Case Study: Building composite applications with the Lotus Expeditor Platform for the TD Canada Trust Call Center

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Agenda

- Introduction
- Business Background and Objectives
- Composite Application and Lotus Expeditor
- Design Approach and Considerations
- Challenges
- Getting Started
- Q&A
**Business Background**

- 3,300+ Specialist servicing more a few million calls every months
- Multiple onshore and offshore locations as well as working from home
- Four different managed desktop platforms
- Customer Centric
- Huge varieties of desktop applications to perform different business functions, including web based applications, java rich client application, Lotus Notes application and Host 3270 Green Screen application
Ongoing Business Objectives

- Maximize Customer experiences – First Call Resolution
- Maximize User experiences – Ease of access to the tools that fulfill customer request
- Optimize Average Handling Time (AHT)
**Technical Objectives**

- Create a reference architecture of the phone channel desktop that can be easily adaptable to different line of businesses
Analysis Approach

- Create a customer interaction business model
- Identify the tool/application that is involved in each step of the model
- Review the process within a single step as well as between the steps and identify the opportunities for improvement
Customer Interaction Model

- Customer Identification
- Customer Authentication
- Retrieve Customer Profile
- Fulfill Customer Request
  - Enquiry
  - Quick and Simple Transaction (e.g. Fund Transfer/Bill Payment)
  - Complicated Workflow (e.g. Open Account/Purchase GIC)
- Sales Opportunity
- Customer Tracking
What’s our finding

- It takes a lot of time for the specialist to switch from one application to another
- Specialist repeatedly keying in the same information to each application
- Specialist has to be very experience in order to know which application to use for each business function
- Conclusion: There is a need to seamlessly integrate all business functions
Business Functions Integration Evolution and Challenge

- Manual Cut and Paste
  - Not efficient/Not acceptable

- Toolbar integration
  - Limited ability
  - One way communication from the toolbar to each application
  - No awareness or conversation between applications

- All-in-one application
  - Huge effort in order to re-create all business functions that involves multiple product area and lines of business
  - Need to create one application for each line of business because they are unique in some ways
  - Cannot integrate with the line of business which have their specialize application/platform (e.g. Collection)
  - Different timeline or readiness for each product area
**Composite Application**

- Use Plug-and-Play business functions to assemble unique application for each line of business
- Integrate different business functions/applications to share and exchange information
- Modular approach, everything is a plug-in and re-usable
- Performance and Scalability of a rich client application
- Integration with IBM Host-On-Demand application

Decision: Eclipse Rich Client Platform offered in IBM Lotus Expeditor product
What is Lotus Expeditor

- A IBM product that build on top of Eclipse RCP and is used by IBM to build the Lotus Notes and Sametime Client
- Provide Interaction Services
  - Embedded Browser, Workbench, Personalities
- Provide Access Services
  - Web Services, DB2 Everyplace, MQ, Security
- Provide Managed Client Services and Platform Management
  - Portability, Preferences
Design Approach

- Use a top down approach to identify what components are needed.
- Design a standard specification of each component:
  - Responsibility
  - Contracts (Behavior, Customization)
  - Dependency
- Decide which business functions depend on external applications and which ones are being built as part of the application:
  - Ownership of the business functions
  - Availability of the web services for that business function
Build Business Functions Components

- Customer Search
- Customer Profile Retrieval
- Connection to External Transaction Application
- Connection to External Workflow Application
- Sales Opportunity
- Customer Tracking
- User Authentication
- User Profile
**Build Technical Components**

- Web Application Connection
- Rich Client Application Connection
- Host On Demand Connection
- Web Services Connection
- CTI Server Connection
- Data Container
Plug-In Categories

- **Product Plug-Ins**
  - Entry point of the application
  - Responsible for the startup of the application
  - Workbench, Preferences, Menu Items, Theme, View/Perspectives etc...
  - Choreography of the behavior of the application
  - E.g. “.product.gtw”

- **Product Specific Plug-Ins**
  - Components that are unique to the product, not intended to be re-usable by other products
  - Same ownership as in the product plug-ins
  - E.g. “.product.gtw.itrack”
Plug-In Categories

- **Generic Plug-Ins**
  - Components provide common functions that are re-usable in other products
  - No dependency of any product specific plug-ins
  - Share Ownership
  - E.g. “.customer.search”

- **Utility Plug-Ins**
  - Hidden Components
  - Generic Plug-Ins that does not any visual interface
  - Minimal/No dependency
  - Share Ownership
  - E.g. “.wsc” (web services client)
Plug-In Design Consideration

- Responsibilities
- Contracts
  - Wiring of the Plug-In, what it expose to others and what action can it does
  - Design Time Customization with Extension points
  - Run Time Customization with User Preferences
Plug-In User Interface Consideration

