2, jQuery, struts2-jQuery 3.4.0 libraries
- Security: SALT, SHA1, ESAPI 2.0, ANTYSAMY 1.4
- Source control: PERFORCE

## Key Technical Tools Used:

- JQUERY, AJAX: For communicating to the server without refreshing the page, resulting in better user experience.
- Distributed Database: For better performance, fault tolerance and failover.
- SSON – Single sign on for better user experience.
- Session tracker for auto logout of inactive sessions.
- Security handshake between the client and the universal e-delivery platform.

## Results Achieved

The client achieved the following major benefits from the partnership:

- Project was brought back on track and delivered on time as promised.
- A universal e-delivery platform was developed for onboarding thousands of customers and end users.
- Rich functionality, high-performance, high availability, and ease of administration were provided.
- Excellent customer adoption and user base growth were achieved.
- Joint development led to better products that were brought to market faster.
- Efficient use of technology led to a wonderful user experience.