- Assembly/View Layout approach, choice of Tabs/Multiple views in a perspective
- Generic plug-ins need to have a flexible presentation. Accommodate the need of a major focus or minor focus view
- Choice of AWT and SWT
- Maintain Look and Feel consistency by following the product theme
- Hot Key short-cut access
- Be Accessible to works with tools like JAWS and ZoomText
**Wiring**

- Communication between the plug-ins
- Each plug-in need to expose its properties and action as part of the contract
- Currently using a in house pub-sub model

**Future Potential**
- Property Broker
- Composite Application Editor
### Sample Layout

**Gateway - eBank**

### ASSETS

<table>
<thead>
<tr>
<th>Account</th>
<th>Balance</th>
<th>Branch</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>GUARANTEED INVESTMENT ACCOUNT - 8872195</td>
<td>$5,750.10</td>
<td>1620</td>
<td>ACTV</td>
</tr>
<tr>
<td>US$ DAILY INTEREST CHECKING ACCOUNT - 7142392</td>
<td>USD ($0.00)</td>
<td>1620</td>
<td>ACTV</td>
</tr>
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</table>

Total Assets: CDN $5,750.10

### LIABILITIES

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<thead>
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<th>Account</th>
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<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAP -</td>
<td>$0.00</td>
<td>5170</td>
<td>APPLICANT</td>
</tr>
<tr>
<td>CAP -</td>
<td>$0.00</td>
<td>5170</td>
<td>APPLICANT</td>
</tr>
<tr>
<td>CAP -</td>
<td>$0.00</td>
<td>0078</td>
<td>APPLICANT</td>
</tr>
<tr>
<td>TD GREEN VISA - 46320 013830082 6102</td>
<td>$2.00</td>
<td>0078</td>
<td>ADDR OWNER OR LIMIT: $1,000.00</td>
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</table>

Total Liabilities: CDN $0.00

Consolidated Balance: CDN $5,750.10

### SERVICES

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<th>Status</th>
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</thead>
<tbody>
<tr>
<td>SAFETY DEPOSIT BOX - 690</td>
<td>1620</td>
<td>ACTV</td>
</tr>
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</table>

### Phone Status

<table>
<thead>
<tr>
<th>Line Information</th>
<th>Call Actions</th>
<th>Phone Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2</td>
<td>Answer</td>
<td>Ready</td>
</tr>
<tr>
<td></td>
<td>New call</td>
<td>Not Rec.</td>
</tr>
<tr>
<td></td>
<td>Confer...</td>
<td>ACW</td>
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<tr>
<td></td>
<td>Transfer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IVR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Held</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drop</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Release</td>
<td></td>
</tr>
</tbody>
</table>
Integration with external applications

- Web Based Application
- Rich Client Application
- Host 3270 Application
- Web Services

- Use of Container to wrap around existing application
- Provide Single Sign On
- Sharing Data/Context
Integrate Web Based Application

- Choice of Eclipse/Lotus Expeditor Browser Plug-In
- Single Sign On with Lotus Expeditor Account Manager Framework
- Choice of Basic HTTP Authentication/Challenge or SPNEGO
- Sharing Context by Cookies and Moniker
Integrate Rich Client Application

- Most Challenging Effort
- Sharing Context by invoking functions/libraries expose by the other client application
- OpenSpan Container for window application
- Microsoft Office Integration/IBM Offers e.g. symphony
- Lotus Notes Application Integration by Notes Container

- Best Practice: Minimize the number of Separate Rich Client applications on the desktop
Integrate Host 3270 Application

- In-House 3270 Terminal Plug-In or LE Host-On-Demand Container
- Single Sign On by capturing and encrypting user ID and password during the logon to the application
- Navigate the Host application with Host-On-Demand Macros
- Best Practices: minimize the dependency of the screen layout
Integrate Web Services

- Using the Job framework
- Progress indicator
- Error handling
Result

- Flexible reference model to adapt to other line of business call center.
- From Telephone Banking to Investment Services, Sales Deliver and Visa Call Center
- The first version of the application saved 15 seconds per call which gave business payback on the investment in the first year of the deployment
- Shorten the delivery time of a new product for a specific line of business by re-using 70% of the code
**Challenges**

- Deployment of a rich client application
  - Updates Site/Feature Update not the best matched to the Managed Desktop platforms in TD
  - Decide to go with a self contain approach to provide a better control and fallback capability

- Support issues
  - Users unaware of the what application they are using
  - How does the help desk route the support ticket
  - Different SLA from external applications

- Governance/Ownership of the plug-ins
  - Different Line of Business has different requirements of the User Interface
Getting Started

- Eclipse 3.4 + WTP 3.0
  - http://www.eclipse.org/
- Eclipse learning resources
  - http://www.eclipse.org/users/
- Lotus Expeditor 6.2 Toolkit
- Lotus Expeditor developerWorks
- Lotus Expeditor Wiki
- Lotus Expeditor 6.2 Info center
- Composite Applications Wiki
Q&A

- Questions